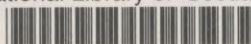




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ENCYCLOPÆDIA BRITANNICA.

EIGHTH EDITION.

THE
ENCYCLOPÆDIA BRITANNICA,

OR
DICTIONARY

OF
ARTS. SCIENCES. AND GENERAL LITERATURE.

EIGHTH EDITION.

WITH EXTENSIVE IMPROVEMENTS AND ADDITIONS;
AND NUMEROUS ENGRAVINGS.

VOLUME XIX.

ADAM AND CHARLES BLACK, EDINBURGH.

MDCCCLIX.

[The Proprietors of this Work give notice that they reserve the right of Translating it.]

Adm. Tail

THE GEOGRAPHICAL MAGAZINE

MARCH 1877

AND THE GEOGRAPHICAL MAGAZINE

FOR THE MONTH

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NEILL AND CO., PRINTERS, EDINBURGH.

ENCYCLOPÆDIA BRITANNICA.

Reid.

REID, DR THOMAS, a distinguished Scottish philosopher, and founder of the school of Natural Realism, was born on the 26th of April 1710 at the manse of Strachan in Kincardineshire, a parish about twenty miles from Aberdeen, where his father, the Rev. Lewis Reid, was minister for fifty years. His mother was Margaret Gregory, daughter of David Gregory, Esq. of Kinnairdie in Banffshire, and one of twenty-nine children, the most remarkable of whom were David, James, and Charles Gregory, then professors of astronomy and mathematics at Oxford, St Andrews, and Edinburgh. By his father, Thomas Reid could look back on a long line of ancestors, most of whom had been ministers of the Scottish Church, and with a decided bias towards literature; and in two cases they had forced their way within the shadow of the throne, the one as Greek and Latin secretary, and the other as physician to royalty. On his mother's side he could count the names of men who were as distinguished for their genius as they were illustrious for their worth; and who, by their brilliant talents, had shed lustre on the northern colleges, and left a memorable name in connection with the universities of the south. It was this twofold stream of literature and science that was to combine in forming the philosophy of Reid. Young Reid received his elementary education first at the parish school of Kincardine, and subsequently at Aberdeen. He entered Marischal College in his twelfth or thirteenth year, where, according to his own account, he received an education that was somewhat slight and superficial. He gave no indication of future eminence, but displayed a modest perseverance in study which amounted almost to a passion. About a century before, one of his ancestors had left an endowment to the librarian of his college; and to this office Reid had the good fortune to be appointed. He could now indulge his love of study amid the calm of an academical retreat. Like his great German rival and contemporary Kant, he at first showed a decided predilection for mathematical pursuits, a taste which was confirmed and strengthened by his familiar intimacy with John Stewart, subsequently professor of mathematics in the same college, and author of *A Commentary on Newton's Quadrature of Curves*. The two youths read mathematics with ardour, and studied the *Principia* with fascination.

VOL. XIX.

In 1736 Reid resigned his office as librarian, and accompanied his friend Stewart on an excursion to England. They visited London, Oxford, and Cambridge, and made the acquaintance of many persons of the first literary and scientific distinction. On Reid's return to Aberdeen, he was presented by King's College to the living of New Machar, in the same county. The popular prejudice was not, however, in his favour; yet he completely disarmed the animosity of the people by the forbearance of his temper and his active spirit of humanity, and so endeared himself to them that they afterwards said, "we fought *against* Dr Reid when he came, and would have fought *for* him when he went away." He seems to have had an aversion at this time to original composition; and it is recorded of him that he preached the sermons of Tillotson and Evans for years after he became a clergyman. The greater portion of his time was spent in intense study, chiefly of a metaphysical cast, and when he took any relaxation it was for the most part in the shape of gardening and botany. A paper which appeared in the London *Philosophical Transactions* for 1748, entitled "An Essay on Quantity, occasioned by reading a Treatise in which Simple and Compound Ratios are applied to Virtue and Merit," will show how far he still clung to his earlier investigations, and to what extent he had realized the larger field which lay beyond. The work alluded to in the title of this paper was the *Inquiry into the Origin of our Ideas of Beauty and Virtue* of Dr Hutcheson of Glasgow, who died the previous year. In 1752 Reid was elected professor of philosophy in King's College, Old Aberdeen, where he required to teach mathematics and physics, as well as logic and ethics. Shortly after his removal to his new sphere of labour, Dr Reid took part in organizing a literary society, which was instrumental during many subsequent years in kindling and fostering that spirit of philosophical research which, in the writings of Reid, Gregory, Campbell, Beattie, and Gerard, reflected so much lustre upon northern literature. The *Inquiry into the Human Mind on the Principles of Common Sense* was published by Reid in 1764, after having received the sanction and applause of his immediate associates. He was then in his fifty-fourth year, and he seems to have meditated this work for twenty-five years, from the publication of Hume's remarkable *Treatise of Human Nature* in 1739.

Reid.

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Reid.

Thus Hume had the unexpected credit of awakening the suspicions of Reid by his sceptical conclusions, as he not long afterwards had of arousing Kant from his "dogmatic slumber." As the refutation of Hume's scepticism was the great object of Reid's *Inquiry*, he took the opportunity of submitting his manuscript, through Dr Blair, to the great sceptic's perusal. Hume, after reading the manuscript, wrote to Reid, "I have read your performance with great pleasure and attention. It is certainly very rare that a piece so deeply philosophical is wrote with so much spirit, and affords so much entertainment to the reader." And again, "I kept a watchful eye all along over your style; but it is really so correct, and so good English, that I found not anything worth the remarking." Reid had unquestionably in this work fallen upon a mine of the very purest metal, and "by an ignorance wiser than knowledge" worked it out with untiring perseverance. It may be fairly questioned, however, whether he was in all respects consistent in his application of the principles of Common Sense to the refutation of the Scepticism of Hume, or of an Idealism more subtle than that of Berkeley. Reid informs us that he "had embraced the whole of Berkeley's system" in the course of his speculative inquiries; and was only withheld from giving it his final approbation on "finding other consequences to follow from it, which gave me more uneasiness than the want of a material world." His reading in philosophy was, to say the least, exceedingly limited; and this limitation had both its advantages and its disadvantages. For, while it kept his mind comparatively free and untrammelled to look at the facts which his consciousness revealed to him, it, by this very freedom, threw him off his guard in analysing the contents of his experience, and deluded him with the conviction, that when he had confuted a doctrine under a particular development, his principles were proof against that doctrine, under whatever guise it might assume. So it was, with the doctrine of Idealism, which he hastily identified with the Idealism of Berkeley. He raised, however, a substantial protest against the doctrines which it was his business to refute, and in his future work was more guarded in his expression as well as more circumspect in his estimate of philosophical opinion.

The fame of Dr Reid spread rapidly all over the country; and in 1763 he was invited to Glasgow to fill the chair of moral philosophy, then vacated by Dr Adam Smith. Glasgow at that time presented strong attractions to a man of Dr Reid's habits of mind. Simson, Moor, and Black, were still in the full vigour of their faculties, and were still looking forward to long years of intellectual enjoyment. Animated by the presence and stimulated by the zeal of such associates, Dr Reid entered upon the new scene of his labours with an ardour that was very uncommon at his period of life. Dugald Stewart, who was a pupil of Reid's in Glasgow, and who has left us an elegant *Account of his Life and Writings*, in speaking of his merits as a public teacher, bears the following testimony:—"The merits of Dr Reid as a public teacher were derived chiefly from that rich fund of original and instructive philosophy which is to be found in his writings, and from his unwearied assiduity in inculcating principles which he conceived to be of essential importance to human happiness. In his elocution and mode of instruction there was nothing peculiarly attractive." "A brief Account of Aristotle's Logic, with remarks," appeared in 1774, from the pen of Dr Reid, in the second volume of Lord Kames's *Sketches of the History of Man*. In 1781 Reid resolved to retire from his public duties, and to devote himself, while his health and faculties would permit, to the further elucidation of the phenomena and laws of the human mind. Although at that time upwards of seventy, neither in vigour of body nor of mind did he seem to have sustained any injury from time. He published his *Essays on the Intellectual Powers of Man* in 1785; and his *Essays*

on the *Active Powers of Man* appeared in 1788. This last performance may be said to have closed his literary career, for, with the exception of short occasional essays on subjects which happened to interest him, written for a philosophical society of which he was a member, it was the last work he ever wrote. His active and useful life was now drawing to a close. He was seized with a violent disorder in the month of September 1796, and after a severe struggle he died on the 7th of the following month, in the eighty-seventh year of his age.

Reid.

Dr Reid, though somewhat under the middle size, was uncommonly muscular and athletic,—advantages to which his habits of temperance and exercise, as well as the extreme evenness of his temper, contributed not a little. In private he combined the dignity of the philosopher with the amiable modesty and gentleness of the child. His philosophical genius was peculiarly distinguished by a singular patience of thought, and by a cautious discriminating judgment. He was endowed by nature with a disposition, which early worked itself into a habit, of rivetting his most fixed and concentrated attention on his own mental operations; and though there have been men who, with such a disposition, would unquestionably have drawn from the evanescent sphere on which he fixed his contemplation results more brilliant and conclusions more startling, yet it remains a question whether a loftier genius would have outshone Reid in the ultimate task of photographing, so to speak, the phenomena of the human consciousness, and of cautiously attending to what that consciousness implied. He was by no means a brilliant thinker; but no philosopher ever surpassed him in patience. His style was simple, easy, and familiar; and perhaps his works have suffered somewhat from not being written in a language more elaborately technical, or at least in a manner less readily accessible to the ordinary comprehension of men. Since Reid's time the estimates of his philosophical capacity have been alike curious and various. Some would have him endowed with a commanding genius, at whose light darkness became visible, and before whose glow all things false were consumed; others would degrade him beneath the dignity of the philosophical class, and have men believe he had no business among philosophers. Extravagant as these estimates must appear, they might perhaps find an explanation in the mode of writing which the author adopted. To the one class, not very discriminating, his simple and familiar language would at once declare him the man of genius; while with the other class, equally indiscriminating, the absence of rigorous and severe technicality would at once erect a barrier between his talent and their appreciation. Suffice it to say, that his philosophy of Common Sense, his theory of external perception, still holds ground amid the war of conflicting systems and the general uprooting of opinion; and so far as one can observe amid the dim and dusky confusion attendant on the strife, it is a philosophy, or, if men will, a bundle of theories, which is likely to outlive the rough weather of human speculation for a considerable time to come. The polemic which Reid implicitly or explicitly carried on was of a twofold character, and the method which he brought to it was in some measure peculiar. In the first place, it was against the *Scepticism* of Hume he directed his primary and ineradicable beliefs; and in the second, it was at the *Idealism* of Berkeley he aimed his principles of the common sense. Hume, as a sceptic, who knew well the functions he had to fulfil, accepted the premises afforded him by the sensationalists, and carried these premises to their legitimate conclusions. These conclusions, as all know, were one weltering, chaotic sea of the wildest doubt; and the fatal reflection regarding the whole of his speculations was, the perfect legitimacy of his polemic, and the absolute justness of his reasoning. It was obvious that if

Reid. Philosophy was again to raise her cloven front before the altar of truth, she must disrobe herself of her meretricious attire, and be content to adorn her person in the simple and severe dress of a handmaid. Thomas Reid saw this truth, to the extent of his vision, and resolved to make the most of it. He would avoid the hollow empiricism which had so greatly degraded his century; and he would shun the extravagant folly of aspiring to a speculative ontology on which so many have made shipwreck. The method which he accordingly adopted was that of observation and experiment, of the analysis of the contents of his inner consciousness; in a word, the method of Induction. Such was his method, and such was his design. It was nothing less than the re-construction and re-establishment of the entire speculative edifice, which, in such an humbling and confounding manner, lay level with the ground. He at once assailed the Idealist and the Sceptic in his doctrine of External Perception; and he entirely confounded the latter by his metaphysical theory of the laws of Substance and Cause. He reduced perception to an act of immediate or intuitive cognition, viewing the one total object of perceptive consciousness as real, and founding the doctrine on the spontaneous consciousness or common sense of mankind. He thus instituted the doctrine of *Natural Realism*, as Sir William Hamilton calls it, to oppose the Idealists, whether absolute like Berkeley, or hypothetical, like the great body of philosophers before his time. Reid may have fallen upon this doctrine by his very ignorance of the literature of philosophy. Of the great principle first explicitly announced by Empedocles, and hitherto assumed by philosophers, that "the relation of knowledge inferred an analogy of existence," Reid, in dealing with Norris, professes his entire ignorance. "This argument," he says, "I cannot answer, because I do not understand it." Thus at least was Reid saved from one great snare which lay on the beaten path to External Perception. But in the further pursuit of scepticism, Reid, on analysing the contents of his observation of the metaphysical laws of Substance and Cause, found that, so far from those principles being entirely deducible from experience, as had hitherto been alleged, they were emphatically of that nature of which experience could give no account at all. Here, again, like the great German critic Kant, he was forced to avow that, while all knowledge began with experience, all knowledge was not therefore necessarily derived from experience. He ascribed those laws to the primary and fundamental beliefs which the mind had brought with it to the observation of phenomena; and without taking account in any very precise way as to whether the Reason in which those radical convictions inhered was personal or impersonal, he left the conviction on the mind of the reader that the principles of Substance and Quality, of Cause and Effect, &c., could not with safety be carried beyond the sphere in which human experience is possible. Thus, again, his philosophy is antagonistic to speculative ontology under every form, whether of a more abstract and indeterminate shape, such as Spinoza, Hegel, and Schelling have promulgated, or whether of a less abstract and more determinate nature, as in the modern speculations of M. Cousin. Reid's philosophy partook to a considerable degree of the modesty of his character. As he knew well that an uneasy vanity was generally inconsistent with true wisdom, so a kindred instinct seems to have taught him a genuine philosophical sagacity. Not that he exhibited throughout that clear seizure of the truth and complete self-consistency, which would have rendered his works immaculate and his conclusions impregnable; but Sir William Hamilton has since thrown his opinions under a much greater light, both of learning and speculative genius, than Reid could pretend to; harmonizing what was discordant, giving definite shape to what was before obscure, inserting useful distinctions, and com-

pleting what the author had only dimly apprehended or but imperfectly grasped. (For further information regarding Reid and his philosophy, the reader is referred to Hamilton's edition of his works. Casual information respecting the philosophy of Common Sense will occasionally be found in the FIRST PRELIMINARY DISSERTATION of Dugald Stewart, prefixed to the present work.) (J. D.—S.)

REID, *Sir William*, distinguished for his success in physical science and in civil administration, was born in 1797, at the manse of Kinglassie, a village in Fifeshire, and entered the army in 1809 as a lieutenant of Royal Engineers. The first part of his career was passed in unobtrusive though active service. He passed through the heat of the French war under the Duke of Wellington, playing his part in most of the onsets, and bringing away several wounds. His next important engagement was at the bombardment of Algiers in 1816. He is then found in Barbadoes in 1832 as major of the engineers who were re-erecting the government buildings. It was not until 1838 when, with the rank of lieutenant-colonel, he was governing Bermuda, that Reid began to come prominently before the public. In that year he published his *Law of Storms*, the first result of a course of patient and sagacious observation. He continued to test and mature his views while holding the governorship of the Windward Islands; and published in 1849 *The Progress of the Development of the Law of Storms*. The fame of these publications, as well as his growing reputation for administrative talent, gave him a high standing on his return home, and led him to several distinguished honours. In 1851 he was appointed chairman of the executive committee of the Great Exhibition. No sooner had that important task been finished than he was made a K.C.B., and sent out to govern Malta. There, too, his vigorous and spirited rule gained for him distinction; and he had just returned home with the title of major-general when he died in October 1858.

REIGATE, a parliamentary borough and market-town of England, in the county of Surrey, stands near the Mole, at the foot of the southern slope of the North Downs, 21 miles S. by W. of London. This small, neat town consists of one main street, running from E. to W.; and has a town-hall in the market-place, occupying the site of an old chapel of St Thomas à Becket. The church, which is built of limestone, at various dates, but chiefly in the perpendicular style, has a lofty embattled tower, and contains the tomb of Lord Howard of Effingham, who commanded the English fleet against the Armada. Besides this and a district church, built in 1845, there are in Reigate places of worship for Independents and Quakers. A grammar school, national and infant schools, literary institute, and a savings-bank are among the other establishments of the town. Some earthworks mark the site of a castle, which was destroyed in 1648. Under the court of the castle is a cavern where the barons are said to have met to draw up the Magna Charta. Of a priory that formerly stood here there are now no remains. Reigate returns one member to Parliament. Pop. (1851) 4927.

REIMARUS, HERMANN SAMUEL, a German, who was born at Hamburg in 1694, and was educated at the university of Wittenberg, is distinguished for his services in several departments of learning. His first fame was gained as the author of *Primitia Wismariensia*, 4to, 1723. Then, settling down at Hamburg in 1727 as professor of philosophy, he became one of the brightest ornaments of the university of that city. His marriage in the following year with the daughter of J. A. Fabricius was the means of introducing him into other fields of labour. He assisted that eminent scholar in preparing his philological works; and after his death he published a Latin memoir of him, 8vo, Hamburg, 1737. Nor did a delicate constitution, and the growing infirmities of age, prevent him from entering

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upon the new study of natural history. He published *Observations, Physical and Moral, on the Instinct of Animals*, in 2 vols. 12mo, Hamburg, 1760. Other researches on the same subject would also have appeared had not death, in 1768, cut short his career. The other works of Reimarus are,—*A Letter to Cardinal Quirini concerning the Works of Dion Cassius*, 4to, Hamburg, 1746; *The Roman History of Dion Cassius*, in 2 vols. folio, Hamburg, 1750–53; and *A Discourse on the Principal Truths of Natural Religion*, 8vo, Hamburg, 1754, a popular treatise, of which a seventh edition appeared in 8vo, 1798. He is also the reputed author of the famous *Wolfenbüttel Fragments*, published by Lessing in 1774 and 1777.

REIMS. See RHEIMS.

REINESIUS, THOMAS, a learned German, was born at Gotha in 1587, and studied medicine at Wittenberg and Jena. After travelling in Italy, and practising in various towns in Germany, he is found at Leipsic in the former half of the seventeenth century enjoying a high reputation. His erudition and critical sagacity in questions of classical lore were admitted to be extremely great. The many philological works which had issued at intervals from his pen had carried his name far and wide, and raised up many admirers. Louis XIV. of France sent him many tokens of regard and esteem. Several eminent contemporaries were in the habit of consulting him on subjects of learning. Especially was he considered an oracle in medicine and archæology. Reinesius died on the 17th January 1667. The following are some of his works:—*Variarum Lectionum Libri Tres Priores*, in 4to, Utrecht, 1640; *Observations upon Petronius*, in 8vo, Leipsic, 1666; *Epistolæ*, in 4to, Jena, 1670; and *Syntagma Inscriptiōum Antiquarum Omisarrum in Opere Jani Gruteri cum Indice*, folio, Leipsic, 1682.

REINHOLD, ERASMUS, an eminent German mathematician, was born in 1511 at Saalfeld, and was determined towards mathematics at the university of Wittenberg. Appointed to the mathematical chair in his *alma mater*, and favoured by the patronage of Albert, Duke of Prussia, he devoted himself to the prosecution of his favourite science. With patient and careful labour he began to produce a series of works of great practical utility. The first book of the *Almagest*, in Greek, with a Latin version and scholia, was issued in 8vo, 1549. A set of astronomical tables, formed from a comparison of the observations of Copernicus with those of Ptolemæus and Hipparchus, and called, in honour of his patron *Prutenicæ Tabulæ Cælestium Motuum*, was published in 1551. In 1554, the year after his death, there appeared a work entitled *Primus Liber Tabularum Directionum*, in which he extended Regiomontanus's Table of Tangents to each minute of the quadrant. There were also other calculations of his which were printed a considerable time after his decease.

REISKE, JOHANN JACOB, a profound scholar and eminent critic, was born in the year 1716 at a small town in the duchy of Anhalt in Germany. His parents occupied an humble situation in life; and in consequence of the narrow circumstances in which he was placed, he had many difficulties to struggle with during the early part of his career. These, however, he surmounted by unabating perseverance; and in 1733 went to the university of Leipsic, where he remained during five years in the ardent pursuit of his studies. Here he acquired an extensive knowledge of the Arabic, and engaged in the translation of a book from that language, which was afterwards published. With the view of prosecuting to greater advantage the study of Arabic, which had become with him a passion, he travelled on foot to Leyden, where new difficulties attended him. Whilst he remained there he was employed in arranging the Arabic manuscripts belonging to the university; and for this labour he received a very small compensation. During his residence at Leyden part

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of his time was occupied in the translation of various essays from the German and French languages into Latin. These essays afterwards appeared in the *Miscellanea Critica*. About the same time also he translated into Latin the whole of the *Chariton* from the Greek, and the *Geography* of Abulfeda from the Arabic. Having spent eight years at Leyden, Reiske was driven from this place by jealousy and calumny, which, it is said, were excited against him chiefly by the younger Burmann, in consequence of his critical strictures on the edition of Petronius published by that author; but before his departure from this learned seminary he had obtained the degree of Doctor of Physic, which was conferred in a manner highly to his honour. He afterwards visited different parts of Germany, and at last settled a second time at Leipsic, where he remained for twelve years. But although he had received the appointment of professor of Arabic, the emoluments of his office were so scanty that he had still to struggle with all the difficulties attendant on poverty, and, to procure a subsistence, was obliged to engage in humble employments of literary labour, and submit to the severe and ill-requred drudgery of editing works for booksellers, or contributing detached papers to periodical publications. About this time the *Acta Eruditorum* were greatly indebted to the labours of Reiske. But in the midst of all the difficulties and hardships now alluded to he prepared and published a work of profound learning and great merit. This work, which extended to five volumes, appeared under the title of *Animadversiones in Auctores Græcos*, and added much to our author's reputation. In the year 1758, in consequence of the death of Haultausius, he obtained a situation which was not only honourable, but lucrative. This was the place of rector of the college of St Nicolas in Leipsic, in which he continued during the remainder of his life. He was now raised above want, and being free from the difficulties and embarrassments which had hitherto constantly attended him, he was thus enabled, in the midst of learned ease, to prosecute his favourite studies.

In the year 1764 Reiske married Ernestine Christine Müller, a woman of great learning, and of whom it is said that her knowledge, especially in Greek literature, was little inferior to that of her husband. In all his literary labours she was a useful associate; but the assistance which she contributed to his great work, the edition of the Greek orators, was particularly valuable. He died in 1774, possessing a very distinguished reputation as a scholar and critic. The number of works which he superintended and published was very great. A complete list of them is given in the continuation of his memoirs by his wife, published at Leipsic in 1783.

RELAND, ADRIAN, an eminent orientalist, born at Ryp in North Holland in 1676, where he evinced early an extraordinary degree of talent for literature and science. He studied under Surenhusius for three years, where he made extraordinary progress in oriental languages and literature. He was elevated to the chair of philosophy at Hardwick before he had completed his twenty-fifth year. He subsequently exchanged his philosophical professorship for that of oriental languages and ecclesiastical antiquities at Utrecht. He died of small-pox on the 5th of February 1718, in his forty-second year.

The principal works of Reland are:—*Palæstina ex Monumentis veteribus illustrata*, 2 vols., Traject. 1714,—unquestionably his greatest work, and still spoken of with great respect by the best writers on the subject; *Dissertationes quinque de Nummis Veterum Hebræorum*, 1709; *Dissertationum Miscellanearum*, 4 vols., 1706–1708; *De Religione Mohammedica*, Ultraj. 1705; *De Spoliis Templis Hierosolymitani in Arcu Titiano Romæ conspicuis*, Traject. 1716. The remaining works of Reland were chiefly Latin poems and orations.

RELIEF, in sculpture is the projection or standing out of a figure which arises prominently from the surface on

Relief which it is formed, whether that figure be cut with the chisel, moulded, or cast. There are three kinds or degrees of relief,—alto, basso, and demi-relievo. The alto-relievo, called also *high-relief*, is when the figure is formed after nature, and projects as much as the life. Basso-relievo, bas-relief, is when the work is raised a little from the surface, as in medals and the frontispieces of buildings, but particularly in the histories, festoons, foliages, and other ornaments of friezes. Demi-relievo is when one-half of the figure rises from the plane. When in basso-relievo there are parts that stand clear out, detached from the rest, the work is called a demi-basso. In architecture the relief or projection of the ornaments ought always to be proportioned to the magnitude of the building it adorns, and to the distance at which it is to be viewed.

RELIEF, in painting, is the degree of boldness with which the figures appear, at a due distance, to stand out from the ground of the painting.

RELIGION (*religio*) is a word, derived, according to Cicero (*De Natura Deorum*, lib. ii. 28.), from *relegere*, to re-consider; but, according to Servius and most modern grammarians, from *religare*, to bind fast. The reason assigned by the Roman orator for deducing *religio* from *relego* is in these words:—"But those who are called religious (*religiosi*), from their habit of considering carefully (*relegendo*), should diligently weigh everything which pertains to the worship of the gods, and, as it were, re-consider (*relegerent*) it." The reason given by Servius for his derivation of the word is, "that religion binds the mind fast." If the Ciceronian etymology be the true one, the word *religion* will denote the diligent study of whatever pertains to the worship of the gods; but, according to the other derivation, which we are inclined to prefer, it denotes that obligation which we feel on our minds from the relation in which we stand to some superior power. The import of the word religion is different from that of theology, since the former signifies a number of practical duties, and the latter a system of speculative truths. (See THEOLOGY.)

REMBANG, a town of Java, capital of a province of the same name, on the N. coast of the island, 60 miles E.N.E. of Samarang. It is a thriving, bustling town, with ship-building and salt-pans, an active navigation and trade, especially in ship-timber. The harbour is safe and good; and the town has a fort, mosque, school, hospital, &c. Pop. 8000.

The province, which is bounded on the E. by that of Surabaya, S. by those of Kediri and Madiun, W. by that of Samarang, and N. by the Java Sea, is generally hilly, and watered by the Solo, flowing eastwards. By far the most of the surface is barren, and much of it covered with date forests. Besides timber, rice and tobacco are among the productions. Pop. 460,000.

REMBRANDT VAN RHIN, the name by which PAUL GERRETZ is usually known, was a very distinguished painter and engraver, and was the son of Hermann Gerritz, a miller, who dwelt on the banks of the Rhine, between Leyderdorp and Koukeren, near Leyden, where he was born in 1606. His father, who was in tolerably easy circumstances, was anxious for the youth to study Latin, and to adopt ultimately some learned profession. Rembrandt thought otherwise; and in place of studying Latin at Leyden, as was his filial duty, he spent his time in drawing Dutch boors and in delineating rotund bar-maids. It was clear that Rembrandt would be a painter; and his father accordingly placed him with Jacob Van Zwaanenbergh at Amsterdam, where he spent three years. According to all accounts, his progress during this initiatory stage was the perfect astonishment of his master. He is said to have passed some time also with Peter Lastmann and Jacob Pinas, in order to perfect himself in the mechanical details of his art. Leaving the studio of Pinas, he commenced work on his own account within the precincts of his father's

mill. In the objects of nature which surrounded his locality, and the grotesque specimens of Dutch peasants which his neighbourhood afforded, he found nourishment for his taste for simplicity, and food for his genius. He worked with great diligence, and rapidly acquired both fortune and fame. In 1630 he settled in Amsterdam, where he resided during the remainder of his life. He married in 1634, soon after reaching the city, a handsome peasant girl of Ramsdorf, whose portrait he has frequently painted. From his first establishment in Amsterdam he met with the most flattering attention. The grandest personages of the Dutch city would have their portraits taken by no one but Rembrandt; all the art students who could muster the requisite fee (for Rembrandt loved money dearly) came and laid it at the feet of this rising Dutch artist. We must not suppose, however, that Rembrandt entirely deserted the ways of those Rhine peasants or their rustic sports, upon his making the acquaintance of such distinguished personages, and on his being able to count his pupils by the dozen. The quaint old mill no longer enlivened him with its pleasant clack, and his eyes no longer rested on the queer figures which moved on the banks of the Rhine. Yet he spent his hours of recreation among the lowest orders of the people, whom his pencil delighted to portray, supplying his capricious fancy with its appropriate stimulant, and finding his ideals of the beautiful among the squat, sturdy Dutchmen who were wont to while away the time amid the congenial flavours of a beer-house. He sought nature in her simplicity; and she seems to have found her way to Rembrandt, despite his occasional irreverence for the antique. He was wont to amuse his disciples by introducing them to his collection which was designed to illustrate the ancient style. This consisted of a great variety of old armour, sabres, flags, and fantastical vestments. There was just a slight degree of affectation in this, as there usually is. Rembrandt was the most illustrious artist of his time; and he continued with unabated ardour to practise his delightful art, until death came to summon him away from Amsterdam. In the registry of burials, in the Wester Kirk of that city, there is the following entry, which has recently been discovered:—"Tuesday the 8th of October, 1669, *Rembrandt Van Rin*, painter, on the Roosegraft, opposite the Maze, leaving two children." This record places the date of his death beyond dispute; but men are likely still to cavil regarding the exact place and date of his birth. Very little is known of his life. At his death he seems to have shared the humble lot of those with whom he for the most part associated; labour and comparative obscurity while living, and at death forgetfulness. The great world, however, would not have him be forgotten. The sons of genius are sons of fame. The burgomaster Six was the only man of rank with whom Rembrandt associated; and the landscape "*De la Moutarde*" is said to have been the result of a wager between the painter and his host. The best and the most recent account of the life and merits of Rembrandt is to be found in a lecture in Dutch, by P. Scheltema, published at Amsterdam in 1853. The reader may likewise consult his *Life and Works*, by J. Burnet, 1848.

Rembrandt Van Rhin stands distinguished from all artists of note by the boldness of his style, his daring manner of colouring, and his distribution of light and shade. His historical figures are doubtless deficient in dignity; but there is in them an eminent degree of truthfulness. While entirely regardless of beauty of person or elegance of deportment in his principal characters, he is eminently careful that every individual in his painting should have the varied expression of passion or sentiment appropriate to his situation. Colour, in all its combinations and gradations, was with Rembrandt the paramount consideration. His landscapes are obscured by a dusky twilight; and forms are rendered apparent in them by a struggling

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gleam of light which has forced its way through the sullen gloom. Rembrandt's great power, however, lay in portraits. In this department he had no equals among the Dutch painters, and few of any other school could rival him in simplicity, truth, and force of expression. As a historical painter, his figures are frequently ignoble; and he seems occasionally to have courted vulgarity rather than the graces. In the handling of his portraits he varies considerably. In the portraits of ladies particularly he seems to have exercised the most scrupulous care and attention; while in his portraits of the other sex he for the most part indulges his freedom to the fullest extent, sometimes running into positive coarseness. Fuseli says of him (Lecture ii.) that he was "a genius of the first class, in whatever relates not to form. In spite of the most portentous deformity, and without considering the spell of his chiaroscuro, such were his powers of nature, such the grandeur, pathos, or simplicity of his composition, from the most elevated or extensive arrangement to the meanest and most homely, that the best cultivated eye, the purest sensibility, and the most refined taste dwell on them, equally enthralled."

Rembrandt was likewise a very eminent engraver as well as a most original painter. He was the inventor of a process which throws an indescribable charm over all the productions of his brilliant burin. His etchings evince the most extraordinary facility, and display the most consummate knowledge of the effect of light and shadow. His most remarkable portraits are those of the burgomaster Six, Van Coppenol the writing-master, Van Thol the advocate, Uytenbogaert the minister, and Uytenbogaert the gold-weigher. England is very rich in Rembrandt's works, particularly the National Gallery in London.

A complete catalogue of Rembrandt's works was published by Daulby, Liverpool, 1796; and another and more perfect one by Bartsch, Vienna, 1797. Reference may also be had to Nieuwenhuys's *Review of the Lives and Works of the most eminent Painters*, and to Smith's *Catalogue Raisonné*, vol. vii. The latter book contains a very ample, interesting, and instructive account of Rembrandt's paintings and etchings. (See ARTS, *Fine*, and PAINTING.)

REMIREMONT, a town of France, capital of an arrondissement in the department of Vosges, on the left bank of the Moselle, at the foot of the Faucilles Mountains, commanding a fine view of the wooded heights of the Vosges, 17 miles S.E. of Epinal. It has broad and regular streets, lined with houses, ancient, low, and generally ill built. The parish church is a fine edifice in the Italian style; there is too a college, public library, hospital, and law court. Cotton, paper, leather, iron, and steel are among the manufactures of the place; and there is some trade, especially in cheese, timber, cattle, iron, and hemp. Pop. 5103.

REMISCHEID, a town of Prussia, province of the Rhine, in the government and 18 miles E.S.E. of Düsseldorf. It is remarkable for its steel and iron forges, and manufactures of cutlery and hardware, which are exported to various foreign countries. The value of such goods annually produced here, and at Solingen, not far off, is more than L.200,000. Pop. of the town itself, 1800; but including the surrounding district (*Bürgermeisterei*), 13,232.

REMO, SAN, a seaport of the kingdom of Sardinia, capital of a province of the same name, in the division of Nice, on the slope of a hill densely covered with olive trees, that rises from the sea, 30 miles E. of Nice. It stands in one of the mildest parts of the beautiful coast; and is surrounded by gardens, where palms, orange, and lemon trees luxuriantly flourish, and where the sweetest flowers during the summer shed their fragrance around. Viewed from the sea, the town rises triangularly from the shore to an apex on the heights above; the upper and more ancient portion has narrow, crooked, and extremely steep streets, while below there is a handsomer and more modern quarter.

There are several churches and convents, a college, and a good picture gallery in the town. The harbour is small; but some trade is carried on in the produce of the country with Genoa, Marseilles, and other places. Pop. 9854.

REMONSTRANTS. See PREDESTINATION.

REMPHAN, or REPHAN (Ῥεμφάν, Ῥεφάν), a name quoted in Acts vii. 43, from Amos v. 26, where the Septuagint has Ῥαιφάν for the Hebrew *Chium*. It is clear that the Septuagint held the original to be a proper name, in which interpretation our own and most other versions have concurred. But this is by no means clear; for, according to the received pointing, it would better read, "Ye bore the tabernacle of your king (idol), and the statue (or statues) of your idols, the star of your god, which ye make to yourselves;" and so the Vulgate, which has "Imaginem idolorum vestrorum." According to this reading, the name of the idol so worshipped by the Israelites is in fact not given, although the mention of a star still suggests that some planet is intended. Jerome supposes it may be Lucifer or Venus. But the Syriac rendering is, "Saturn your idol," who was worshipped by the Semitic nations along with Mars as an evil demon to be propitiated with sacrifices. This now seems to be the general conclusion, and Winer indeed treats the subject under the head Saturn. It has been alleged, but not satisfactorily proved, that Remphan and Rephan were Egyptian names of the planet Saturn. They indeed occur as such in the Coptic-Arabic Lexicon of Kircher (*Ling. Ægypt. Restit.*, p. 49; *Ædip. Ægypti*, i. 386); but Jablonsky has long since shown that this and other names of planets in these lexicons are of Greek origin, and drawn from the Coptic versions of Amos and the Acts. (Jablonsky, "Remphan Ægyptior," in *Opusc.* ii. 1, sq.; Schræder, *De Tabernac. Molochi et Stella Dei Remph.* 1745; Maius, *Dissert. de Kium et Remphan*, 1763; Harenberg, *De Idolis Chium et Remphan*, 1723; Wolf, *Dissert. de Chium et Remph.* 1741; Gesenius, *Thesaurus*, pp. 669, 670.)

REMUS. See ROMAN HISTORY.

RÉMUSAT, JEAN PIERRE ABEL, a celebrated orientalist, was born at Paris on the 5th of September 1788. A severe fall which he received in infancy, and which kept him lying on his couch for several years, was the means of making him a student. Cut off from all the engrossing bustle of life, his mind eagerly sought for amusement and interest in books. The severest studies became in course of time mere pleasant exercises. English history, botany, and Latin were mastered with little or no difficulty. His mental activity continued when he went forth again into the world, and began to fit himself for being a medical man. Besides pursuing his professional studies with great success, he applied himself to oriental languages. At length falling in with a magnificent Chinese work on botany, and desirous of being able to peruse it, he began to learn the language in which it was written. With no other aid than Fourmont's Grammar he accomplished the task in the course of five years; published his *Essai sur la Langue et la Littérature Chinoises* in 1811; and at the age of twenty-three appeared before the world as a Chinese scholar. The great acquirements of Rémusat soon came to be recognised in different quarters. The academies of Grenoble and Besançon received him among their members. The faculty of medicine at Paris gave him the diploma of doctor at the age of twenty-five. He was also patronized by the great scholar Silvestre de Sacy, and obtained through him the appointment of chief doctor of the hospital of Montaigne. But it was not until the restoration of the Bourbons that the good fortune of Rémusat's career really commenced. The great reputation he had achieved now recommended him for promotion. This was ably seconded by his cringing and selfish policy. A long series of appointments was the result. In 1814 the newly-appointed Chinese professorship

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Remy, St Renaudot. in the College of France was conferred upon him. Not long afterwards he was entrusted with the cataloguing of all the Chinese works in the royal library. In 1818 he was elected to succeed Visconti in the editorship of the *Journal des Savans*. In 1824 he was appointed keeper of the oriental manuscripts in the royal library. There was in fact almost no end to the snug posts and lucrative sinecures which he obtained. Nor did the revolution of 1830 interrupt the flow of his prosperity. He managed to remain in possession of all his salaries until his death on the 3d of June 1832. Rémusat was a member of the Asiatic Societies of London and Calcutta, and of many other learned bodies.

His principal works are,—*Plan d'un Dictionnaire Chinois*, 8vo, 1814; *Le Livre des Récompenses et des Peines*, translated from the Chinese, in 8vo, 1816; *Mémoire sur les Livres Chinois de la Bibliothèque du Roi*, in 8vo, 1818; *Description du Royaume de Camboge*, from the Chinese, in 8vo, 1819; *Mémoires et Anecdotes sur la Dynastie des Djogours Souverains du Japon*, in 8vo, 1820; *Histoire de la Ville de Khotan*, from the Chinese, in 8vo, 1820; *Recherches sur les Langues Tartares*, in 4to, 1820; *Elements de la Grammaire Chinoise*, in 8vo, 1822; *Deux Mémoires sur les Relations Politiques des Premiers Chrétiens, et particulièrement des Rois de France, avec les Empereurs Mongols*, in 4to, 1822–24; *Mémoire sur la Vie et les Opinions de Lao-Tseu, Philosophe Chinois*, in 4to, 1823; *Recherches Chronologiques sur l'Origine de la Hiérarchie Lamaïque*, in 4to, 1824; and *Mémoire sur Plusieurs Questions Relatives à la Géographie de l'Asie Centrale*, in 4to, 1825. The numerous papers which he communicated to several scientific journals, and to the *Biographie Universelle*, were published under the titles of *Mélanges Asiatiques*, in 2 vols. 8vo, 1825–26; *Nouveaux Mélanges Asiatiques*, in 2 vols. 8vo, 1829; and *Mélanges Posthumes d'Histoire et de Littérature Orientale*, in 8vo, 1843.

REMY, St, a town of France, in the department of Bouches-du-Rhône, on a plain planted with groves of olive trees, 42 miles N.N.W. of Marseilles. It is irregularly built, and has many good houses in an antique style. The best modern edifice is the town-hall; but there are two interesting remains of antiquity,—a triumphal arch and a sepulchral monument, both of unknown date. St Remy has silk-mills, and some trade in corn and wine. Pop. 6024.

RENAIX (Flam. *Ronse*), a town of Belgium, in the province of East Flanders, 20 miles south of Ghent. It has three public squares, with a fountain in each; several churches and schools, a ruined castle, town-hall, hospital, orphan asylum, and other benevolent institutions. The manufactures of the town include cotton, woollen, and linen fabrics; hats, leather, beer, tobacco, chocolate, bricks, tiles, pottery, &c. A large trade in linen is carried on; and besides weekly and monthly markets, there are two annual fairs. Pop. 11,670.

RENAUDOT, EUSÈBE, a learned orientalist and ecclesiastical historian, was born at Paris in 1646, and was educated for the church at the Jesuits' College. He first became notable at court as a wonderful young scholar. His exhaustless linguistic knowledge, and the easy way in which he spoke many different languages, drew towards him the regard and confidence of several influential personages. Colbert, the great financial statesman, consulted him upon the project of establishing printing-presses in Paris for the oriental languages. The king himself employed him in various important missions to England, Spain, and other countries. The Cardinal de Noailles likewise took him to Rome in 1700, as his conclavist in the conclave for the election of a Pope. Thus encouraged, Renaudot spent the chief part of his remaining years in illustrating the history and opinions of the ancient churches. His principal works on that subject were,—*Défense de la Perpétuité de la Foi contre les Monuments Authentiques de la Religion des Grecs* par Jean Aymon, in 8vo, Paris, 1708; *Historia Patriarcharum Alexandrinorum Jacobitarum*, in 4to, Paris, 1713; and *Liturgiæ Orientalium Collectio*, in 2 vols. 4to, 1716. Renaudot died in 1720. An English translation of the last of the above-mentioned publications appeared in 12mo, Dublin, 1822.

RENDEL, JAMES MEADOWS, a distinguished civil engineer, was born at a village on the borders of Dartmoor, in December 1799. His professional talents were early developed by various commissions which he received in his native district. Telford, the famous engineer, employed him to lay down considerable lengths of turnpike roads in Devonshire. The Earl of Morley entrusted him with the construction of a cast-iron bridge across the Lary, an arm of the sea within Plymouth harbour. An order was given to him to build a floating steam-bridge for crossing the estuary of the Dart near Dartmouth. He was also engaged in surveying nearly all the harbours on the S.W. coast of England. It was in 1838 that Rendel settled in London, and began to take a high place in his calling. He was soon recognised as a man of accurate observation, sagacious judgment, great professional knowledge, and unwearied energy. The success with which he continued to execute his numerous commissions brought him more and more into repute. At length, in 1843, his engagement to construct the projected docks at Birkenhead was the occasion of bringing him prominently before the public. The enterprise met with opposition; the case was laid before the legislature; and he was summoned as a witness before the parliamentary committees. His learned and lucid evidence, and the able and successful manner in which he maintained his own views, established his reputation as one of the first engineers in the land. From that time he was constantly engaged throughout the country in projecting and conducting large public works. Among his most important enterprises were the dock at Great Grimsby, and the harbours of refuge at Holyhead and Portland. Nor did his talents fail to be appreciated beyond the limits of Great Britain. The Brazilian, the Prussian, and the Sardinian governments in turn employed him to make certain surveys and reports. The viceroy of Egypt appointed him a member of the international commission for examining into the practicability of a canal across the isthmus of Suez. The city of Hamburg too, the year before he died, engaged him to find out some plan of preventing the bed of the River Elbe from being choked up with mud. Rendel, at his death in 1856, was a fellow of the Royal Society, and one of the council of the Institution of Civil Engineers.

RENDSEBURG, a town of Denmark, in the duchy of Holstein, on the confines of Schleswig, stands in a flat, sandy region on both sides of the Eider, and on an island in its centre, 26 miles W. of Kiel, and 54 N.N.W. of Hamburg. It was formerly fortified, but the defences were destroyed in 1852. It is for the most part well built, and consists of three parts,—the old town on the island, the new town on the south or left bank, and the Crown-work (*Kron-werk*) on the opposite side of the river. There are two market-places, two churches, a gymnasium, an arsenal (which contained until recently a great quantity of arms of all kinds), an hospital, house of correction, and custom-house. The manufactures include bells, pottery, tobacco, vinegar, and other articles. The situation of the place is very favourable for trade and navigation. It communicates with the German Ocean by the Eider, and with the Baltic by the Schleswig-Holstein Canal, which joins the river here. There is also a railway from this to Hamburg. In the middle ages the site of the old town was occupied by a castle called Reinoldsburg, which was for a long time alternately possessed by Denmark and Holstein. The date of the first rise of the town is unknown; it was encircled by walls and ditches in 1539. The old town was fortified anew by Frederick III. of Denmark (1669–71), who placed over the Holstein gate the inscription, “Eidora Romani terminus imperii,” declaring the Eider to be the limit of the German empire, of which Rendsburg is consequently the most northern town. Additional fortifications were added in 1685, 1690, and 1695, so that the place became

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a fortress of the second class. In 1848 Rendsburg fell into the hands of the Prussian and Holstein troops; and on being regained by the Danes was dismantled. Pop. 10,000.

RÉNÉ OF ANJOU, commonly known as the "good King René," was born at the castle of Angers in 1409. The first part of his life was remarkable for a course of tantalizing events. He had not long obtained possession of the duchy of Lorraine, in right of his wife, when Anthony, Count of Vandemont drove him from it. Not long afterwards the intelligence, that his brother Louis of Anjou, and Joan, Queen of Naples, had died, leaving him heir to their dominions, reached him when he was the prisoner of the Duke of Burgundy, and unable to lay hold of his newly-acquired rights. It is true that he was soon released; but fortune still continued to make him her sport. Before he had been four years on the Neapolitan throne, Alfonso of Aragon forced him to leave his crown and flee. He returned to France in 1442, only to find that his territories there were occupied by the English. It was not until after the marriage of his daughter Margaret with Henry VI. of England in 1443 that he was allowed, for the first time in his life, to settle down in undisputed possession of a part of his dominions. This severe course of experience did not prevent René from spending the remainder of his days in sustaining the mock state of a sovereign. Establishing a court in the old castle of Aix in Provence, and keeping up the empty title of King of Naples, the Two Sicilies, and Jerusalem, he conducted himself more like a monarch in a romance than a prince in that troublous and warlike age. Dancing, music, painting, and poetry were his serious business. Troubadours and knights-errant were his only courtiers. If he ever came out among ordinary men and things, it was to superintend some public mime or pageant, or to introduce some luxury among his subjects. So genial and pleasant, indeed, was his rule that, after his death in 1480, the natives of Provence long cherished the memory of the "good King René." As recently as 1823 his statue, wrought in marble by David, was placed in one of the squares of Aix. A graphic account of René is given in Scott's *Anne of Geierstein*.

RENFREW, a parliamentary and royal burgh of Scotland, the capital, but not the largest town, of the county of the same name, near the left bank of the Clyde, 6 miles W.N.W. of Glasgow. The Cart, an affluent of the Clyde, passes close to the town; and there is also a short canal between Renfrew and the Clyde. A single street, with lanes diverging from it, forms the whole town; and the only buildings of importance are the Established church, the Free church, town-house, jail, grammar school (endowed by King Robert III.), and a superior school established in 1842. There is also a library and athenæum. Many of the people are employed in weaving muslin and silk; others in a bleachfield near the town, in ship-building yards, iron foundry, and a distillery in the neighbourhood. There is very little trade, though Renfrew has a quay where the Clyde steamers touch. Weekly markets are held here. The burgh is governed by a provost, two bailies, and nine councillors; and, along with Dumbarton, Port-Glasgow, Kilmarnock, and Rutherglen, sends a member to Parliament. The royal family of Stuart had their earliest possessions in this parish, and the Prince of Wales still bears the title of Baron of Renfrew. Pop. (1851) of the royal burgh, 2722; of the parliamentary burgh, 2977.

RENFREWSHIRE, a county in Scotland, lying between 55. 40. and 55. 58. N. Lat., and 4. 14. and 4. 54. W. Long., is bounded on the E. by Lanarkshire, on the S. by Ayrshire, and on the N. and W. by the river and firth of Clyde, which separate it from the shires of Dumbarton and Argyle, excepting a section of about 1300 imperial acres, which is situated on the north bank of the Clyde, opposite the town of Renfrew. Its greatest

length is 31½ miles, and its greatest breadth 13½ miles. Its area is 234 square miles, or 150,000 acres. Notwithstanding the small extent of this shire, its manufactures and commerce render it one of the most important in Scotland.

At the epoch of the Roman invasion, in the first century of the Christian era, this part of Scotland was inhabited by a Celtic tribe, called by the invaders the Damnii. After the withdrawal of the Romans, it was comprehended in the British kingdom of Strathclyde.

The district which now forms the county of Renfrew, at least the greater part of it, was denominated, from one of its rivers, *Strathgryfe* (the valley of the Gryfe), and at one time formed part of the shire of Lanark or Clydesdale. It was the chief patrimony of the great stewards of Scotland, to whom it was granted by the sovereign in the twelfth century. Afterwards it was called the barony of Renfrew, from the burgh of that name, where the stewards long had their principal residence. In 1404, thirty-three years after the accession of the House of Stuart to the Scottish throne, King Robert III. granted this barony, and the other portions of the estates of the steward, to his son and heir James; since which time the eldest son of the sovereign has, besides his other titles, borne that of "Baron of Renfrew." Soon afterwards this barony was erected into a distinct sheriffdom, the courts of which were held at Renfrew till the year 1705, when they were, for convenience sake, removed to Paisley. In 1815 the county was formed into two wards, termed the Upper and the Lower, with a sheriff-substitute for each, Paisley and Gretnock being the seats of their respective courts.

Renfrewshire comprehends sixteen entire parishes, besides small portions of those of Beith and Dunlop in Ayrshire, and Govan in Lanarkshire. Two of the parishes, Eaglesham and Cathcart, belong to the presbytery of Glasgow; the other fourteen composed the presbytery of Paisley for a long time prior to the year 1834, when two presbyteries were formed; that of Paisley, consisting of nine of these fourteen parishes; and that of Gretnock, consisting of the other five, with the addition of Cumbræ in Buteshire, and Largs in Ayrshire, both of which parishes formerly belonged to the presbytery of Irvine. In the above enumeration of parishes, those which are so *quoad sacra* only have not been taken into account.

About two-thirds of this county, comprehending the western and southern sides, are hilly, the medium elevation being from 500 to 600 feet. Mistylaw, on the west, which is about 1240 feet above the level of the sea, has been represented as the highest hill in the county; but it is now ascertained that a neighbouring height, called the Hill of Staik, is entitled to that distinction, being a few feet higher. Balagleigh is one of the highest hills on the south-east side, being about 1000 feet above the sea-level. The hilly district is in general kept in pasture, for which it is better adapted, by the nature of its surface, than for tillage. The cultivated land, which forms a gently-rising district, lies on the north and north-east, and in the centre of the county on both sides of the Black Cart. Of this, the greater part consists of low, detached eminences, which swell in endless variety. These being interspersed with copses, and often watered at the bottom by winding streams, present views remarkable for richness and variety. Indeed, it will be difficult to point to a more beautiful surface anywhere in Scotland. Much of this tract has a close subsoil of small stones and coarse clay, almost impenetrable to water, though there are here many flat holms of great fertility. It is only between Paisley and the Clyde that the country sinks down into a plain, forming the flat district known by the name of "the Laighlands." The length of this beautiful level tract is about 6 miles, its breadth about 3, and its area 12,000 acres. Here the soil is generally a deep, rich

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loam of a dark-brown colour, sometimes of the nature of what is called "carse clay;" and much of it seems to have been formed by the deposition of vegetable mould from the higher grounds. Among the hills in the S.W. there are extensive moors and mosses, the largest being that of Kilmacolm.

Like the other western counties of Scotland, Renfrewshire has a moist climate, with frequent rains; and the prevailing wind is from the south-west.

Besides the Clyde, which, as has been already mentioned, flows along the northern and western boundaries of this county, the principal rivers are the White Cart, the Black Cart, and the Gryfe. The White Cart, which rises in Lanarkshire, enters Renfrewshire from the south, and pursues a winding course, first westerly towards Paisley, through which it passes, and then northerly towards the Clyde. It is joined at Inchinnan Bridge by the Black Cart, which had previously received the waters of the Gryfe at Walkinshaw, above Barnsford Bridge; and these united streams, which contain nine-tenths of the water of the county, fall into the Clyde about 3 miles below Paisley. By means of a short canal, which was cut to avoid the shallows at Inchinnan Bridge in 1786, the White Cart is navigable up to Paisley. Other improvements upon this river are in progress. Like some other Scottish streams, it was once famous for the pearls which were found in its bed, but these have disappeared since the beginning of the eighteenth century. The Black Cart rises from Loch Winnoch, or, as it is usually called, from an adjoining estate, Castle-Semple Loch, a lake in the south-western extremity of the county. The Gryfe rises in the west, amongst the high lands of the parish of Greenock. The only other stream deserving mention is the Kipp Water, in the west of the county, which falls into the Firth of Clyde at Innerkip. All these streams, and several others of smaller size, independently of their importance to agriculture, are in almost every part of their course applied by the industrious and ingenious inhabitants to the various purposes of manufactures. A ready supply of water is secured by means of reservoirs, some of which are of the size and appearance of considerable lakes; or by enlarging the natural lakes, of which there are many. These streams and lakes contain the kinds of fish that are common in this quarter of the country.

Two important railways traverse the county. Commencing at Glasgow, they have a common line to Paisley, from which the one leads north-westwards to Greenock, and the other south-westwards towards Ayr. There are also railways from Glasgow to Neilston, and from Paisley to Renfrew, and a canal from Glasgow to Johnstone.

The minerals of Renfrewshire are of great importance, and constitute the main source of its manufactures and commerce; but we can only advert to them very generally. Coal, limestone, and sandstone are wrought at Neilston, one of the parishes of the hilly district; and both coal and lime have been found in the flat district near Renfrew. The south-eastern portion belongs to the great western coal region of Scotland; and the many mines which are wrought at Polmadie, on the north-east boundary; at Hurlet, three miles south-east from Paisley, where it has been wrought for more than three hundred years; and at Quarrelton, south-east from Johnstone, give employment to a great number of the people. Limestone abounds in various parts, and is wrought at several quarries. Ironstone, granite, pyrites, alum, &c., are also found. Excellent freestone, lying near the surface, is wrought at various places in the middle district. Greenstone, or, as it is provincially called, *whinstone*, exists in immense masses, along with porphyry, in the west of the county.

The number of proprietors in Renfrewshire is 2610; the amount of real property in 1857, L.282,196; and the valuation of rent for 1857-8, L.315,630. Among the noble-

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men's and gentlemen's seats are Hawkhead, belonging to the Earl of Glasgow; Blantyre House, to Lord Blantyre; Pollok, to Sir John Maxwell; Pollok Castle, to Sir Hew C. Pollok; also Castle-Semple, Caldwell, Ballochmyle, &c. There are many remains of ancient structures, which formed the seats of powerful or respectable families. This shire was anciently covered with wood. Even now it is ornamented with many woods and plantations; and it is in general well inclosed.

As an agricultural district, this does not rank so high as some others in Scotland. Hardly more than half the surface is cultivated; but what is so, has the advantage of the best methods. The mode of farming is such as every year to leave more than a half of the arable land in grass, on which the stock chiefly kept is cows, the most part of whose milk is made into butter. There are few cheese-dairies. Out of a total acreage of 75,152, under a rotation of crops in 1857, occupied by tenants paying L.10 rent and upwards, 4765 acres were in wheat, 417 in barley, 17,098 in oats, 1232 in beans, 206 in vetches, 3470 in turnips; 5729 in potatoes, 221 fallow, and 41,598 in grass and hay. In the same year the total number of horses was 3535; of cattle, 22,398; of sheep, 22,477; of swine, 1761; of all kinds of stock, 50,271.

It is by its manufactures and commerce that this county is most distinguished. Goods of silk and cotton, and muslin fabrics, are the principal articles manufactured. Cotton-mills, bleachfields, and printfields furnish employment to a large portion of the inhabitants. Paisley and its environs form the chief seat of the manufactures. At Greenock and Port-Glasgow the foreign and coasting trade of the county, and indeed a great proportion of the foreign trade of Scotland, are carried on.

According to the census of 1851, the county contained in all 128 places of worship, with 82,514 sittings. Of the former, 32 belonged to the Established Church; 29 to the Free Church; 21 to the United Presbyterians; 7 each to Independents, Baptists, and Roman Catholics; 6 to Wesleyans; 4 each to Reformed Presbyterians and Latter-Day Saints; 3 to the Evangelical Union; 2 to Episcopalians; 1 each to the Original Secession, the Unitarians, and the New Church; and 3 to isolated congregations. There were also 105 public schools, with 10,355 scholars; and 103 private ones, with 5948 scholars; besides numerous evening and Sunday schools. The total amount of public expenditure on education in Renfrewshire from 1833 to 1857 is L.10,505. The county returns a member to Parliament; and the constituency in 1858 was 2702. The Parliamentary burghs of Paisley and Greenock have each one member. In 1851 the county contained 10,760 inhabited houses. Pop. (1811) 93,172; (1821) 112,175; (1831) 133,443; (1841) 155,072; (1851) 161,091.

RENI, a fortified town of European Turkey, Moldavia, in the Bessarabian territory, ceded by Russia in 1856, on the left bank of the Danube, at its confluence with the Pruth, about 12 miles E. of Galatz. It has a harbour, considerable navigation, and trade in wheat, fish, hides, copper, wax candles, &c. The value of the exports in 1850 was L.38,815; that of the imports, L.35,593. Pop. (1849) 7314.

RENNELL, JAMES, an eminent geographer, was the son of a captain in the artillery, and was born near Chudleigh in Devonshire in 1742. His early distinction was gained in the active service of his country. He first came into note as a fearless and enterprising midshipman at the siege of Pondicherry. He next appeared more prominently as an officer in the Indian army of Lord Clive. His skill and bravery in that capacity soon marked him out for promotion. He was speedily raised to the rank of major. Not long afterwards he was appointed surveyor-general of Bengal, a post which he held until his severe wounds compelled

Rennes.

him to return to England in 1782. Major Rennell, after his re-settlement in his native country, maintained a high place among men of learning. A *Chart of Cape Lagullas*, a *Bengal Atlas*, and a *Map of Hindustan*, had established his reputation as one of the first of English geographers. He was still adding to his fame by the able and thorough way in which he continued his investigations. His mind fixed itself keenly upon every geographical subject that was brought before it. All the provinces of literature were carefully and patiently explored for the needed information. His conclusions were drawn with acuteness and sagacity; and the results of his researches were laid up securely and methodically in his memory. Nor was he less facile in reproducing his acquisitions for the good of the public. He assisted Dr Vincent in writing the *Voyage of Nearchus*. He aided Sir William Jones in some of that great scholar's oriental works. He likewise illustrated Mungo Park's travels by an accurate and elaborate map. At the same time his pen was busily employed in producing independent works of great and standard value. The most important of these were, *The Geographical System of Herodotus*, in 4to, London, 1800; and *Observations on the Topography of the Plain of Troy*, in 4to, 1814. At his death, in March 1830, Major Rennell was an F.R.S. of London and Edinburgh, and a member of the Royal Institute of France and of other foreign societies. He was buried in Westminster Abbey.

RENNES, a town of France, capital of the department of Ille-et-Vilaine, at the foot and on the slope of a hill, at the confluence of the rivers Ille and Vilaine, 60 miles N. of Nantes, and 190 W. by S. of Paris. The latter river traverses the town from E. to W., receiving the other from the N. To the south of the Vilaine stands the old or lower town, to the north the upper or new town, which is the finest portion, having been rebuilt since a conflagration which destroyed it in 1720. These separate quarters are connected by three bridges, and both are surrounded by an ancient wall and towers. Its narrow, crooked streets, and curiously-carved wooden houses, give to the lower town a very picturesque appearance; the other portion, though handsome, is uniformly built of a dull grey stone, and has a sombre aspect. One of the most attractive features of Rennes is its public walks, which are very beautiful: Le Mont Thabor, formed of the garden of an old abbey, commands a fine view over the city and the valley of the Vilaine; Le Mail extends between two canals to the confluence of the rivers. Besides these there are Le Mont de Madame and Le Champ de Mars, all of them being planted with shady trees. One of the ancient gates is still preserved; it is that by which the dukes of Brittany, after taking a solemn oath, entered the city to be crowned in the cathedral. This is now a modern building, large and heavy, with two square towers; the interior, in the Grecian style, is imposing, but has little of an ecclesiastical aspect. Some of the other churches are more tasteful in architecture. The most remarkable edifice of the new town, and almost the only ancient one that has escaped destruction, is the court-house, in which the estates of Brittany used to meet. It contains a large and handsome hall, decorated with paintings and other ornaments. Among the other buildings are the town-hall, a fine modern pile, containing the public offices, library, lecture-rooms, and schools of art and architecture; the theatre, episcopal palace, barracks, and arsenal. There are also in the town several schools, hospitals, and a house of correction. As a manufacturing town, Rennes is not of very much importance, though there is considerable variety in the articles produced. Linen, sail-cloth, hosiery, hats, cordage, fishing-nets, starch, glue, leather, paper, playing-cards, and pottery are the most important of these. The trade, however, is of more extent, and is much facilitated by the situation of the town and its

means of communication, the Vilaine being navigable for barges up to this point, and being connected with the sea by canals leading to St Malo and Brest. Rennes is also connected by canal and railway with Nantes, and so by the latter with Paris. The chief articles of trade are the manufactures of the town, and butter, wax, honey, and poultry, from the surrounding country. Rennes is the seat of a bishop, of a high court of justice, and of a university-academy, besides inferior courts of law. There are large suburbs, which have much resemblance to the town itself. *Condade* was the ancient name of the place, and it was the capital of the tribe called Redones, from whom the modern appellation has been derived. After the fall of the Roman empire it fell into the hands of the Franks; and Clovis established here counts, who seem to have been subject now to the French kings, now to the kings or dukes of Brittany. When Nomenoe, in the ninth century, established the independence of Brittany, Rennes was made the capital, and was fortified as a frontier town against the French monarchy. Along with the rest of Brittany, Rennes came by marriage to the French crown under Francis I. The town has been subjected to several sieges; and at the time of the Revolution was the scene of some conflicts, being always firmly attached to the popular cause. Pop. (1856) 38,945.

RENNIE, JOHN, a distinguished mechanist, architect, and civil engineer, was born on the 7th of June 1761, at Phantassie, in the parish of Prestonkirk, in the county of East Lothian. His father, a highly respectable farmer, died in 1766, leaving a widow and nine children, of whom John was the youngest. The first rudiments of his education were acquired at the village school; and as it frequently happens that some trifling circumstance in early life gives a bent to the pursuits and fixes the destinies of the future man, so it fared with young Rennie. The school was situated on the opposite side of a brook, over which it was necessary to pass by means of a rustic bridge of stepping-stones; but when the freshes were out, the only alternative of crossing the stream was by means of a boat, which was kept at the workshop of Andrew Meikle, an ingenious mechanic, well known in Scotland as the inventor of the thrashing-machine, and many improvements in agricultural implements. In passing through the workshop, which stood on his family property, young Rennie's attention was forcibly drawn to the various operations that were in progress, and a great part of his leisure and holiday time was passed therein. The sons of Meikle and the workmen, seeing the great delight which he appeared to take in examining their labours, were in the habit of indulging him with their tools, and showing him their various uses. His evenings were chiefly employed in imitating those models which had particularly attracted his attention in the workshop; and it is known in the family that, at little more than ten years of age, he had constructed the model of a windmill, a pile-engine, and a steam-engine. That of the pile-engine is still in existence, and is said to be remarkably well made.

Having continued at Preston school till twelve years of age, he had about that time a quarrel with his schoolmaster, whom he deemed incompetent to give him further instruction, and therefore entreated that he might be permitted to leave the school. But his active mind soon became restless; for the first time he felt the hours hang heavily on his hands; and having expressed a wish to be placed under his friend Meikle, he employed himself with this ingenious mechanic for about two years; but his mind expanding with his growth, he began to feel that the progress of his intellectual faculties was likely to be retarded by a constant application to manual labour. He therefore at length determined to place himself under the tuition of Gibson, an able teacher of mathematics at Dunbar, where he soon distinguished himself in so particular a manner that David Loch, general inspector of the fisheries in Scotland, in de-

Rennie.

Rennie. scribing a visit which he paid to the school at Dunbar in 1778, notices the great proficiency displayed by young Rennie, prophesying that at no distant period he would prove an honour to his country. (Loch's *Essays on the Trade, Commerce, Manufactures, and Fisheries of Scotland*, vol. iii., p. 211.) From this school, in less than two years, he returned to Meikle, with a mind well stored with every branch of mathematical and physical science which Gibson could teach him. About this time, Gibson being appointed master to the public academy of Perth, he earnestly recommended young Rennie to succeed him at Dunbar. But his views were of a more aspiring cast. As a matter of favour, he undertook the management of the school for about six weeks, when he returned to his family, occasionally visiting and assisting his friend Meikle, but mostly improving himself in drawing and making models of machinery. His first essay in practical mechanics was the repairing of a corn-mill in his native village; and he erected two or three others before he was eighteen years of age.

Resolved, however, that these mechanical occupations should not interfere with his studies, he laid his plans so that he should be able to proceed occasionally to Edinburgh with a view of improving himself in physical science. He there attended the lectures of Professors Robison and Black, and formed that acquaintance with the former of those gentlemen which was gradually raised into friendship, and which perhaps may be said to have laid the foundation of his future fortune; for by him he was introduced to Messrs Bolton and Watt of Soho, near Birmingham. With these gentlemen he remained but a few months for the purpose of receiving explanations respecting the plan of the Albion Mills, then erecting, the machinery of which he superintended. This exactly suited his views; for, conscious of his own powers, he deemed the capital the proper theatre to try his strength, and in this he was not mistaken.

In proceeding from Edinburgh to Soho, he had taken the route by Carlisle, Lancaster, Liverpool, and Manchester, for the purpose of visiting the different mills and public works in those great commercial and manufacturing towns; and the remarks which he made on the bridge then building over the Lune at Lancaster, on the docks at Liverpool, and more particularly on the Bridgewater Canal, are distinguished by great sagacity, and were of essential use to him afterwards. On leaving Soho, he again made a tour through the manufacturing districts of Leeds, Sheffield, Rotherham, and Newcastle.

For some time after he was settled in London the Albion Mills, of which Bolton, Watt, and Wyatt were the projectors and leading proprietors, and who engaged him to superintend the execution of the mill-work, occupied a great share of his attention. Watt, in his *Notes to Professor Robison's Account of the Steam-Engine*, says, that "in the construction of the mill-work and machinery they derived most valuable assistance from that able mechanician and engineer Mr John Rennie, then just entering into business, who assisted in placing them, and under whose direction they were executed." He also says that the machinery, which used to be made of wood, was here made of cast-iron, in improved forms; and thinks that this was the commencement of that system of mill-work which has proved so beneficial to this country. In fact, Rennie's mills are the most perfect species of mechanism in that way that exist, distinguished by a precision of movement and a harmony and proportion of parts that now serve as models throughout the empire. His water-mills are so accurately calculated that every particle of water is effectively employed, and none of it lost, as in the common mode of constructing water-wheels. There is reason to believe that the difficulties which occurred at the Albion Mills with regard to the ebb and flow of the tides, and which

Rennie. required all the ingenuity of that extraordinary genius Watt, first led Rennie to the study of that branch of civil engineering connected with hydraulics and hydrodynamics, and in which he soon became so celebrated as to have no rival after the death of Smeaton, in whose steps, he always used to say, he was proud to follow.

Our limited space will not permit us to enter upon even an enumeration of all his great works, much less to give any detailed account of them; we must therefore content ourselves by mentioning some of the most important designs and undertakings in his threefold capacity of mechanist, architect, and civil engineer; three branches of art so intimately blended as scarcely to admit of a separation.

First, as a mechanist. Immediately after the completion of the Albion Mills, in 1786 or 1787, Rennie's reputation was so firmly established in everything connected with mill-work that he found himself in a very extensive line of business. To him the planters of Jamaica and of the other West India Islands applied for their sugar-mills, which he constructed in a manner so superior to the old ones that he soon obtained almost a monopoly of these expensive works. The powder-mill at Tunbridge, the great flour-mill at Wandsworth, several saw-mills, the machinery for various breweries and distilleries, were mostly of his manufacture; and wherever his machinery was required to be impelled by steam, the incomparable engines of his friends Messrs Bolton and Watt supplied the moving power; but, contrary to what has been stated in some of the public journals, he never had the least concern in directing, contriving, or advising any one part or movement of the steam-engine. He also constructed those beautiful specimens of machinery, the rolling and triturating mills, at the Mint on Tower Hill, to which Bolton and Watt's engines give motion; and at the time of his death he was engaged in the construction of a rolling-mill, and similar machinery, for the intended mint at Calcutta.

As a bold and ingenious piece of mechanism, which may be considered as distinct from positive architecture, there was nothing in Europe that could bear a comparison with the Southwark Bridge. The three immense arches, the centre one of 240, and each side arch of 210 feet span, consist entirely of masses of cast-iron, of various forms and dimensions, put together on the same principle as a similar fabric of hewn stone; a method of employing iron which may be considered to form a new epoch in the history of bridge-building. Various sinister predictions were entertained against this light and beautiful bridge, which was to be rent in pieces by the expansive power of the first summer's heat, or, if it escaped that, by the contraction of the first winter's cold; but it has stood the test of many winters and summers, and appears not to feel either. Rennie was applied to by the East India Company for the design of a cast-iron bridge to be thrown over the River Goomty at Lucknow, at the desire of the nabob vizier of Oude. It consisted of three arches of cast-iron, the centre arch 90, and each of the other arches 80 feet span. The arches were cast, and a superintending engineer sent out with them; but on their arrival, the nabob, in one of those moments of caprice to which eastern despots, even in their impotency, are so liable, changed his mind, and would not allow it to be put up.

Secondly, as an architect. Since there are few parts of civil engineering that do not occasionally require the aid of architecture, Rennie, at a very early age of his progress, was called upon for a display of his skill in this line. Amongst his first undertakings in either line was that of the Lancaster Canal, which presented many difficulties, and amongst others, that of carrying it by an aqueduct over the Lune, so as not to interrupt the navigation of the river. Being one of the largest fabrics of its kind in Europe, and of a pleasing design, it is an object that arrests the attention

Rennie. of strangers, and is very generally admired. The bridges of Leeds, Musselburgh, Kelso, Newton-Stewart, Boston, New Galloway, and a multitude of others, attest the architectural skill, the solidity, and, we may add, the good taste of Rennie; whilst a thousand smaller ones, with the various locks, wharf-walls, quays, embankments appertaining to canals, rivers, and harbours in every part of the United Kingdom, are so many proofs of his diversified talent, and his skill in adapting the means to the end. The breakwater in Plymouth Sound can scarcely be called an architectural work, but it is constructed on true hydrodynamical principles, and so gigantic in its dimensions, and cyclopean in its structure, as to defy equally the force of the waves and the ravages of time. To Whidby, who zealously superintended the execution of this immortal work, the highest praise is also due; nor was the plan finally determined on without his advice and assistance.

But the architectural work which, above all others, will immortalize the name of Rennie, is the Waterloo Bridge, a structure which, even according to foreigners, had no parallel in Europe (and if not in Europe, certainly not in the whole world) for its magnitude, its beauty, and its solidity. That a fabric so immense, presenting a straight horizontal line, stretching over nine large arches, should not have altered more than a few inches, not five in any one part, from that straight line, is an instance of firmness and solidity utterly unknown, and almost incredible; but all Rennie's works have been constructed for posterity. The bridge of Neuilly, which the French ranked as superior to that of Waterloo, actually sunk 23 inches. Rennie made nothing slight; nor would he engage in any undertaking where, from an ill-judging economy, a sufficiency of funds was not forthcoming to meet his views. Another work, executed from a design of his, is that of the stone bridge over the Thames, by which the old London Bridge, so long the disgrace of the metropolis, was replaced. His design, which was selected by a committee of the House of Commons, out of at least thirty that were offered, consisted of a granite bridge of five arches, the centre one of 150 feet span, being one of the largest stone arches in the world which has been constructed in modern times. Of the bridges which connect the banks of the Thames, three have been built from the designs of one man; a fact which must throw a lustre on the name of Rennie, and be regarded with a feeling of pride by the most distant connection of his family.

Thirdly, as a civil engineer. The first great attempt in this line of his profession was the survey and execution of the Crinan Canal, a work remarkable for the multitude of practical difficulties that occurred throughout the whole of this bold undertaking, it being necessary in many places to cut down through solid rock to the depth of 60 feet; and it is rather remarkable that the second undertaking, the Lancaster Canal, was also replete with difficulties, and called for the exercise of his skill as an architect, as we have already seen in noticing the aqueduct over the Lune. But these two works established his reputation as a civil engineer, and his opinion and assistance were required from all quarters. His faculties were now called into full play, and they expanded with the demands made upon them. The following are some of the most important of those the execution of which he personally attended:—Aberdeen, Brechin, Grand Western, Kennet and Avon, Portsmouth, Birmingham, Worcester, besides many others. But the resources of his mind were displayed in all their vigour in the plans and construction of those magnificent docks which are at once an ornament to the capital, and of the utmost utility to commerce and navigation. Nor are these splendid and useful works confined to the metropolis. The docks at Hull, Greenock, Leith, Liverpool, and Dublin attest his skill; and the harbours of

Queensferry, Berwick, Howth, Holyhead, Dunleary (now called Kingstown Harbour), Newhaven, and several others owe their security and convenience to his labours. But even these works, splendid as they are, must yield to what he has planned and executed in her Majesty's dockyards at Portsmouth, Plymouth, Chatham, and Sheerness. The last was a mere quicksand of 40 feet in depth, mixed with mud and the wrecks of old ships; the whole of which was excavated, and a magnificent basin constructed, with a beautiful surrounding wall of granite, with which three of the finest dry docks in the universe communicate; and that important dockyard, which may be said to command the mouths of the Thames and the Medway, from being an unhealthy and detestable place, and wholly inefficient for its purpose, is now, by being raised many feet, and laid out with skill and judgment, one of the most convenient in the kingdom. He also planned the new naval arsenal at Pembroke, which is considered as a perfect model for a building-yard. The repairing of the pier-head of Ramsgate harbour was a remarkable instance of his skill. The violence of the waves, acting upon the bad quality of the stone, had so completely undermined it that the stability of the whole pier began to be endangered. It was from 10 to 13 feet below the level of low-water, spring-tides; yet, by means of the improved diving-bell and its apparatus, the pier-head was not only effectually secured, but rendered more solid and durable than it originally had been. In the harbour of Howth the diving-bell was of the utmost use; and it is remarkable enough that the masons who have been for a little while accustomed to work under water prefer it—at least the Irish masons do—to working in the air, it being cooler in summer, and warmer in winter; though an increase of pay for submarine work is probably the real cause of preference.

The last effort of Rennie's genius to which we shall advert was the drainage of that vast tract of marsh land bordering upon the rivers Trent, Witham, New Welland, and Ouse which for centuries past had baffled the skill of some of the ablest men in that department of civil engineering. Upon the same principles, he laid down a grand scheme for draining the whole of that immense district known by the name of the Bedford Level, which has in part been carried into execution by the completion of the Eau-brink Cut, near Lynn. The estimate he made for draining the whole amounted to L.1,200,000.

Rennie's industry was very extraordinary; though fond of the society of his select friends, and of rational conversation, he never suffered amusement of any kind to interfere with his business, which seldom engaged him less than twelve hours, and frequently fifteen, in the day. His conversation was always amusing and instructive. He possessed a rich fund of anecdote, and, like his old friend James Watt, told a Scotch story admirably. As a travelling companion, he was highly entertaining; he knew everybody on the road, and everybody knew John Rennie. Of an ardent and anxious mind, and naturally impetuous, he was gifted with the most perfect self-control; and the irritation of the moment was seen but as a light summer's cloud passing across his finely-marked features, which were on so large a scale, though blended with much mildness as well as dignity, as to obtain for his noble bust by Chantrey, when exhibited in Somerset House, the name of *Jupiter Tonans*.

Rennie possessed considerable skill in bibliography; and being a zealous and liberal collector, he succeeded in forming a very valuable library, consisting of the best and rarest books in all the branches of science and art, of voyages and travels, and many curious books in the black letter; whilst in his own department it contained every work of the least merit, in whatever language it might be written. He had, besides, a good collection of mathematical and

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astronomical instruments, and frequently spoke of erecting an observatory, but did not live to carry his intention into execution. He had for some years laboured under a disease of the liver, which had apparently yielded to the usual treatment; but a relapse took place, and on the 16th of October 1821, after a few days' illness, he expired without a struggle, in the sixtieth year of his age.

Rennie, in 1789, married Miss Mackintosh, who died in 1806, leaving a family of seven young children. His remains were accompanied to St Paul's by men of eminence in the arts, in science, and in literature, and were interred near those of Sir Christopher Wren. A plain granite slab covers his grave, on which is inscribed an appropriate epitaph.

RENT. See POLITICAL ECONOMY.

RENTON, a village of Scotland, in Dumbartonshire, near the right bank of the Leven, 2 miles N. of Dumbarton. It has an Established church, a Free church, and a Reformed Presbyterian church, several schools, and a library. There is here a monument to Smollett, who was born in the vicinity, and has described the Leven and adjacent country in his poetical and prose works. The people are to a large extent employed in dyeing and bleaching establishments. Pop. 2398.

RENWICK, JAMES, the last of the Scottish martyrs, was the only surviving child of a poor weaver, and was born in the parish of Glencairn, Dumfriesshire, in 1662. After he had entered the university of Edinburgh the Covenanted faith, in which he had been brought up, came boldly into action. He refused to take the oath of allegiance which was tendered to him at his laureation. At length he consecrated his life to the covenanting cause, by repairing to Holland at the request of the praying societies of Scotland, for the purpose of receiving ordination. Renwick returned to his native country in 1683, to enter into a perfect storm of persecution. Daring to take upon himself the task of preaching to the scattered Nonconformists in the south and west of Scotland, he provoked the savage malignity of many enemies. The government set a price upon his head, and declared him an outcast from society. Bands of dragoons were ready to hunt him down

wherever he appeared. Even some of the friends of the Covenant came to misrepresent his patriotic and religious zeal. He was reduced to the greatest shifts in the pursuit of his ministerial vocation. Often did he cower for bed and shelter in the holes of the ground. Often did he hold his meetings at the dead of night in the heart of the wilderness. At length he was caught one January morning on the Castlehill of Edinburgh; and in February 1688, on the scaffold in the Grassmarket, he met his death with the ecstatic welcome of a saint. (See Simpson's *Life of Renwick*.)

REPEATING CIRCLE. See BORDA.

REPP, THORLEIF GUDMUNDSSON, a learned author, was born as Reykiadal in Iceland in 1794, and received his education at the university of Copenhagen. He was known in Britain between 1825 and 1837 as a foreigner of great acquirements. The curators of the Advocates' Library have brought him over to Edinburgh to be their sub-librarian. His acquaintance with the modern languages and with Hebrew and Arabic was extensive. Nor was he incompetent to write English. In 1832 he published *A Historical Treatise on Trial by Jury, Wager of Law, and other co-ordinate Forensic Institutions formerly in use in Scandinavia and in Iceland*; in 1833 he wrote an article on the Advocates' Library for the *Penny Cyclopædia*; and about the same he contributed to the literature of the country several translations from the German and Italian. After his return to Copenhagen in 1837, Repp continued his literary labours. Among other works, he wrote a pamphlet in Danish, entitled *Dano-Hungarian Discoveries*, Copenhagen, 1843; and compiled, in conjunction with Ferrall, a *Danish and English Dictionary*, 12mo, Copenhagen, 1845. He died in 1858.

REPRIEVE, in criminal law (from Fr. *reprendre*, to take back), is the withdrawing of a sentence for an interval of time, by which means the execution is suspended. This may be either before or after judgment, as where the judge is not satisfied with the verdict, the evidence, or the indictment; or sometimes if any favourable circumstances appear in the character of the criminal, in order to give time to apply to the crown for either an absolute or conditional pardon.

Repeating
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Reptilia.

REPTILIA: REPTILES.¹

THESE form the third great division of the animal kingdom, and in systematic works on natural history occupy an intermediate position between the class of birds and that of fishes.²

As in tracing the modifications of various organs, from the zoophytical and radiated animals to the molluscous, from these to the articulated classes, and onwards through the fishes to the reptile tribes, it is among the last named that we first perceive the passage from the truly aquatic to the terrestrial or air-breathing animal,—so the respiratory organs of such tribes are naturally those which excite the greatest and most peculiar interest. Among the more important classes of animals, respiration is effected in one or other of two ways; 1st, either by certain internal cellular sacs, for the reception of air, called *lungs*, which communicate with the mouth and nose by means of the trachea or windpipe; or, 2dly, by external organs called *gills*, which require either to float in water, or to be in some other way continually immersed in that fluid. The object of both contrivances is to subject the blood to the influence of vital air, and this end is obtained very admirably, though

in a different way, by each. All mammiferous animals, including whales, all birds, and all reptiles (in the perfect state), possess the first form of the respiratory organs; all fishes, and several reptiles in their adolescent condition, are distinguished by the second. But even among such as are furnished with true lungs we observe different modifications of the circulating system.

The principal characteristic of reptiles in general consists in this, that only a portion of the blood is transmitted through the lungs, the remainder being projected by the heart directly to the other parts of the body, without being specially subjected to the influence of the respiratory organs; whereas, in the higher classes, such as man, the rest of the mammalia, and birds, the whole of the blood must pass by the lungs before it is retransmitted to the more distant parts of the circulating system. The amphibious habits of such reptiles as are unprovided with gills result in a great measure from the power which they thus possess of carrying on a partial circulation of the blood independent of respiration. The respiration of animals, or the process by which the blood is oxygenated, becomes weaker and less

¹ The natural history of reptiles is frequently treated of under the term ERPETOLOGY, from *ἑρπεν*, reptile, and *λογος*, discourse. The verb *ἑρπεν* signifies to creep.

² See ANIMAL KINGDOM.

Reptilia. frequent in proportion to the diminution which takes place in the quantity of blood transmitted to the lungs, compared with that which passes directly from the heart; and as it is respiration which warms the blood, and produces in the fibres their susceptibility of nervous irritation, it follows, as observed by Cuvier, that the blood of reptiles is cold, and their muscular strength much less than that of birds and quadrupeds. The seat of their sensations is also much less centralised than in the last-named classes, and hence many of them exhibit life and motion long after their heads have been severed from their bodies.¹

A truly amphibious animal, according to the proper meaning of the term (which is derived from *ἀμφι*, *on both sides*, and *βίος*, *life*), ought to possess the power of breathing under water like a fish, and of respiring atmospheric air like a land animal. According to this interpretation, neither seals, nor beavers, nor even whales, are truly amphibious, for they cannot sustain their existence under water except by the use of a certain portion of air which they have previously inspired at the surface. In like manner, neither the frog nor the tadpole is amphibious (unless it may be for a short intermediate period, or state of transition); for the former seeks the water merely as a place of temporary resort, in which it cannot breathe, and the latter is entirely aquatic, being unprovided with lungs, and consequently unable to respire, except through the medium of water. A frog, therefore, can only be said to be amphibious in as far as it possesses, at two different periods of its life, the faculty of living first in the water and then on the land. Born with gills, and destitute of external members, its form and functions are originally rather those of a fish than of a reptile; but as it advances in growth, the four limbs become developed, the tail decreases and disappears, the jaws are formed, and the gills absorbed, and their functions supplied by lungs. But the peculiar structure of the heart, already mentioned, enables these and other species to remain submerged for a great length of time.

Among the many wonderful anomalies, however, with which the kingdom of nature presents us, there exist two truly amphibious animals, the *proteus* and the *siren*, both of which are provided at one and the same time with the gills of a fish and the lungs of a terrestrial creature. But their propensities are decidedly aquatic. The former inhabits certain subterranean waters in Carniola, the latter rejoices in the muddy marshes of South Carolina.² Both will be hereafter noticed.

The amount of respiration is by no means so fixed or determinate among reptiles as it may be said to be in quadrupeds and birds, but varies with the proportion which the diameter of the pulmonary artery bears to that of the aorta. Thus, turtles and lizards respire much more than frogs and others of the class; and from this results a much greater difference in energy and sensibility between different tribes of Reptilia, than exists among the members of the class of quadrupeds or birds. Reptiles also may be said to exhibit a much greater variety of form, aspect, and condition, than either of the classes just named; and it is in their production that nature (as we are wont to term the powers of the Omnipotent Creator), has invented the most extraordinary forms and modifications which exist among the vertebrated division of the animal kingdom.

No reptile is known to hatch its eggs, and in the Batrachian order (frogs, toads, &c.) fecundation does not take

place till after the female has excluded the so-called ova, which in such cases are covered merely by a slight and simple membrane, bearing no resemblance to a shell. The young of this Batrachian order, on leaving the egg, bear the general form of fishes, and are, moreover, furnished with gills, which a few of them retain even after acquiring lungs, and assuming the other attributes of maturity. Among several of the egg-laying species, the included young are not only formed, but far advanced at the period of laying; while a few, such as vipers and certain lizards, are actually born alive, being hatched within the body of the mother. Hence the expression by which these are designated, of *ovo-viviparous*. Some even of those which usually lay eggs may be rendered viviparous by a short retardation of the process of laying, as effected by M. Geoffroy in the case of certain snakes by merely depriving them of water.

Although many reptiles are active leapers, and even run with rapidity for a short distance, the coldness of their blood, and proportional want of muscular power, induce on the whole an indolent habit. They are probably, of all vertebrated animals, the least perfectly endowed with the power of migratory movement. The brain is proportionally very small, a sea-tortoise, for example, weighing twenty-nine pounds, having been found to possess brains to the weight only of two drams, that is, equal to not more than an eighteen hundred and fifty-sixth part of the entire animal. Now, we know, that in several small birds and quadrupeds, the brain exceeds a thirtieth part of the remainder of the body. In reptiles, indeed, the brain seems less necessary than among other vertebrated beings, to the exercise of the animal and vital functions, and their sensations are less referable to a common centre. Connection with the nervous system is also much less necessary to the contraction of their fibres, and a portion of their flesh possesses its irritability long after separation from the rest of the body. The heart beats for several hours after being extracted, and the said extraction does not prevent the body itself from moving about for a considerable time. The cerebellum in several species is extremely small, a fact regarded as being in exact accordance with their indolence of movement.

The small size of the pulmonary vessels admits of reptiles suspending their respiration without arresting the course of the blood, and they can accordingly dive more easily, and continue submerged for a longer time, than either mammiferous quadrupeds or birds. The cellules of the lungs being less numerous, as having fewer vessels to lodge upon their parietes, are much wider, and these organs have sometimes indeed the form of simple sacs scarcely cellular.

They are all provided with a trachea and larynx, although many are entirely mute. Their blood being naturally cold, they have no need of such integuments as fur or feathers to retain the heat, and are covered either by scales or a naked skin.

Although no portion of the organ of hearing is external in reptiles, yet among crocodiles there is an appearance of an outer *meatus auditorius*, owing to the skin forming a thick cover over the tympanum. This peculiar formation is sufficient to explain a passage in Herodotus, who states, that the Egyptians were in the habit of suspending jewels from the ears of the crocodile.

The digestion in reptiles is extremely slow, and all their sensations are obtuse. In cold, and even in temperate climates, they fall into a state of torpor during the prevalence

¹ "Les muscles des reptiles conservent plus long temps encore leur irritabilité que ceux des poissons. Nous avons vu des crapauds, des salamandres, des tortues, des serpens, privés de la tête et dépouillés de leur peau depuis plusieurs jours, et maintenus humides, produire encore des mouvemens pendant des semaines entières; un tortue terrestre, du poids des près de 40 kilogrammes, morte depuis plusieurs jours, dont le cou était tombé dans cette sorte de flaccidité, suite de la raideur qui survient après la mort, dont les yeux en particulier avaient la cornée desséchée, manifester des mouvemens par la contractions et la retraction des membres, toutes les fois qu'on stimulait, en les piquant, les muscles des membres postérieurs." (Dumeril et Bibron, *Erpétologie*, i. 41.)

² See Wilson's *Illustrations of Zoology*, vol. i.

Reptilia. of chilly weather, being more than any other class of creatures under the influence of temperature,—“*frigida æstantium animalia*,” and what is truly singular, is the fact mentioned by Humboldt, that the inverse cause produces a corresponding effect on some of the species of tropical climates, the caymans or crocodiles of South America becoming torpid, and entombing themselves in mud, during the prevalence of the hottest season.

Indeed, among the more singular features in the economy of the reptile race, may be numbered their power of enduring long-continued abstinence, and the lethargic state, infinitely more profound than the winter sleep of quadrupeds, into which they yearly fall. In connection with this subject, Mr Jacobson of Copenhagen has recognised in reptiles a special arrangement of certain vessels which constitute a peculiar *venous system*. This system may be said to exist more or less in all the race; but, rudimentary in the tortoises and crocodiles, it shows its chief development among the other Saurians, and the Ophidian and Batrachian groups. “It is composed of the veins of the abdominal members, the pelvic or caudal veins, the hinder veins of the kidneys, the veins of the oviductus, a great portion of the veins of the skin, of those of the muscles of the abdomen, and of those of certain organs peculiar to the reptiles. These veins combine, and form one or many trunks, which proceed either into the vena porta or the liver, or into both. What especially distinguishes this system is, that in it a part of the veins of the organs of locomotion, and of the skin, proceed to distribute themselves into the liver. There is no other example of this among the vertebrated animals. Certain special organs appear connected with this venous system in a peculiar manner, and are regarded by Mr Jacobson as proper for secreting and preserving a nutritive juice, destined to be re-absorbed in the rigorous months of the severe season, during the hybernal slumber of these animals.”¹

In regard to the geographical distribution of reptiles in general, we shall here briefly observe, that they augment in number as we advance towards the equatorial regions. While Sweden possesses scarcely a dozen snakes and lizards, about three or four frogs and toads, and not a single tortoise, the temperate parts of Europe produce about forty snakes and lizards, and several of the tortoise tribe. In Scandinavia, however, although the species are so few in number, the individuals are much more abundant than in Britain; from which we infer, that it is rather the want of strong continuous summer heat than the actuality of our winter's cold, that is unfavourable to the production of reptiles in our cloudy clime. As soon as we gain the southern extremity of Spain, the number of species in these tribes greatly increases, and in Andalusia the African complexion of the country is still further manifested by the frequent appearance of the chameleon. On proceeding further south, not only does the number of reptiles increase, but they also augment in size, splendour, and ferocity, till from the Tropic of Cancer onwards and beyond the line, we meet with crocodiles, caymans, boas, and other giants of the reptile race. Several species, however, even in sultry latitudes, are subjected by their peculiar position to the influence of severe cold. Thus the *axolotl* of Mexico occurs in the chill waters of lakes elevated above 8000 feet from the surface of the sea; and the salamander (a water newt) of Europe is frequently found frozen up in ice in early spring, without being destroyed. Indeed, Dufay has remarked, as a singular circumstance, that those very animals of which it once was fabled they could withstand the fiery flames, are in reality endowed with the almost equally surprising power of resisting frost, so generally fatal to the life of reptiles.

Although we have now endeavoured to state a few of what may be regarded as the generalities of the reptile class, yet it must be borne in mind, that no great division of the animal kingdom exhibits such a singular diversity of form and aspect, or is more liable to exceptions from whatever features we may incline to consider as general characteristics. “*Aussi les reptiles*,” says Baron Cuvier, “*présentent-ils des formes, des mouvements, et des propriétés beaucoup plus variées que les deux classes précédentes (quadrupèdes and birds); et c'est surtout dans leur production que la nature semble s'être jouée à imaginer des formes bizarres, et à modifier dans tous les sens possibles le plan général qu'elle a suivi pour les animaux vertébrés, et spécialement pour les classes ovipares.*” Among no animals indeed do we meet with beings of more singular forms than in the class Reptilia, many of which exhibit an aspect so unusual, so grotesque, and even so formidable, that it would be difficult for the imagination of the poet or the painter to exceed the “dread realities” of nature. Although the majority are oviparous, some, as we have said, produce their young alive. Many have four legs, some only two, which vary from an anterior to a posterior pair, while the entire tribe of serpents have no legs at all. Some have their bodies more or less closely beset by scales, varying in size from extreme tenuity to the strength and thickness of mailed armour; many, as the numerous tribes of frogs, are defended only by a soft and mucous skin; as many more are shut up in a strong bony box-like covering, within which they dwell, as in an impregnable castle. The greater number possess a tail, but several entirely want that organ. Numerous tribes live unceasingly in the water, others pass their infancy in moist abodes, their maturer years on terra firma, provided in the former case with gills, in the latter with lungs for respiration. Marshes and muddy swamps, the dry and desert sands, the umbrageous woods, the upland mountains, the “resounding shores,” are all alike pervaded by one or many of the numerous forms of reptile life. The subterranean proteus fears the light, though dealing in no deeds of darkness; the agile lizard, “all scaled silver bright,” basks delighted beneath the beams of the most brilliant sun, “no cloud in heaven.” Some are fierce and carnivorous, others gentle and herbivorous. The most deadly poison is distilled by many, while entire tribes are quite innocuous; and while some are resplendent in burnished gold and azure, “like mailed angels on a battle-day,” as many exhibit the last stage of ugliness in

worse
Than fables yet have feigned or fear conceived,
Gorgons, and hydras, and chimeras dire.

It has been observed, that in the popular superstitions of various countries, the reptile race have been almost always clothed in revolting attributes, and that the worship accorded them was one not of gratitude, but fear.² Victor or vanquished, they seem ever to have borne a cruel and pestilential character, in opposition to the welfare of the human race; and the prowess both of gods and men was called into frequent and vigorous exercise for their subduction. “Glorious Apollo” pursued the enormous Python with his unerring shafts; the dreadful Acheloius was strangled by the son of Jove, in spite of folds “voluminous and vast;” the Hesperian gardens and the golden fleece were protected by fierce dragons; Perseus, from the dripping head of Medusa, sowed with serpents the arid Libyan sands; and gorgons and furies, discord and envy, are armed by the poets with snakes, “as appropriate emblems of their ministry of vengeance.”

It was chiefly on the comparative consideration of the amount of respiration, and of the organs of movement, that

¹ Griffith's Animal Kingdom, ix. 182.

² Ibid. 20.

Chelonia. M. Brogniart founded the four great orders of the class Reptilia, which are now so generally adopted in the works of systematic authors.¹ They are as follows.

1st, The CHELONIAN REPTILES (turtles, tortoises, &c.), of which the heart is provided with two auricles, and the body, borne on four legs, is contained as it were within an upper and an under buckler, formed by a peculiar structure of the ribs and sternum.

2d, The SAURIAN REPTILES (crocodiles, lizards, &c.), which have likewise two auricles and four legs, but the body is covered with scales.

3d, The OPHIDIAN REPTILES (or serpents), which have a heart furnished with two auricles, but the body is destitute of legs.

4th, The BATRACHIAN REPTILES (frogs, toads, &c.), in which the heart has only a single auricle, the body is naked, and the majority of species undergo a kind of transition as they advance in age, from the form of a fish with gills to that of a quadruped with lungs. Some, however, as already mentioned, never lose their gills, and a few have only a single pair of legs.

Our notices of the various genera of the different orders must be here extremely brief; and in the following slight sketch we shall adhere, as we have done in most of our zoological treatises, to the systematic exposition of Baron Cuvier.²

ORDER I.—CHELONIA. CHELONIAN REPTILES.

The various groups of this order are known to English readers by the general names of *tortoise* and *turtle*,—the former appellation being usually bestowed on those which dwell on land, the latter on such as inhabit water. The heart is composed of two auricles, and of a ventricle with two unequal chambers communicating with each other. The blood from the body enters into the right auricle, that from the lung into the left; but both streams mingle together more or less in passing by the ventricle.

All the species of this order are distinguished at first sight by the peculiar armature in which the body is contained, and which consists of an upper and under buckler, nearly meeting along their edges, and permitting only the

head, limbs, and tail to appear externally. The upper buckler, called the *carapace*, is formed by the ribs, which amount to eight pair, extended and united by toothed sutures between, and having bony plates adhering to the annular portion of the dorsal vertebræ, and so connected that all these parts are rendered motionless. The under buckler is called the *plastron*, and is composed of portions which represent the sternum, and which are usually nine in number. A kind of lateral edging or frame-work, consisting of osseous pieces, bearing some analogy to the sternal or cartilaginous portion of the ribs, and which in one sub-genus even continue cartilaginous, surrounds the carapace, binding and uniting together the ribs by which it is composed. Thus the cervical and caudal vertebræ alone retain the power of distinct movement. (See Plate I., fig. 1.)

These two bony envelopes being covered immediately by skin or scales, the shoulder-blade and all the muscles of the neck and fore-arms, instead of having their attachments over the ribs and spine, as in other animals, are supported from beneath these parts; and the same peculiarity occurs in relation to the bones of the lower extremity and the muscles of the thighs, so that, as Baron Cuvier observes, a turtle may be termed "*un animal retourné*," as if it had been turned inside out.

The vertebral extremity of the shoulder-blade articulates with the carapace; and the opposite end, which may be regarded as analogous to the clavicle, articulates with the plastron in such a manner that the two shoulders form a ring through which the œsophagus and wind-pipe pass. A third bony branch, larger than the other two, and directed downwards and backwards, represents, as in birds, the coracoid process, but its posterior extremity is free.

The lungs are much expanded, and lie in the same cavity with the other viscera. The thorax being immoveable in the majority of species, it is by the play of the mouth that the Chelonians respire,—holding the jaws closed, and alternately lowering and raising the hyoid bone. The first movement permits the air to enter by the nostrils, and then the tongue closing the interior opening, the second movement forces the air into the lungs.

The Chelonians have no teeth, but their jaws are furnished with a horny substance like the mandibles of birds, with the exception of the *Chelydes*, in which they are cover-

¹ *Essai d'une Classification Naturelle des Reptiles*, Paris, 1805.

² The following are some of the principal works on reptiles in general. We do not here name those systematic writers who have treated of the class in question merely in the course of their universal exposition of the animal kingdom, although they are elsewhere referred to in the progress of the present treatise.

J. N. Laurenti, *Specimen Medicum, exhibens synopsis Reptilium emendatam, cum experimentis circa venena et antidota Reptilium Austriacorum*, 1768. This work has been since attributed to M. Winterl, a chemist of Vienna, who is merely named by Laurenti, on the terminal page, as having been a co-labourer in his therapeutical experiments. Lacepède, *Histoire Naturelle des Quadrupèdes Ovipares et des Serpens*, 2 vols. 4to, 1788–90. The Abbé Bonnaterre is the author of the text which accompanies the plates of reptiles in the French *Encyclopédie*, under the title of *Tableau Encyclopédique et Méthodique des trois Règnes de la Nature (Erpétologie et Ophiologie)*, 4to, 1789–90. L. J. M. Daubenton composed *Les Quadrupèdes Ovipares et les Serpens*, in *Dictionnaire des Animaux Vertébrés*, tom. ii. part. de l'Encyclop. Méthod. J. G. Schneider, the celebrated Greek scholar, has not published any general work on reptiles, but has written extensively on various groups. His productions are the following:—*Amphibiorum Physiologia Specim. i. et ii.* 1797. *Amphibiorum naturalis et litterariæ Fasciculus primus, continens Ranas, Calamitas, Bufones, Salamandras, et Hydros, in genera et species descriptos notisque suis distinctos*, 1799. *Fasciculus secundus, continens Crocodilos, Scincos, Chamasauros, Boas, Pseudoboas, Elapes, Angues, Amphibanas, Cæciliæ*, 1801. Latreille, *Histoire Naturelle des Reptiles*, four vols. small 12mo, 1801. Dr Shaw, *General Zoology*, vol. iii.—*Amphibia*, 1802. F. M. Daudin, *Histoire Naturelle des Reptiles*, eight vols. 8vo, 1802–3. Alex. Brogniart, *Essai d'une Classification Naturelle des Reptiles*, 1805. M. Oepel, *Die Ordnungen Familien und Gattungen der Reptilien, als Prodom einer Naturgeschichte derselben*, one vol. 4to, 1811. Blas Merrem, *Tentamen Systematis Amphibiorum*, one vol. 8vo, 1820. A. H. Haworth, A Letter on the Binary Arrangement of the Class of Reptiles, in the *Philosophical Magazine* for 1825, p. 372. F. J. Fitzinger, *Neue Classification der Reptilien*, one small vol. 4to, 1826. Ritgen, A Classification of Reptiles, in *Nova Acta Acad. Nat. Cur.* for 1828. Bory St Vincent, *Résumé d'Erpétologie*, on *Hist. Nat. des Reptiles*, 12mo, 1828. J. Wagler, *Natürliches system der Amphibien*, one vol. 8vo, 1830. We have also by the same author *Icones et Descriptiones Amphibiorum*, two fascic. folio, 1830, as well as some explications and critical remarks on Séba's plates of reptiles (*Isis*, 1833, ninth cahier, p. 885). J. E. Gray, *Synopsis Reptilium*, part 1st, 1831; and later in the same year, *Synopsis of the Species of the Class Reptilia*, in Griffith's *Animal Kingdom*, end of vol. ix. John Müller, *Beiträge zur Anatomie und Naturgeschichte der Amphibien*, in *Zeitschrift für Physiologie von Tiedemann, &c.*, No. 19, p. 190, 1832. H. T. Schinz, *Naturgeschichte und Abbildungen der Reptilien*, 4 fascic. large 4to, 1833. We conclude the list with a reference to a work already named, and frequently hereafter quoted, the *Erpétologie Générale, ou Histoire Naturelle complète des Reptiles*, of Messrs Dumeril and Bibron. The best and latest work on one class of REPTILIA, the *Serpents*, is *Essai sur la Physionomie des Serpens* of M. Schlegel, superintendent of the Museum of Natural History at Leyden, published in two 8vo volumes and a folio volume of plates, at the Hague in 1837. A partial translation of it, by Professor Traill, appeared at Edinburgh, 1843.

Chelonia. ed with skin. Their tympanic cavity and palatine arches are fixed to the cranium, and immoveable. The tongue is short, and beset with fleshy filaments. The stomach is simple and strong, the intestines of medium length, and unfurnished with a cæcum. The bladder is very large. The females in this order produce eggs provided with a hard shell. The males of many species may be recognised by the greater concavity of the plastron.¹

The limbs of Chelonian reptiles being so confined between the carapace and plastron, their powers of locomotion, at least on land, are very limited. They can scarcely raise their bodies above the surface of the ground, and they advance by a slow, awkward, and apparently embarrassed action. But the aquatic species being provided with fin-like members, and dwelling amid a fluid well adapted to their use, the flat and smoothly expanded bodies of these creatures glide along with great ease and considerable swiftness. Such of the land species as inhabit temperate countries pass the colder seasons of the year in a state of torpidity, having previously excavated or taken possession of some secure and subterranean retreat. They are supposed to be extremely long lived. The marine species are more tropical in their distribution; and we are not aware that any hibernation takes place among them. They are often met with many hundred leagues from land. They deposit their eggs on sandy shores, where they are hatched by the heat of the sun,—the process of laying being usually carried on during the night.

The dimensions of animals of this order exhibit a great range, some being only a few inches in length, while others attain to a gigantic size, and weigh many hundred pounds. They are all extremely tenacious of life,—whether under the effects of long-continued abstinence while being conveyed from distant regions, or when suffering from the infliction of grievous wounds. Indeed they will live for months, or, as it is alleged, even for years, without any food, and will show decided symptoms of life and locomotion for several weeks after their heads have been severed from their bodies.

The whole of this order was formerly contained in the old and unrestricted genus *TESTUDO* of Linnæus, divided by Cuvier into the five following generic groups, of which the distinctive characters are mainly derived from the form and covering of the carapace, and from the feet.

GENUS *TESTUDO*, Brogn. Tortoises. Carapace bulged, supported by a solid bony frame-work, and soldered by the greater portion of its lateral edges to the plastron. Legs as if truncated, the toes extremely short, and united almost to the nails, of which there are five to the fore-feet, and four to the hinder, all thick and conical.

The species, most of which subsist on vegetables, are too numerous to be here described, but we shall indicate a few of the more noted or remarkable.

The Greek tortoise (*T. Græca*, Linn.) is the most common of the European kinds, and occurs in most of the countries which surround the Mediterranean, and in several islands of that sea. It is distinguished by its broad and equally bulged carapace, its relieved scales, granulated in the centre, striated on the margins, and spotted, or rather marbled, with black and yellow; in the centre of its posterior margin there is a small prominence slightly curved over the tail. The Greek tortoise lives on leaves, fruits, and insects. It sleeps throughout the winter, pairs in spring, and lays four or five eggs resembling those of a pigeon. It seldom attains to the length of twelve inches, its general extent being from six to eight. This species has been known to reach an extraordinary old age. One of the most remarkable instances has been often recorded. It

is that of a tortoise which was introduced into the archiepiscopal garden at Lambeth in the time of Archbishop Laud, about the year 1633, and continued there till 1753, when it died, as was supposed, rather from accidental neglect than the effect of old age. Its shell is preserved in the library of the palace. The Greek turtle is used as an article of food in some of the southern countries of Europe. According to Forskal, it retires under ground in September, and re-appears in February. In this country it hibernates later, and does not emerge so soon. It lays its eggs in June, in a small hole, which it scratches in some sunny spot, and the young are hatched in autumn, being on their first exclusion about the size of walnuts.

Of the foreign species, one of the most remarkable for size is the Indian tortoise (*T. Indica*, Vosm.), first described by M. Perrault. It has been taken on the coast of Comorandel, and sometimes measures four feet and a half from the nose to the tail, with a height or convexity of fourteen inches. The shell is brown, reflected or turned upwards over the neck; and there is a tubercle on each of the three anterior scutella.

Other species are less remarkable for size than for the beautiful distribution of the colours by which they are adorned. Such is the geometrical tortoise (*T. geometrica*, Linn.), which is easily distinguished by the symmetrical regularity with which the yellow rays, and the alternate lines of brown and yellow, are disposed upon the scales of the upper shield. Certain species have the anterior part of the shield moveable, while in others the posterior portion is in that condition. The former constitute the genus *PYXIS* of Mr Bell, while the latter pertain to the genus *KINIXIS* of that author.

GENUS *EMYS*, Brogn. Fresh-water tortoises.

The species of this genus are not distinguishable from those of the preceding by more important characters than the greater separation of the toes, which are terminated by longer nails, and have their intermediate spaces filled up by membrane. The number of the nails is the same, but the form of their feet enables them to indulge in more aquatic propensities. Their envelope is generally of a flatter form than that of the terrestrial species, and the majority live on insects, small fishes, &c. (See Plate I., fig. 2.)

One of the best known of this group is the speckled tortoise (*T. Europæa*, Schn.; *T. orbicularis*, Linn.), a small species, pretty widely distributed over the southern and eastern countries of Europe. Its carapace is of an oval form, but slightly convex, rather smooth, of a blackish colour, beset with innumerable small yellow spots. Its length seldom exceeds ten inches. This creature inhabits lakes, marshes, and muddy places. Its flesh is esteemed as food, on which account it is sometimes kept in ponds appropriated to the purpose, and fattened with lettuce leaves, bread, and other substances. It may also be kept in a cellar, and fed with oats scattered on the floor. These it eats readily, especially when they have begun to germinate. Its natural food, however, is said to consist of insects, slugs, &c. It deposits its eggs in warm and sandy places, and Marsigli alleges that an entire year elapses before they are hatched.

Another species of this genus is *la Bourbeuse* of the French (*T. lutaria*, Linn.), commonly called the mud-tortoise. It is a small animal, with a flattish brown-coloured shield, and a tail of considerable length, which, instead of being kept bent inwards, is stretched out in walking. It is well known in France, and is particularly plentiful in Languedoc and many parts of Provence. It has been known to occur in such abundance in a lake of about half a league in width in the plain of Durance, that the neighbouring peasantry, on one occasion, almost entirely sustained themselves

¹ Règne Animal, ii. 2.

Chelonia. upon them continuously for three months. Though the species is aquatic, it always lays its eggs on land. When the young are first hatched they do not measure above six lines in diameter. Like most other tortoises, it may be tamed, and its love of slugs and snails makes it a useful adjunct to a garden. Yet it must be borne in mind, that however beneficial to the horticulturist, it is a dangerous inmate of the fish-pond, where it attacks and destroys the inhabitants, first biting them till they become enfeebled through loss of blood, and then dragging them to the bottom, where it quietly devours everything but the bones and some of the cartilaginous parts of the head. The air-bladder also is often left, and, swimming on the surface, gives notice of the depredation done below. The mud-tortoise walks with greater quickness and activity than the ordinary land species, especially on even ground.

The painted tortoise (*T. picta*) likewise pertains to this genus. It is a beautiful little creature, with a smooth, rather flattish shield, of a brown colour, and each compartment bordered by a yellow band. It is a North American species, often seen congregated in clear sunny weather along the sides of rivers on stones and trunks of fallen trees, from which it plunges into the water on the slightest disturbance. It swims swiftly, but walks slowly, and is said to be very voracious, sometimes even destroying ducklings, by seizing their feet and dragging them below the water.

A few species with the neck more elongated (such as *T. longicollis*, Shaw) form the genus *HYDRASPIS* of Bell. There are also some peculiar species called *tortues à boîte* by the French, in which the plastron or lower shield is divided into two by a moveable articulation. These tortoises can close their carapace, and so shut themselves up as in a box, after having drawn in their head and legs. Such is the close tortoise (*T. clausa*, Gmel.), so called on account of the peculiarity just alluded to. The shell is of great strength, and although the creature itself rarely exceeds a few inches in length, it remains uninjured under a weight of five or six hundred pounds. It occurs in different parts of North America, being usually found in marshy places, though sometimes seen in dry and sultry situations. It feeds on insects, mice, and even snakes, which it is said to seize by the middle, and crush to death by drawing them within its shell.

Others have the tail and limbs by much too large to be withdrawn into the shell. Such is the long-tailed tortoise (*T. serpentina*, Linn.), a fresh-water species, native to the warmer parts of North America, where it is known under the name of snapping turtle. It is of considerable size, sometimes weighing twenty pounds, and seizes upon its prey (fish, ducklings, &c.) with great force and rapidity, stretching out its neck, and uttering a hissing sound. Its grasp is so tenacious that it will suffer itself to be lifted up by a stick rather than quit its hold. The tail is almost as long as the body, and is beset by sharp raised ridges. The plates of the shield assume a somewhat pyramidal form. (See Plate I., fig. 3.)

GENUS *CHELONIA*, Brogn. Turtles, or sea-tortoises. This group differs from all the preceding in its long, flat, fin-like feet, with the toes closely united, and enclosed within the membrane. The first two toes of each foot alone are furnished with nails, one or other of which often drops off at a certain term of life. The different portions of the lower shield do not form a continuous plate, but are variously dentated, and have large intervals covered by cartilage alone. The ribs are narrow, and separate from each other at their outer portion; but the circumference of the shield is occupied throughout by a circle of pieces corresponding to the bony ribs. The interior of the œsophagus is entirely beset by sharp cartilaginous points directed towards the stomach.

To illustrate the prevailing habits of these curious creatures, we shall extract the following notices regarding se-

veral species of sea-turtle, from one of those delightful papers with which Mr Audubon has enlivened his Ornithological Biography. That gentleman's observations were made chiefly among the Tortugas, a group of low uninhabitable islands, or rather banks of shelly sand, which lie about eighty miles from Key West, off the peninsula of the Floridas. As usual, the author intermingles his minuter notices of natural history with very pleasing sketches of the general features of the surrounding scene. "If you have never seen the sun setting in those latitudes, I would recommend you to make a voyage for the purpose; for I much doubt if, in any other portion of the world, the departure of the orb of day is accompanied by such gorgeous appearances. Look at the great red disk increased to triple its ordinary dimensions! Now it has partially sunk beneath the distant line of waters, and with its still remaining half irradiates the whole heavens with a flood of golden light, purpling the far-off clouds that hover over the western horizon. A blaze of refulgent glory streams through the portals of the west, and the masses of vapour assume the semblance of mountains of molten gold. But the sun has now disappeared, and from the east slowly advances the gray curtain which night draws over the world." "Slowly advancing landward, their heads alone above water, are observed the heavily-laden turtles, anxious to deposit their eggs in the well-known sands. On the surface of the gently rippling stream, I dimly see their broad forms, as they toil along, while at intervals may be heard their hurried breathings, indicative of suspicion and fear. The moon, with her silvery light, now illumines the scene, and the turtle having landed, slowly and laboriously drags her heavy body over the sand, her 'flappers' being better adapted for motion in the water than on shore. Up the slope, however, she works her way, and see how industriously she removes the sand beneath her, casting it out on either side. Layer after layer she deposits her eggs, arranging them in the most careful manner, and, with her hind paddles, brings the sand over them. The business is accomplished, the spot is covered over, and with a joyful heart the turtle swiftly retires towards the shore, and launches into the deep." "There are four different species, which are known by the names of the *green turtle*, the *hawk-bill turtle*, the *loggerhead-turtle*, and the *trunk-turtle*. The first is considered best as an article of food, in which capacity it is well known to most epicures. It approaches the shores, and enters the bays, inlets, and rivers, early in the month of April, after having spent the winter in the deep waters. It deposits its eggs in convenient places in two different times in May, and once again in June. The first deposit is the largest, and the last the least, the total quantity being at an average about two hundred and forty. The hawk-bill turtle, whose shell is so valuable as an article of commerce, being used for various purposes in the arts, is the next with respect to the quality of its flesh. It resorts to the outer keys only, where it deposits its eggs in two sets, first in July, and again in August, although it 'crawls' the beaches of these keys much earlier in the season, as if to look for a safe place. The average number of its eggs is about three hundred. The loggerhead visits the Tortugas in April, and lays from that period until late in June three sets of eggs, each set averaging a hundred and seventy. The trunk-turtle, which is sometimes of an enormous size, and which has a pouch like a pelican, reaches the shores latest. The shell and flesh are so soft, that one may push his finger into them, almost as into a lump of butter. This species, therefore, is considered as the least valuable, and indeed is seldom eaten, unless by the Indians, who, ever alert when the turtle season commences, first carry off the eggs, and afterwards catch the turtles themselves. The average number of eggs which it lays in the season, in two sets, may be three hundred and fifty."

Chelonia.

Chelonia. "The loggerhead and the trunk turtles are the least cautious in choosing the places in which to deposit their eggs, whereas the two other species select the wildest and most secluded spots. The green turtle resorts either to the shores of the Maine, between Cape Sable and Cape Florida, or enters Indian, Halifax, and other large rivers or inlets, from which it makes its retreat as speedily as possible, and betakes itself to the open sea. Great numbers, however, are killed by the turtles and Indians, as well as by various species of carnivorous animals, as cougars, lynxes, bears, and wolves. The hawk-bill, which is still more wary, and is always the most difficult to surprise, keeps to the sea-islands. All the species employ nearly the same method in depositing their eggs in the sand; and as I have several times observed them in the act, I am enabled to present you with a circumstantial account of it. On first nearing the shores, and mostly on fine calm moonlight nights, the turtle raises her head above the water, being still distant thirty or forty yards from the beach, looks around her, and attentively examines the objects on shore. Should she observe nothing likely to disturb her intended operations, she emits a loud hissing sound, by which such of her many enemies as are unaccustomed to it are startled, and so are apt to remove to another place, although unseen by her. Should she hear any noise, or perceive indications of danger, she instantly sinks and goes off to a considerable distance; but should everything be quiet, she advances slowly towards the beach, crawls over it, her head raised to the full stretch of her neck, and when she has reached a place fitted for her purpose, she gazes all around in silence. Finding 'all well,' she proceeds to form a hole in the sand, which she effects by removing it from *under* her body with her *hind* flappers, scooping out with so much dexterity that the sides seldom if ever fall in. The sand is raised alternately with each flapper, as with a large ladle, until it has accumulated behind her, when, supporting herself with her head and fore part on the ground fronting her body, she with a spring from each flapper sends the sand around her, scattering it to the distance of several feet. In this manner the hole is dug to the depth of eighteen inches, or sometimes more than two feet. This labour I have seen performed in the short period of nine minutes. The eggs are then dropped one by one, and disposed in regular layers to the number of a hundred and fifty, or sometimes nearly two hundred. The whole time spent in this part of the operation may be about twenty minutes. She now scrapes the loose sand back over the eggs, and so levels and smooths the surface, that few persons, on seeing the spot, could imagine anything had been done to it. This accomplished to her mind, she retreats to the water with all possible despatch, leaving the hatching of the eggs to the heat of the sand. When a turtle, a loggerhead, for example, is in the act of dropping her eggs, she will not move although one should go up to her, or even seat himself on her back, for it seems that at this moment she finds it necessary to proceed at all events, as she is unable to intermit her labour. The moment it is finished, however, off she starts; nor would it then be possible for one, unless he were as strong as a Hercules, to turn her over and secure her." "Persons who search for turtles' eggs are provided with a light stiff cane, or a gun-rod, with which they go along the shores, probing the sand near the tracks of these animals, which, however, cannot always be seen, on account of the winds and heavy rains that often obliterate them. The nests are discovered not only by men, but also by beasts of prey, and the eggs are collected or destroyed on the spot in great numbers, as on certain parts of the shores hundreds of turtles are known to deposit their eggs within the space of a

mile. They form a new hole each time they lay, and the second is generally dug near the first, as if the animal were quite unconscious of what had befallen it. It will readily be understood, that the numerous eggs seen in a turtle on cutting it up could not be all laid the same season. The whole number deposited by an individual in one summer may amount to four hundred, whereas, if the animal is caught on or near her nest, as I have witnessed, the remaining eggs, all small, without shells, and as it were threaded like so many large beads, exceed three thousand. In an instance where I found that number, the turtle weighed nearly four hundred pounds. The young, soon after being hatched, and when yet scarcely larger than a dollar, scratch their way through their sandy covering, and immediately betake themselves to the water."

"The food of the green turtle consists chiefly of marine plants, more especially the grass-wrack (*Zostera marina*), which they cut near the roots, to procure the most tender and succulent parts. Their feeding grounds, as I have elsewhere said, are easily discovered by floating masses of these plants on the flats, or along the shores to which they resort. The hawk-billed species feeds on sea-weeds, crabs, various kinds of shell-fish and fishes; the loggerhead mostly on the fish of conch-shells of large size, which they are enabled, by means of their powerful beak, to crush to pieces with apparently as much ease as a man cracks a walnut. One which was brought on board the Marion, and placed near the fluke of one of her anchors, made a deep indentation in that hammered piece of iron that quite surprised me. The trunk-turtle feeds on mollusca, fish, crustacea, sea-urchins, and various marine plants. All the species move through the water with surprising speed; but the green, and hawk-billed in particular, remind you, by the celerity and ease of their motions, of the progress of birds through the air."¹

We shall add a few brief notices, chiefly to connect the preceding observations, and such as follow, with the systematic names bestowed by naturalists.

Our first species is *Chelonia mydas*, commonly called the green turtle, not so much by reason of its external colour, as because its fat, beloved by aldermen, assumes, when the creature is in high condition, a decidedly greenish hue. This tint is by some regarded as derived from its marine pastures, particularly *Zostera marina*, or turtle-grass, of which it is particularly fond. The shield of this species consists of thirteen plates, which do not lie over each other after the manner of tiles. Those of the central or upper line are almost in the form of regular hexagons. The green turtle is a reptile of gigantic proportions, sometimes measuring six or seven feet in length, and weighing seven or eight hundred pounds. Its flesh forms an agreeable and healthy aliment to sea-faring men in most of the seas of the torrid zone, and is still more highly prized by epicurean landmen. Its eggs are also most excellent as articles of diet. The introduction of turtle into Britain, as an article of luxury, is believed to be of no very distant date.

"Of the sea-turtles," says Catesby, "the most in request is the green turtle, which is esteemed a most wholesome and delicious food. It receives its name from the fat, which is of a green colour. Sir Hans Sloane informs us, in his History of Jamaica, that forty sloops are employed by the inhabitants of Port Royal, in Jamaica, for the catching them. The markets are there supplied with turtle as ours are with butchers' meat. The Bahamians carry many of them to Carolina, where they turn to good account; not because that plentiful country wants provisions, but they are esteemed there as a rarity, and for the delicacy of their flesh. They feed on a kind of grass growing at the bottom of the sea, commonly called turtle-grass. The inhabitants of the Ba-

¹ Ornithological Biography, ii. p. 370.

Chelonia.

hama Islands, by often practice, are very expert at catching turtles, particularly the green turtle. In April they go in little boats to Cuba and other neighbouring islands, where, in the evening, especially in moonlight nights, they watch the going and returning of the turtle to and from their nests, at which time they turn them on their backs, where they leave them, and proceed on, turning all they meet; for they cannot get on their feet again when once turned. Some are so large that it requires three men to turn one of them. The way by which the turtle are most commonly taken at the Bahama Islands, is by striking them with a small iron peg of two inches long, put in a socket at the end of a staff of twelve feet long. Two men usually set out for this work in a little light boat or canoe, one to row and gently steer the boat, while the other stands at the head of it with his striker. The turtle are sometimes discovered by their swimming with their head and back out of the water, but they are oftenest discovered lying at the bottom, a fathom or more deep. If a turtle perceives he is discovered, he starts up to make his escape, the men in the boat, pursuing him, endeavour to keep sight of him, which they often lose, and recover again by the turtle putting his nose out of the water to breathe; thus they pursue him, one paddling or rowing, while the other stands ready with his striker. It is sometimes half an hour before he is tired; then he sinks at once to the bottom, which gives them an opportunity of striking him, which is by piercing him with an iron peg, which slips out of the socket, but is fastened with a string to the pole. If he is spent and tired by being long pursued, he tamely submits, when struck, to be taken into the boat or hauled ashore. There are men who by diving will get on their backs, and by pressing down their hind parts, and raising the fore part of them by force, bring them to the top of the water, while another slips a noose about their necks.¹

"The sea-tortoises, or turtles, in general," continues our author, "never go on shore but to lay their eggs, which they do in April. They then crawl up from the sea above the flowing of high water, and dig a hole above two feet deep in the sand, into which they drop in one night above an hundred eggs, at which time they are so intent on nature's work that they regard none that approach them, but will drop their eggs into a hat, if held under them; but if they are disturbed before they begin to lay, they will forsake the place and seek another. They lay their eggs at three, and sometimes at four different times, there being fourteen days between every time, so that they hatch and creep from their holes into the sea at different times also. When they have laid their complement of eggs, they fill the hole with sand, and leave them to be hatched by the heat of the sun, which is usually performed in about three weeks."

A still more gigantic species is the loggerhead-turtle (*Ch. caretta*, Gm.), distinguished by fifteen dorsal plates, of which the central are raised into a ridge. The upper portion of the muzzle is bent or beak-shaped, the anterior pair of feet are longer and narrower than in the allied species, and the two nails are persistent and better marked. It inhabits the tropical seas along with the preceding species, but extends into nearer northern latitudes, occurring occasionally in the Mediterranean. In a commercial point of view it is of little or no value, the flesh being coarse and rank, and the shell of no estimation. It furnishes, however, a useful lamp-oil. The loggerhead is said to be a bold and voracious reptile, feeding on shell-fish and other animal products, which it crunches with its strong bony beak. Al-

drovandus alludes to one which he saw exhibited alive in his days in Bologna. He held a thick walking-stick towards it, which it immediately bit in two.

The imbricated turtle (*Ch. imbricata*, Linn.) is so named on account of the mode in which its dorsal plates, thirteen in number, lap over each other, after the manner of tiles. (See Plate I., fig. 4.) Its muzzle is more prolonged than in many species, on which account it is sometimes named the hawk's-bill. Its mandibles are serrated. It measures from two to four feet, and occurs in the tropical seas. The flesh is disagreeable, and occasionally even dangerous, but the eggs are excellent; and its shield yields the finest quality of that valuable material in the arts called *tortoise-shell*. The lamellæ or plates are thicker, stronger, clearer, and more beautifully mottled than in any other species. The colours consist of an elegant undulation of white, yellow, red, and rich deep brown; but the article is too well known to require any detailed description. It is obtained by raising the fine external coating from the bony portion which it covers, by placing fire beneath the shell, which causes the plates to start and become detachable. They vary in thickness with the age and dimensions of the individual, and measure from an eighth to a fourth of an inch in thickness. A large turtle is said to afford about eight pounds weight of tortoise-shell; and Mr Schoepf states the range to be from five to fifteen or twenty pounds, adding, that unless the animal itself has attained the weight of a hundred and fifty pounds, the shell is of little value.

"In order," says Dr Shaw, "to bring tortoise-shell into the particular form required on the part of the artist, it is steeped in boiling water till it has acquired a proper degree of softness, and immediately afterwards committed to the pressure of a strong metallic mould of the figure required; and where it is necessary that pieces should be joined, so as to compose a surface of considerable extent, the edges of the respective pieces are first scraped or thinned; and being laid over each other during their heated state, are committed to a strong press, by which means they are effectually joined or agglutinated. These are the methods also by which the various ornaments of gold, silver, &c. are occasionally affixed to the tortoise-shell."

"The Greeks and Romans appear to have been peculiarly partial to this elegant ornamental article, with which it was customary to decorate the doors and pillars of their houses, their beds, &c. In the reign of Augustus this species of luxury seems to have been at its height in Rome."

"The Egyptians," says Mr Bruce, in the supplement to his Travels, "dealt very largely with the Romans in this elegant article of commerce. Pliny tells us the cutting them for finereing or inlaying was first practised by Carvillus Pollio; from which we should presume that the Romans were ignorant of the art of separating the laminæ by fire placed in the inside of the shell when the meat is taken out. For these scales, although they appear perfectly distinct and separate, do yet adhere, and oftener break than split, where the mark of separation may be seen distinctly. Martial says that beds were inlaid with it. Juvenal, and Apuleius in his tenth book, mention that the Indian bed was all over shining with tortoise-shell on the outside, and swelling with stuffing of down within. The immense use made of it in Rome may be guessed at by what we learn from Velleius Paterculus, who says, that when Alexandria was taken by Julius Cæsar, the magazines or warehouses were so full of this article that he proposed to have made it the principal ornament of his triumph, as he did ivory afterwards

¹ One of the most remarkable modes of capturing turtles is that mentioned by Mr Salt. When that gentleman was at Mosambique he received a present of a fish of the genus *Echeneis*, which the inhabitants assured him they were in the habit of employing, by securing it by a cord to a boat, after which it would fasten itself by a sucker on the head to the breastplate of the first turtle it met with, and so firmly that the latter might be drawn towards the boat and captured.

² *General Zoology*, iii. 91.

Chelonia. when triumphing for having happily finished the African war."

But of all the marine tortoises, the coriaceous turtle (*Ch. coriacea*, Linn.) seems to attain to the greatest size, individuals having been met with measuring eight feet in length, and weighing about a thousand pounds. It differs from the rest of its tribe, as well in its more lengthened form and tapering termination, as in the softer or more leathery texture of its shield, which is not formed into distinct plates, but rather marked all over with small obscure subdivisions or lineations, which do not interfere with the general smoothness of the surface. There are also three raised longitudinal ridges, which run from above the shoulders to the posterior portion of the shield. (See Plate I., fig. 5.) This species inhabits the Mediterranean Sea, has been frequently taken even along the outer coasts of France, and occasionally makes its way to our own island shores. In the month of August 1729 a specimen was taken about three leagues from Nantes, near the mouth of the Loire. It measured above seven feet in length, and is said, when taken, to have uttered a scream so loud and hideous as to have been heard at the distance of a mile. Its mouth "foamed with rage, and exhaled a noisome vapour." It no doubt, and very naturally, objected to being lifted into a stinking slimy boat, from its own beautiful translucent sea. In the year 1778 a specimen was captured off the coast of Languedoc, which measured seven feet five inches; and, in 1756, another was taken on the Cornwall coast, which, Dr Borlase says, "measured six feet nine inches from the tip of the nose to the end of the shell, and ten feet four inches from the extremities of the fore-fins extended, and was adjudged to weigh eight hundred pounds." According to Lacépède, the coriaceous turtle is the species with which the Greeks were best acquainted, and he supposes it to have been particularly used in the formation of the ancient harp or lyre, which was originally constructed by attaching strings or wires to the carapace of one of these marine reptiles. "We may add," says Dr Shaw, "that the ribs or prominences on the back of the shell bear an obscure resemblance to the strings of a harp, and may have suggested the name of luth or lyre, *ou* which it is called among the French, exclusive of the use to which the shell was anciently applied." This turtle is reputed to be extremely fat, and it is eaten by the Carthusians, although its flesh is coarse and bad.

GENUS CHELYS, Duméril. Wide-mouthed turtles. This little group resembles the preceding genus *Emys* in the feet and claws. The carapace is much too small to admit of the withdrawal of the head and limbs, which are proportionally large. The muzzle is prolonged into a little trunk, but the most marked and peculiar character consists in the deeply cleft transverse gape, which is not armed with corneous mandibles, as in the other *Chelonians*, but rather resembles that of the *Batrachian* genus *Pipa*.

The best known and most noted species is the matamata (*T. fimbria*, Gm.), an animal of a very singular and rather repulsive aspect, first described by M. Bruguere.¹ It measures about a foot and a half in length. Its carapace is oval, with raised pyramidal plates pointing backwards. The neck and other parts of the body are furnished with peculiar projecting fringes, or wart-like appendages. This reptile is native to Guiana, and was once common in Cayenne; but its numbers were long ago much thinned by the fishermen, who prize it as an excellent and nutritious food. It feeds on aquatic plants, and is said to wander by night to

some distance from the banks in search of pasture. The specimen described by M. Bruguere was brought to him alive, and was sustained for some time on bread and herbs. It afterwards laid five or six eggs, one of which produced a young turtle.

GENUS TRIONYX, Geoff. Soft turtles. These have no plates or scales, but merely a soft skin enveloping their carapace and plastron, neither of which are completely supported by the bones, the ribs not reaching to the margins of the shield, nor being united to each other except by a portion of their length, and the parts analogous to the sternal ribs being replaced by simple cartilage, and the sternal pieces, partly toothed as in the marine species, by no means filling up the whole of the under surface. The feet, as in the fresh-water tortoises, are palmated though not elongated, and only three of the toes are furnished with nails. The corneous portion of the beak is clothed externally with fleshy lips, and the snout is prolonged. The tail is short. The species of this genus dwell in fresh waters, and the flexible margins of their carapace are of use in swimming.

The Egyptian species or tyrse, the *soft turtle* of the Nile (*Test. triunguis*, Forskal, *Tr. Egyptiacus*, Geoff.), sometimes attains the length of three feet. Its shield is flattish, and of a green colour, spotted with white. This reptile devours young crocodiles the moment they are hatched, and, according to Sonnini, is more serviceable in this way than even the ichneumon.

An American species (*Tr. ferox*, Gmel.) inhabits the rivers of the new world, from Guiana as far north as the southern parts of the United States. It lies concealed in reeds and rushes, seizes on birds and reptiles, preying also on young caymans, and being in turn frequently devoured by the elder members of that powerful family. It is itself sought after as an article of food even by the human race, its flesh being by some esteemed equal to that of the green turtle. This species has been described as possessing considerable vigour and swiftness in its motions, and as springing forward when attacked to meet its assailant with fierceness and alacrity. It measures about a foot and a half in length, and seems to have been first described by Dr Garden in his correspondence with Pennant.²

ORDER II.—SAURIA. SAURIAN REPTILES.

In this order the heart is composed, as among the *Chelonians*, of two auricles and a ventricle, the latter being sometimes divided by imperfect partitions. The ribs are moveable, partly attached to the sternum, and are capable of being raised and depressed for the purposes of respiration. The lungs extend more or less towards the hinder portion of the body, and frequently enter far into the lower part of the abdomen. Those in which the lungs are large possess the singular faculty of changing the colour of their skin, according as they are excited by their wants or passions. The eggs are enveloped by a more or less consistent covering, and the young are produced in the perfect state, that is, they merely increase in size, without undergoing metamorphosis. The mouth is always armed with teeth; and the toes are furnished with nails, with very few exceptions. The skin is clothed with scales, or with little scaly granules. All the species have a tail, varying in length in the different kinds, but almost always thick at the base. The majority have four legs, although a few have only a single pair.

¹ *Journal d'Hist. Nat.* 1792.

² *Phil. Trans.* lxi. 266. The chief works on the *Chelonian* reptiles are the following. J. G. Walbaum, *Chelonographia oder Beschreibung einiger Schildkröten*, 1782. J. G. Schneider, *Allgemeine Naturgeschichte der Schildkröten, nebst einer Systematischen bezeichnung der einzelnen arten*, 1783. J. D. Schoepf, *Historia Testudinum iconibus illustrata*. A. F. Schweigger, *Monographia Testudinum* (in the *Archives de Königsberg* for 1812). Thomas Bell, F. R. S., *Monograph of the Testudinata*. J. Spix, *Species Novae Testudinum et Ranarum quas in itinere*, &c., 1824. The various species are also enumerated by Mr Gray in his *Synopsis Reptilium*.

Sauria.
Crocodili-
dæ.

The Saurian order of reptiles was included by Linnæus under two genera, DRACO and LACERTA. The latter has been greatly subdivided, in accordance with the number of the feet, the form of the tongue, tail, and scales; and the formation of several separate families has resulted from the consideration of these important features. None of the saurian reptiles are venomous, although the bite of several of the larger kinds is to be avoided rather than otherwise. They all appear to be what may be called carnivorous; that is, they feed on living prey. Many assume the torpid state during the colder seasons of the year; but in their more active condition they affect, according to the species, a great diversity of situation; some haunting obscure and humid places, others rejoicing in a dry and sandy soil, exposed to the influence of the most radiant sun. Several are aquatic; while many climb trees, or, avoiding "leafy umbrage," seek the surface of exposed and barren rocks. Their form and outward adornment are as varied as their habits. Some are remarkable for beauty of shape and brilliancy of colour, while others present a repulsive aspect and a lurid hue. Many are extremely small, entirely innocent, and naturally familiar and confiding in their mode of life; others are of gigantic size, and distrustful and dangerous in their disposition. How great the difference between the beautiful, bright-eyed lizard, which suns itself beside a cottage window, and the huge cayman of America, stretched like a blackened log along the desolate shore of some forsaken river!

FAMILY I.—CROCODILIDÆ. CROCODILES IN GENERAL.

The *Crocodilidæ* take the first place in the Saurian order, a distinction to which they are well entitled from their great magnitude and strength, and a ferocity which has obtained for them the appellation of the tyrants of the fresh waters, both in the old and new world. They often attain the size of ten and twelve feet, frequently that of fifteen and twenty, and, more rarely, even that of twenty-five and thirty. Inhabiting the margins of the mighty streams of tropical climates, they are the terror of all who approach them; they prey upon every animal which comes within their reach; and man himself is not free from their attacks, for instances are by no means rare, both in ancient and modern times, of their suddenly seizing upon human beings, and carrying them off to their watery haunts. Hence these formidable animals are never witnessed, especially in temperate climates, but with the deepest interest. In the year 58 before the common era, the edile Scaurus exhibited at Rome five crocodiles from the Nile; on another occasion, Strabo mentions that the inhabitants of Denderah brought many to the great capital of the world; but the most astonishing spectacle of this sort ever witnessed was when the Emperor Augustus caused the Flavianian Circus to be filled with water, and there displayed thirty-six crocodiles, which were killed by an equal number of men accustomed to fight with these monsters. Popular curiosity continues unabated; and the intimate connection of the creatures in question with geological investigations has more recently conferred upon them a very different but not less important interest.

The *Crocodilidæ* form an exceedingly natural group, closely associated by many common characters, of which the following are the most striking. They all attain a great size.

Their tail is compressed laterally. The fore-feet have five toes; the hind four, the three internal of which are furnished with nails, but all of them are more or less united by membranes. There is a single row of teeth in each jaw. The tongue is fleshy, flat, and attached by nearly the whole of its margin, a circumstance which led the ancients to believe that crocodiles were destitute of this member. The back and tail are covered with great scales or plates, which are often pointed in their centre; the scales on the abdomen are not so thick and strong.

The nostrils of these amphibious creatures open at the end of their snout by two small apertures, which shut with valves. The lower jaw is prolonged behind the cranium, which gives the appearance of motion to the upper jaw when the mouth is opened, an idea entertained by the ancients.¹ Their external ears are shut at will by two fleshy lips; their eye has three eyelids, two horizontal, like our own, and the third, a membrana nictitans, capable of being drawn from within outwards over the whole front of the globe. Beneath the lower jaw, on either side, is a gland, whose duct opens by a small slit a little within the lower edge of the jaw; it secretes an unctuous matter of a strong musky smell, and is supposed by Mr Bell (*Phil. Trans.* 1827) to be a bait for attracting fish towards the sides of the mouth. This gland, with others of a like nature situated elsewhere, confers a smell which pervades the whole animal. The vertebræ are to the number of sixty; seven are cervical, and these are so connected with each other by bony processes that they impede lateral movements, so that it is difficult for the animal to change its direction; and hence, when a person is pursued, he may easily escape by turning. Of all the Saurians, they are the only ones which are destitute of clavicles. Besides the ordinary supply of ribs, they have some which protect the abdomen without ascending to the spine. Their lungs do not descend into the abdomen, as in other reptiles of their order; and this, with their heart of three cavities, where the blood from the lungs does not mix with that from the body so freely as in the rest of the Reptilia, associates them somewhat nearer to warm-blooded animals.

It would be interesting, did space permit, to enlarge upon these physiological details. It is not a little curious, that in the animals belonging to this group, two openings are found, leading from the surface to the internal cavity of the abdomen, a structure similar to that which prevails in a few animals further down the scale. M. Geoffroy St Hilaire supposes that the superior energy of the crocodile in water is due to this penetration of that fluid, and the consequent conversion of the peritoneum into an additional respiratory surface. Another singular circumstance is, that these animals, as in some higher up the scale, are in the habit of swallowing great stones. An officer in the Colombian navy, who mentions this, tells us, that being somewhat incredulous on the point, he was satisfied of the fact by Bolivar, who, in order to convince him, shot several alligators with his rifle, and in the stomachs of all of them were found stones varying in weight according to the size of the animal. The largest killed was about seventeen feet in length, and had within him a stone weighing from sixty to seventy pounds. Upon their dispositions and habits we cannot greatly dilate.

In relation to the geographical distribution of the *Crocodilidæ*, we may here remark, that they are entirely foreign to Europe, and do not occur in New Holland, but are else-

Sauria.
Crocodili-
dæ.

¹ The peculiar structure of the jaws, and the nature of their movement, among these reptiles, have formed the subject of frequent argument. The fact, or rather the knowledge of it, although controverted by Perrault and Duverney, is as old as the time of Herodotus; and Aristotle asserts that they can move both jaws: κινουμένην καὶ ὑπὲρ καὶ ὑποκάτω. "Enfin, nous réviendrons encore sur la circonstance, tout-à-fait particulière, qui permet à la mâchoire supérieure, ou plutôt à toute la masse supérieure de la tête, de s'élever en bascule, et de se mouvoir ainsi sur la mâchoire inférieure quand celle-ci repose sur le terrain ou sur un plan fixé." (*Erpétologie Générale*, iii. 25.) See also *Annales du Mus.* ii. 33.

Sauria. where extensively spread over various regions of the earth. **Crocodyli-** The caymans are peculiar to America, the crocodiles, properly so called, are common to both worlds, and the gavials have hitherto been found only in Continental India. The following table will show the distribution of the family, and the amount of species, in all the great divisions of our globe :

Sauria.
Crocodyli-
dæ.

	Asia.	Both Asia and Africa.	Africa.	America.	Doubtful.
Cayman.....	0	0	0	5	0
Crocodile.....	2	1	1	2	2
Gavial.....	1	0	0	0	0
Total species ...	3	1	1	7	2=14

GENUS GAVIALIS, Cuv. and Geoff. We begin with the very limited genus GAVIAL, which, so far as known, is confined to the old world, if not to the Asiatic continent. The first description of one of these animals was given by our celebrated countryman Edwards.¹ Count Lacépède introduced the native name Gavial into our systematic works. The most recent researches of Cuvier have scarcely succeeded in determining whether there is more than one living species; there appear, however, to be several fossil, and hence additional interest is excited.

In this genus the snout is slender, and very much prolonged; the teeth are nearly uniform and alike; the fourth of the under jaw, when the mouth is closed, locks not into a foramen in the upper jaw, but into a lateral groove only; the hind feet are denticulated on the outer margin, and palmed to the extremity of the toes; and there is a deep depression behind the eye.

G. longirostris, Cuv.; *Crocodylus longirostris*, Schn.; *Lacerta Gangeticus*, Gmel. *The Great Gavial*. The muzzle of this species is almost cylindrical, and somewhat bent at its extremity; its head is singularly broad, especially towards the back part; the length of its muzzle to that of its body is as one to seven and a half. Its dental formula is $\frac{23}{25} = 106$. Its scales, as in all its congeners, supply excellent specific characters. This animal appears to attain a great size. Baron Cuvier received from Dr Wallich a specimen of an individual captured near Calcutta, which was seventeen feet long; and from a fragment in the Paris museum, it is calculated it must sometimes attain to nearly double that size. Notwithstanding its great bulk, the very slender form of its muzzle renders it much less formidable than the other and more numerous genus (*Crocodylus*), which also frequents the Ganges. It feeds wholly upon fish, and is not regarded as dangerous to man, a fact confirmatory of Elian's observation, that "there are two kinds of crocodiles in the Ganges, the one innocent, the other cruel." Though it has not hitherto been observed in other Asiatic rivers, it may reasonably be supposed to exist elsewhere than in the Ganges.

G. tenuirostris. Though the materials possessed by Baron Cuvier did not enable him to come to a definitive conclusion regarding the existence of the *small gavial*, yet upon the whole he favoured its claims to being something more than the young of the preceding species; the existence of some nearly allied fossil kinds favouring the conclusion. There is no difference in the shape and arrangement of the teeth or scales; and the greater narrowness of the upper and back part of the head, and of the orbital foramina, are the only specific differences supplied. Its average size has not been ascertained. Like the preceding, it frequents the Ganges.

GENUS CROCODYLUS, Cuv. The generic characters of the *true crocodiles* are sufficiently distinct. They do not possess the slender beak of the gavials; the head is oblong,

and not half as broad as it is long; the muzzle is oblong and depressed; the teeth, which are somewhat unequal in their dimensions, are fifteen on each side in the lower jaw, and nineteen in the upper; the fourth, which are the longest, pass into furrows, and are not lodged in distinct foramina of the upper jaw; the hind feet have usually a denticulated crest at their outer margin; and the interval of their toes, at all events the external ones, are palmed. There is a deep hollow behind each eye.

Different species of crocodile are found in the hot regions of Asia, Africa, and America. Many bear a very close resemblance to each other, but about eight seem to be satisfactorily established. These are, the species called *chamsees*, or *temsach*,—the common crocodile of the Nile; the *biporcatus*, or double crested; the *acutus*, *rhombifer*, *galeatus*, and *cataphractus* (Cuv.); to which are to be added the *Gravesii* and *Journei* (of Bory de St Vincent). We begin with that which has been longest, and perhaps is best known, the famous crocodile of the Nile.

C. vulgaris, Cuv.; *Temasch* of the modern Egyptians; *Lacerta crocodilus*, Linn. The length of the head of this species is double that of the breadth; the snout is very ragged and unequal, especially in the old; its eyes are more asunder than in other species. Without entering into minute details of the number and arrangement of the scales on the neck, back, tail, &c. we shall only state, that six rows of nearly equal-sized plates run all along the back, giving it the appearance of mosaic. The colour is a bronzed green, speckled with brown; underneath it is a yellowish-green.

These animals sometimes attain the enormous size of thirty feet; "and if we except," says Lacépède, "the elephant, the hippopotamus, some cetacea, and a few enormous serpents, they have no equal in nature." The female lays her eggs twice or thrice in the year, but only during the hot weather, and deposits them in the sand, where they are hatched by the sun. They amount to about twenty; and are said to be hatched after fifteen or twenty days. They are about twice the size of the goose's egg, and it is stated that the mother takes no charge whatever of them. Indeed we believe that this maternal carelessness is characteristic of the reptile race.

This species is frequently designated the crocodile of the Nile, a name far from happy,—because other species may inhabit its waters, and the one in question may be more common elsewhere. There seems, indeed, to be no doubt that this same animal abounds in the Senegal and other rivers of Western Africa; probably even in all the rivers of that continent, and certainly in those of Madagascar. Formerly it used to frequent the Nile as far down as the Delta, but now we must ascend to its less frequented portions before it is encountered. It was probably in reference to an individual of this species that Mungo Park relates the fact, that one of his guides across the river Gambia was suddenly seized by a crocodile and pulled under water. The negroes, however, are so familiar with these creatures, and so skilful in meeting their attacks, that they generally escape. On this occasion the negro thrust his fingers in the crocodile's eyes with so much violence that it quitted its hold; but seizing him again, he resorted to the same expedient, and with more success, as it again released him, appeared stupified, and swam down the river. Although its flesh has a strong musky smell, yet the inhabitants of the districts wherein it abounds frequently attach a high value to it, as, according to the testimony of Herodotus, did also some of the ancient Egyptians. A common method employed by the Africans for destroying the crocodile is to thrust the arm, well defended with ox-hides, down its throat, and then to plunge a dagger into its vitals. The European

¹ Phil. Trans. 1756.

Sauria.
Crocodili-
dæ.

traveller will probably prefer avoiding such a close encounter.

Although we have hitherto treated of the common crocodile as one and distinct, yet it seems beyond doubt, that in the wide habitat assigned to it, many *varieties* at least exist. Cuvier remarks, that from the Senegal to the Ganges, and even beyond it, there are crocodiles very like the common one, which have the muzzle somewhat longer or narrower, and have slight differences in the scales of their neck and back, but which it is very difficult to distribute into distinct species. He himself was not able to establish any; nor could he with satisfaction adopt the four proposed by his eminent colleague M. Geoffroy, viz. *C. suchus*, *marginatus*, *lacunosus*, and *complanatus*.¹ Of these, by far the most famous is the *suchus*, which the last-named naturalist considers identical with the *sacred crocodile* of the ancient Egyptians. His theory is, that there existed a species of a small size, having a narrow snout, and a disposition which was wholly gentle and inoffensive, which affected the margin of the river, and was thus the precursor of its inundations; and that it was to this species that the Egyptians rendered divine honours. The opposing view, advocated by Cuvier, is that the favoured crocodile did not belong to any one species or variety more than another, and, far from being less, was even more ferocious; but that it was the custom of the priesthood to entertain, not a host of crocodiles, but only one, or a few, of any given variety, under the name of *souchis*, as the idol of a divinity who was represented by a crocodile's head; and that it was to this individual especially that divine honours were paid, in the same way as *apis* was the name of the sacred ox at Memphis, and *mnevis* at Heliopolis. This favoured animal was always nourished and adorned with extreme splendour, and after its death was buried in the subterranean cells of the Labyrinth; whilst throughout the district where these honours were paid, the whole race of crocodiles were respected and preserved. Cuvier assigns the following among other reasons for the accuracy of his views, which we think conclusive: *First*, the crania of the buried and embalmed crocodiles do not belong to any one variety, but to all of them; and, *2dly*, there is the strongest historical proof that the crocodiles in those districts where they were worshipped, far from being less savage, were even more so than in others, because from their impunity they became more bold. Thus Ælian reports, that in the district of Tyntyrites, where they unsparingly destroyed the crocodiles, the inhabitants could bathe and swim in the river securely, whilst at Arsinoë they could not safely walk, far less draw water from the river's banks. The evidence that individuals, when taken young, may be completely tamed, is equally satisfactory. Thus Bruce relates, that on the western shores of Africa, the negroes bring up crocodiles, which become so gentle as to let children play with them and ride upon their backs; a fact which satisfactorily corroborates the accounts of those religious processions, &c. in which the sacred crocodile performed so essential and conspicuous a part.

C. biporcatus, Cuv. Dum; *C. porosus*, Schn. *Double crested crocodile*. This species is the common crocodile of India and its archipelago, frequenting the Ganges and other great rivers which empty themselves into the ocean, as also those of Corea and China, Ceylon, Java, Timor, &c. It has a strong resemblance to the Egyptian species; but the cervical scales are differently arranged, and the dorsal are smaller, more numerous, and differently shaped. (See Plate I., fig. 6.) The appearance of the pores between the scales is

much more conspicuous than in the other species, and grows with their growth. Its colour is brownish, with black bands on the back, and spots on the side. In the Paris museum there is one seventeen feet long, from the Ganges. In the account of Macassar, or Celebes, we read, that in the great river of that island, there are crocodiles so ferocious that they do not confine themselves to making war on fish, but assemble in troops to watch the boats, and endeavour to overturn them, that they may devour those who are in them. It is the opinion in Java that these animals do not devour their prey on capturing it; but bury it for a time in the mud, that it may decay. This remark is so generally made of other species in different parts of the world, that it would appear to be a prevailing habit among them.

C. acutus, Cuv. Dum. *The slender-snouted crocodile*, or *crocodile of St Domingo*. This slender-snouted crocodile is extremely common in the island of St Domingo, as well as in Martinique, and the northern parts of South America. Its most remarkable specific characters are the length of the muzzle, which is bulged at its base; and the scales of the back are differently disposed from those of the preceding. The upper part of the body is of a deep green colour, spotted and marbled with black; the under part is pale green. Dr Descourtils states that this animal is more flexible than is usually supposed, for it can introduce the extremity of its tail into its mouth. On the same respectable authority we learn that the males are not so numerous as the females; that they fight furiously at the season of reproduction; that the males are fit for generation at the age of ten, and the females at that of eight or nine, their fecundity not lasting more than four or five years,—a statement which may well be questioned. The eggs are deposited in spring, and hatched in a month. On issuing, the young are only nine or ten inches long; their growth continues for about twenty years, and some are as long as sixteen feet. At the time of the escape of the young, the female comes to scrape away the earth and let them out. She conducts, defends, and feeds them, by disgorging her own food for about three months, a space of time during which the male would seek to devour them.

C. rhombifer, Cuv. Dum. *Lozenge-scaled crocodile*. The habitat of this species has been ascertained only of late years. It occurs in the island of Cuba, and probably inhabits the other Antilles. Its specific characters are well marked. Its chanfrin is extremely prominent, forming a semicircle, whilst in the common crocodile it is only a gentle elevation; and the extremities are clad with much stronger and more projecting scales than in the other species. Its ground colour is green, bespeckled with small and very distinct brown spots.

C. galeatus, Cuv. Dum. *Helmeted crocodile*. The helmeted crocodile has been hitherto found only in Siam, and is remarkable for two bony triangular crests implanted, the one behind, the other on the middle line of the head. It has been taken ten feet long. *C. biscutatus* is now regarded as an anomalous variety of *C. acutus*. *C. cataphractus*, the *cuirassed crocodile*, may be witnessed in the museum of the London Royal College of Surgeons, and it is very different, according to Cuvier, from all the others described. The source from whence it was obtained is unknown.² Its muzzle is longer and narrower than that of the St Domingo crocodile, whose peculiar chanfrin it wants. It is most easily distinguished by the armour on its neck; there are first two oval plates, then a row of four, then scaly bands common to the neck and back, which together form a cuirass as strong as that of any of the gavials or alligators.

Sauria.
Crocodili-
dæ.

¹ These seem all to be now regarded as varieties of the common Egyptian crocodile,—*C. vulgaris*, Cuv. and Dum. See *Erpétologie Générale*, iii. 104.

² A specimen of a young individual was presented to the Paris museum as having been obtained from "le grand Galbac, rivière qui coule près de Sierra de Léone."

Sauria. Crocodilidæ. There still remain two other true crocodiles, described by M. Graves,¹ and which he regards as new; the *C. Gravesii* and *Journei* of Bory de St Vincent. Both of them are in the Bordeaux museum. The habitat of the former is believed to be the Congo, and of the latter America. All the bones of the *Gravesii* are as if pierced with small holes, a character they possess in common with some of the alligators. Its head is of the shape of a slender isosceles triangle; the extremity of the snout is rounded, and its surface covered with great obtuse tubercles, having no regular arrangement. The ninth, tenth, and eleventh teeth of the lower jaw are received into a furrow, as well as the fourth. The colour of the upper part is a dark deep brown, that of the lower a dull yellow. The snout of the *Journei* is very slender, approaching to that of the gavials; it is convex as well as long, and near its extremity is almost cylindrical. The back of this species is of a deep yellowish green; the flanks are yellowish, and the belly yellow.

GENUS ALLIGATOR, Cuv. The alligators are by far the most common representatives of this group in the new world; although, as we have already seen, there are true crocodiles in St Domingo, and probably in many other localities. In most parts of America they are known by the title of cayman, a name apparently of African origin, and applied by the negroes, not to the alligators only, but indifferently to every species of the group. It does not seem to be yet ascertained whether any true caymans are found in the old world. Adanson thought he discovered one in the Senegal; M. de Beauvais states that he saw one in Guinea; and Cuvier thinks it most probable that they have their representatives in our hemisphere. They possess all the power and ferocity of the true crocodiles, and in many places are found in astonishing numbers.

The head of the alligator is not so oblong as that of the true crocodile; the snout is broad and obtuse; the teeth are somewhat unequal, the number ranging from nineteen to twenty-two on each side of each jaw; the fourth of the under jaw is received, not into a lateral furrow of the upper one, but into a distinct foramen. Their feet are only semipalmated, and are not denticulated.

A. lucius, Cuv.; *Croc. Cuvieri*, Leach. *Pike-muzzled alligator*. This is peculiarly the alligator of the southern parts of North America, including Carolina, the Floridas, and Louisiana. In the Mississippi it ascends as far as the thirty-second degree north, a higher latitude than any species reaches in the old world. In these countries they frequent the muddy banks, and quite bury themselves in the cold season, falling into a lethargic state before the setting in of the frost.² This sleep is so profound that they may be almost cut to pieces without manifesting any sign of life; when the warm weather returns, they are soon roused into activity. According to Bosc, their eggs are white, and not larger than those of the turkey. They are good eating, and are prized by the natives, though they partake of the musky smell of the animal. As soon as they escape, the young betake themselves to the water; but the vast majority become the prey of turtles, fish, and amphibious animals, not excluding the older of their own species. During the first year they feed upon insects and very young fish. Bosc states that he preserved a brood of fifteen. They ate only living insects; and never captured them except when moving, upon which they darted at them with great velocity. They appeared quite gentle when he took them in his hand. At the end of the first year they are still very feeble creatures; during the second they acquire their formidable teeth. The duration of their existence is not precisely ascertained, but is supposed to equal

that of man. They never cast their skin; and on acquiring their full size, few animals can injure them. They can fast long. They live on frogs, fish, aquatic birds, on dogs, hogs, cattle, and any animal they can catch; when these go to the river to drink, they seize them by the muzzle or leg, and draw them into the water to drown them. "I used often," adds the traveller last named, "to amuse myself, bringing them from their retreats by making my dog bark. Sometimes I used to advance and strike them with my stick, at which they were little disturbed. They never thought of attacking me, and deliberately retired when they found their hunting promised no success." Though slow on land, they swim with great velocity. In Carolina they make deep burrows, where they pass the whole winter, and even the entire day in summer. Though usually met with on the edges of rivers and lakes, they are sometimes also found in ponds in woods. Bosc often attempted to take them with every kind of strong snare; but these were invariably broken to pieces. They are commonly taken with a strong hook baited with a bird or small quadruped, and connected by a chain to a tree. The Indians eat the tail only. At the time of reproduction they fight furiously with each other, and bellow as loud as bulls. They avoid the salt water and proximity to the sea, because they are there exposed to the attacks of sharks and the great turtle. In very warm districts in the Floridas, the rivers are sometimes quite crowded with them, so that they almost interrupt the navigation.

The specific characters of the pike-headed alligator are a flat snout, the sides of which are nearly parallel, uniting in front in a regular curve. There are eighteen transverse rows of scales on the back. The colour above is a deep greenish brown, beneath white tinged with green, and the flanks are regularly striated with the two colours. Catesby has seen them fourteen feet long. Its hide, except at particular spots, resists a musket ball; it is most vulnerable at the inferior part of the belly, and round the eye.

The great alligator of North America certainly forms one of the most remarkable features in the zoology of the United States. Whatever may be said of the African or South American species, this huge reptile is usually neither shy nor dangerous. Its ordinary motion on land is slow and sluggish, a kind of laboured crawling, which leaves the track of a lengthened trail upon the mud, like the keel of a small vessel. When met with at any distance from the water, it immediately squats, that is, lies as flat as it can, with its nose upon the ground, and staring around with rolling eyes. "Should a man approach them," says that accurate and admirable describer Audubon, "they do not attempt either to make away or attack, but merely raise their body from the ground for an instant, swelling themselves, and issuing a dull blowing sound, not unlike that of a blacksmith's bellows. Not the least danger need be apprehended; you either kill them with ease, or leave them." As if conscious of their incapacity of self-defence, they seldom travel except during the night, being then less subject to disturbance, besides "having a better chance to surprise a litter of pigs, or of land-tortoises, for prey." "In Louisiana," Mr Audubon observes, "all our lagoons, bayous, creeks, ponds, lakes, and rivers, are well stocked with them; they are found wherever there is a sufficient quantity of water to hide them, or to furnish them with food; and they continue thus in great numbers as high as the mouth of the Arkansas river, extending east to North Carolina, and as far west as I have penetrated. On the Red River, before it was navigated by steam-vessels, they were so extremely abundant, that to see hundreds at a sight along the shores, or on the immense rafts of floating or stranded timber, was

¹ Ann. Gén. des Scien. Physiques, t. ii. p. 243.

² An individual, however, was observed by Messrs Dunbar and Hunter in latitude 32½° north, in the month of December, while the weather was very cold.

Sauria.
Crocodili-
dæ.

quite a common occurrence, the smaller on the backs of the larger, groaning, and uttering their bellowing noise, like thousands of irritated bulls about to meet in fight;¹ but all so careless of man, that unless shot at or positively disturbed, they remained motionless, suffering boats or canoes to pass within a few yards of them without noticing them in the least. The shores are yet trampled by them in such a manner that their large tracks are seen as plentiful as those of sheep in a fold." It was in the Red River, it seems, that so many thousands of these reptiles were killed, while a mania prevailed for wearing boots and shoes made of *crocodile leather*. This had fairly become an article of trade, many of the squatters following for a time no other business. But this leather, though handsome and pliant, exhibiting all the regular lozenges of the scales, and capable of receiving the highest polish, is not sufficiently firm or close-grained to prevent for any length of time the ingress of damp or moisture.

The power of this alligator lies chiefly in his jaws and tail. The latter is admirably adapted to serve as an ally to the former, because when curved into a semicircle it sweeps everything towards the enormous mouth. "Woe be to him who goes within the reach of this tremendous instrument; for, no matter how strong or muscular, if human, he must suffer greatly if he escapes with life. The monster, as he strikes, forces all objects within the circle towards his jaws, which, as the tail makes a motion, are open to their full stretch, thrown a little sidewise to receive the object, and, like battering-rams, to bruise it shockingly in a moment. The alligator, when searching after prey in the water, or at its edge, swims so slowly towards it as not to ruffle the water. It approaches the object sidewise, body and head all concealed, till sure of his stroke; then, with a tremendous blow, as quick as thought, the object is secured." When these giant reptiles are engaged in fishing, the flapping of their tails upon the water may be heard at half a mile. In the vicinity of Bayou Creek, on the Mississippi, there are extensive shallow lakes and marshes, yearly overflowed by the dreadful flooding of that mighty river, and stored with myriads of fish of many different kinds—trouts, white perch, cat-fish, alligatorgars or devil-fish. Thither, in the heats of early autumn, after a burning summer sun has exhaled a quantity of water, the squatter, planter, hunter, all proceed in search of sport. The lakes are then not more than two feet deep, with a fine sandy bottom, and much grassy vegetation bearing seeds, keenly sought for by vast multitudes of water-fowl. In each lake is a deeper spot, called the Alligator Hole, because dug and dwelt in by these reptiles. There they may be seen in numbers lying close together. "The fish that are already dying by thousands, through the insufferable heat and stench of the water, and the wounds of the different winged enemies constantly in pursuit of them, resort to the alligator's hole to receive refreshment, with a hope of finding security also, and follow down the little currents flowing through the connecting sluices; but no! for as the water recedes in the lake, they are here confined. The alligators thrash them and devour them whenever they feel hungry; while the wood-ibis destroys all that make towards the shore. The hunter, anxious to prove the value of his rifle, marks one of the eyes of the largest alligator, and as the hair-trigger is touched, the alligator dies. Should the ball strike one inch astray from

the eye, the animal flounces, rolls over and over, beating furiously with his tail around him, frightening all his companions, who sink immediately; while the fishes, like blades of burnished metal, leap in all directions out of the water, so terrified are they at this uproar. Another and another receives the shot in the eye, and expires; yet those that do not feel the fatal bullet pay no attention to the death of their companions till the hunter approaches very close, when they hide themselves for a few moments by sinking backwards." So disinclined are they to attack the human race, that Mr Audubon and his companions have waded waist-deep among hundreds of them. The cattle-drivers may be often seen beating them away with sticks before crossing with their beasts, for they will readily attack cattle, and swim after such animals as dogs, deer, and even horses.

As soon as the cool autumnal air gives warning of the approach of frosty weather, alligators leave the lakes to seek for winter quarters, by burrowing beneath the roots of trees, or covering themselves with earth. They speedily become inactive; and to sit and ride on one, according to Mr Audubon, who never rows in the same boat with Squire Waterton, would now be no more difficult than for a child to mount a rocking horse. The negroes kill them by separating, at a single blow, the tail from the body. They are afterwards cut into large pieces, and boiled in a good quantity of water, from the surface of which the fat is collected in large ladles. A single man often kills above a dozen alligators in an evening, prepares his fire in the woods, and, by morning, the oil is rendered. This oil is used for greasing the machinery of steam-engines and cotton-mills; and formerly, when Indigo was made in Louisiana, it served (we know not how) to assuage the overflowing of the boiling juice, when a ladleful was thrown into the caldron. We would have deemed the remedy more dangerous than the disease. These reptiles emit a strong odour, and a large one may be discovered by it at a distance of sixty yards. The smell is musky, and, when strong, is insupportable. It is not, however, perceptible when they are in the water, "although I have," says Mr Audubon, "been so close to them while fishing, as to throw the cork of my line upon their heads to tease them." He adds, that he has regularly found in their interior round masses of a hard substance resembling petrified wood. He has broken these with a hammer, and found them brittle, and as hard as stones, which they outwardly resemble. "And as neither our lakes nor rivers in the portion of the country I have hunted them in, afford even a pebble as large as a common egg, I have not been able to conceive how they are procured by the animals if positively stones, or (if not) by what power wood can become stone in their stomachs." They are probably concretions formed of indigestible animal substances, or may themselves assist digestion.² Mr Audubon has often amused himself, when fishing where alligators abounded, by throwing an inflated bladder towards the one next him in the water. It makes for it at once, flapping it towards its mouth, and trying to seize it, but in vain. The light inflation floats aside, and in a few minutes many more of these huge creatures are seen attempting to master the delusive bladder, "putting one in mind of a crowd of boys running after a foot-ball." A black bottle is also sometimes thrown among them, tightly corked; but some one, more active than the rest, will seize it greedily, and the crunched

Sauria.
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¹ The majority of authors who have written of crocodiles from personal observation, agree regarding the frequent cries of the younger individuals, but seem to consider the older ones as seldom giving utterance to their feelings in that way. "Au contraire," says Humboldt, "le rugissement du crocodile adulte doit être très rare, car ayant vécu pendant plusieurs années ou en couchant à l'air libre sur les bords de l'Orénoque, nous avons été presque toutes les nuits entourés des crocodiles, nous n'avons jamais entendu la voix de ces sauriens à taille gigantesque." (*Recueil d'Observ. de Zoologie*, tom. i.)

² "Une particularité notable, mais qui paraît assez constante chez les crocodiles, puisque tous les auteurs qui en ont fait l'anatomie en ont fait mention, c'est qu'on trouve dans leur estomac des cailloux de différentes grosseurs, qui semblent devoir servir à la trituration des alimens, comme les petits pierres qui se rencontrent dans le gésier ou l'estomac musculieux des oiseaux." (*Erpétologie Générale*, iii. 27.)

Sauria. glass gives way within its ponderous jaws as easily as if
Crocodili- ground in a coarse mill.
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During the season of love, in spring, the male alligator is a fierce and dangerous animal, and possibly its observation by different naturalists, at different seasons of the year, may account for the contradictions which pervade the recorded statements of its life and manners. When thus excited, no man dares to swim or wade among them, or, as Mr Audubon quietly observes, "they are usually left alone at this season," a delicate piece of attention, which, we doubt not, like other virtues, is its own reward. The female prepares her nest about the first of June, choosing a place about forty or fifty yards from the water, in some thick bramble or cane, where she gathers leaves, sticks, and rubbish of all kinds, carrying the materials in her mouth as a hog does straw. As soon as a proper nidus is formed, she lays about ten eggs, which she covers over with more rubbish and mud; and proceeding in this manner, she deposits about fifty or sixty eggs in various layers. The whole is then covered up, matted, and tangled together with long grasses, in such a manner that it is extremely difficult to break it up. These eggs are in size like those of a goose, but of a longer form, and are protected rather by a parchment-like transparent substance than by shell. Though they are not eaten either by hogs or vultures, the female, now not only wary, but ferocious, watches near the spot, visiting the water from time to time for food. The nest is of course easily discovered, as she always goes and returns the same way, and soon forms a conspicuous path by the dragging of her giant form. According to Mr Audubon, to whom we stand indebted for these details, it is not the heat of the sun which hatches the eggs, but that of the nest itself,—a perfect hot-bed, from the mode of its formation. The young, as soon as excluded, force their way through the walls of their putrescent chambers, and issue forth all as beautiful and brisk as lizards. The female then leads them to the lake, or more frequently, for greater security, to some small detached bayou; for now the males, their own ungentle fathers, will swallow them by hundreds, and the wood-ibis and sand-hill cranes devour them.¹

A. sclerops, Cuv.; *Croc. sclerops*, Schn. *Spectacled alligator*. This is more especially the alligator of Guiana and Brazil. Its snout, though broad, has not the sides parallel, as in the preceding, and is more triangular in its shape. The lower edge of the orbits are very prominent, and a crest projecting between them gives the appearance whence their specific name is derived. Its colour is bluish-green above, and irregularly marbled green and yellow, more or less pale, below. Azara speaks of a red variety, which is the most savage of all. It acquires a great size. Cuvier has seen it fourteen feet long; and in Surinam some have attained the length of twenty and twenty-four feet. In South America it extends as far as 32° south latitude, the same distance from the equator on the one side, as the preceding species reaches on the other. It cannot run half so swiftly as man, and rarely attacks him; but when the eggs are plundered, the female defends them courageously. She lays, according to some, as many as sixty, and covers them with a few leaves or a little straw. It passes the night in water, as Herodotus states of the crocodile of the Nile, and during the day basks in the sun on the banks. It has been stated, that in certain places, when the morass is partially dried, the remaining water is so crowded with caymans that nothing is to be seen but their projecting backs.

It was probably over this species (the *Yacare* of Azara, *Jacare noir* of Spix) that Mr Waterton obtained his famed and well-known conquest; and of it also that he relates the following anecdote. "One fine evening last year,

as the people of Angustura, said its governor, were sauntering up and down here on the bank of the Oronoco, I was within twenty yards of this place, when I saw a large cayman rush out of the river, seize a man, and carry him down, before any body had it in his power to assist him. The screams of the poor fellow were terrible as the cayman was running off with him. He plunged into the river with his prey; we instantly lost sight of him, and never saw or heard him more." The negroes of South America sometimes eat the flesh, notwithstanding its fetid and musky smell. Azara tells us that they succeed in sticking it with an armed harpoon, and after fatiguing it in the water, pull it out by main force and despatch it.

A. palpebrosus, Cuv. *Bony eyelid alligator*. The muzzle in this species is somewhat longer and less depressed than in the preceding, and the margins of the orbits are not projecting. The character, however, which at once distinguishes it from all the other Crocodilidæ is, that the upper eyelid is wholly occupied with an osseous plate, divided into three pieces by sutures. None of its congeners have more than a small osseous particle near the inner angle. Its teeth are $\frac{1}{2}$ on each side of each jaw. The interval between the two external toes is less palmated than in the other species, from which it may be concluded to be more terrestrial. This animal inhabits Cayenne, and exhibits considerable variation in its characters.

In addition to these clearly distinct species, naturalists now recognise the two following, viz. the dog-headed cayman, *Al. cynocephalus*, Dum. and Bib., and the black spotted cayman, *Al. punctulatus*, Spix.²

FAMILY II.—LACERTINIDÆ. LIZARDS IN GENERAL.

The members of this family are characterised by a slender extensile tongue, terminated by two filaments, like that of many snakes. All the four legs have five toes, separate, of unequal size, especially the hinder ones, and furnished with nails. The scales on the abdomen, and those beneath the tail, are disposed in transverse parallel bands. A produced portion of the skin, longitudinally cleft, and closing by a sphincter, protects the eye, beneath the anterior angle of which there is the vestige of a third eyelid. The false ribs do not form an entire circle.

The species of this family are numerous and diversified, and now constitute several generic groups. Like all other reptiles, they are much more abundant in sultry than in cold or temperate climates. "I am positive," says Mr Bruce, alluding to the lizard tribe in general, "that I can say without exaggeration, that the number I saw one day, in the great court of the temple of the sun at Balbec, amounted to many thousands; the ground, the walls, and stones of the ruined buildings were covered with them, and the various colours of which they consisted made a very extraordinary appearance, glittering under the sun, in which they lay sleeping and basking." He adds, that the desert parts of Syria, bordering on Arabia Deserta, abound with these reptiles beyond the possibility of calculation.

The genus *MONITOR* of Cuvier contains the largest species, some of them almost approaching to the size of crocodiles. They have teeth on both jaws, but none upon the palate. The greater number have the tail compressed, which aids their aquatic propensities. Their vicinity to water brings them into the frequent neighbourhood of crocodiles and caymans, and they are said to give warning of the approach of these formidable reptiles by a shrill whistle. Hence probably their name of monitor. That of *Tupinam-*

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¹ See "Observations on the Natural History of the Alligator," by John J. Audubon, Esq. in *Edinburgh New Philosophical Journal*, ii. 270.

² *Erpétologie Générale*, iii. 86-91.

Sauria.
Lacertini-
dæ.

bis, which they often bear, was bestowed upon them by an error of Seba's, who, misconstruing a passage in Margrave, applied to these reptiles the designation of a tribe of people.

The first subdivision of the genus contains the MONITORS properly so called (genus *VARANUS*, Dum.),¹ distinguished by small and numerous scales on the head, limbs, beneath the abdomen, and around the tail, the last-named portion being surmounted by a kind of keel formed by a double range of projecting scales. The thighs want the peculiar range of pores observable among several other groups of saurians. The species are confined exclusively to the ancient world, although Seba, and in later years Daudin, have stated the contrary. Travellers report that they prey on the eggs of water-fowl and on those of crocodiles, and that chameleons, young turtles, and fishes, have been found in their stomachs. M. Leschenault de Latour even states that they combine together on the banks of lakes and rivers for the purpose of attacking such quadrupeds as come to assuage their thirst, and that he has seen them attempt to drown a young stag which was trying to cross a river. He moreover found the thigh-bone of a sheep in one which he dissected.

The monitor of the Nile (*L. Nilotica*, Linn. *Varanus Niloticus*, Dum.), called *Ouaran* by the Arabs, has the teeth strong and conical, the posterior becoming rounded by age. The general colour is brown, with paler and darker points, forming various compartments, among which are transverse rows of large ocellated spots, which on the tail become ring-like. The tail is rounded at the base, and surmounted by a keel throughout its whole length. This species grows to the length of five or six feet. A vulgar belief prevails among the Egyptians, that it is a young crocodile hatched in drier earth than usual. Its figure is engraved on the ancient monuments of Egypt, probably in connection with the fact of its preying on the eggs of the crocodile. To the monitors also belong the animal called scink (*L. scincus*, Merr., but not of Linn., *Var. arenarius*, Dum.), a small species, very abundant in Libya, Syria, Egypt, and Arabia, where it frequents rather dry and sandy soils. It is called *Ouaran el hard* by the Arabs. Its teeth are compressed, cutting, and pointed, the tail almost without ridge, and a great part of it rounded. Its habits are more terrestrial than those of the preceding, and it may be regarded as identical with the land-crocodile of Herodotus. The jugglers of Cairo pluck out its teeth, and then employ it in the performance of tricks. Many other monitors are found both in Africa and India.²

The second subdivision of Baron Cuvier's monitors consists of such as have angular plates upon the head, and large rectangular scales beneath the abdomen and around the tail. The skin of the throat is clothed with small scales, and forms a couple of transverse folds. There is a row of pores upon the thighs.

This subdivision corresponds to the genus *TEYUS* of Merrem, and several minor groups may be indicated in it. For example, those called *Dracænæ* by Lacépède have the scales raised up into ridges, as among the crocodile tribe, and forming crests along the tail, which is compressed. An eatable species (*Mon. crocodilinus*, Merr.) occurs in Guiana, where it inhabits holes in the vicinity of marshes. It is said to swim with difficulty, to run rather swiftly, to climb trees with facility, and to bite severely. It attains the length of six feet, and is characterized by some scattered ridges of scales upon the back. Another and much smaller species (*Drac. bicarinata*) likewise inhabits South America. (See Plate II., fig 1.) The little group of safe-

guards (*Sauvegardes*, Cuv. the restricted genus *Monitor* of Fitzinger) have all the scales of the back and tail without ridges. Their teeth are dentated, although those of the back part of the mouth become rounded by use or age. Some have the tail more or less compressed, and the scales of the abdomen longer than broad. They dwell by the banks of rivers. Such is the very large variegated lizard (*L. tequixin*), well represented by Madame Merian at the end of her work on the insects of Surinam. It inhabits Brazil, Guiana, &c. where it attains the length of six feet. It runs rapidly, and plunges into the water when pursued, although it can scarcely be said to swim. It feeds on insects, reptiles, the eggs of poultry and of other birds, and is itself useful as an article of food. Others, distinguished by the name of *Ameiva*, scarcely differ from the preceding sections of the genus *TEYUS*, except in the tail being rounded, and no way compressed, and furnished, as well as the abdomen, with transverse rows of square scales. The scales of the abdomen are rather broader than long. The species of this little group may be regarded as the lizards of America, that is, as representing in the new world the reptiles which we so designate in the old; but they differ in wanting the molar teeth, the majority have no collar, and all the scales upon the throat are small. Their heads also are more pyramidal, and they want the osseous plate above the orbits. Several different species have been confounded under the title of *Lacerta ameiva*. The most generally distributed is that named *Teyus ameiva* by Spix. (See Plate II., fig. 2.) It is of a green colour, with vertical rows of white ocelli, bordered with black upon the flanks.

The genus *LACERTA*, Cuv., or lizards properly so called, forms the second principal group of the Lacertine family. They have the back part of the palate armed with two rows of teeth, and are further distinguished from the Ameivas and Safeguards by a collar beneath the neck, formed by a transverse row of broad scales, separated from those of the abdomen by a space, on which there are only minute scales, as on the throat. A portion also of the bones of the cranium projects over the orbits and temples, so that all the upper part of the head is provided with a bony buckler.

Lizards are remarkable for their lively movements, and light and elegant forms. Their colours are also often brilliant. They pass the winter in a state of torpidity, and are always active and vivacious in proportion to the power of the solar heat. They are often seen stretching themselves on rocks or stones, however heated, and brandishing from time to time their forked tongues, a motion which in some countries has induced the belief of their being venomous, an unfounded idea, we need scarcely say, no creatures being more innocent. They are by no means difficult to tame, but in a state of nature we have usually found them very timorous, although M. Bory St Vincent regards them as being as bold as they are beautiful. "Nous en avons vu plusieurs saisir bravement au museau des chiens d'arrêt qui les avaient surpris dans quelque pelouse sèche, et ne pas lâcher prise malgré les secousses violentes et les efforts que faisaient ces chiens pour se délivrer." They are by no means devoid of intelligence, and, though shy and fearful, are decidedly inquisitive in regard to what takes place around them. When raising themselves as high as their little limbs permit, in order to enlarge their "visible diurnal sphere," they often exhibit themselves to a quiet and concealed spectator in attitudes of great beauty. They frequently show themselves more alarmed for birds and quadrupeds than for the human race, and they will even acquire a certain degree of tameness when domiciled near

Sauria.
Lacertini-
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¹ The term *Monitor* is somewhat injudiciously applied to this restricted group, in as far as it does not contain the species originally so named, that is, the *grande sauvegarde d'Amerique*.—*Lacerta tequixin* of Linn. and Shaw.

² The genera *Varanus* and *Heloderma* form a distinct family (*Varaniens*) in the system of MM. Duméril and Bibron. Of the former genus, four are Asiatic, two are from New Holland, one is from the Papous, one from Timor, and three are of African origin. *Heloderma horridum* (the sole species) is the only American member of the family.

Sauria.
Lacertini-
dæ.

the dwelling of a gently-disposed lover of nature. They fear cats and children. Lizards change their skins, like most other reptiles, and the difference between the brightness and brilliancy of their old and new attire has caused the description by naturalists of many species which have no foundation in reality. Although belonging to the cold-blooded classes, they are warmly attached to their females, and frequent battles take place among the males for the possession of their fair companions. The eggs are covered by a pale-coloured membranous skin, and are hatched by the heat of the sun, whether in the body of the basking parent, or after exclusion. The eggs themselves increase in size considerably, as the creature contained within develops its parts. The reptiles of this group are never voluntarily found in water. They dislike that element, and avoid it, being bad swimmers; nevertheless, when pursued down steepish banks, we have seen them swim across small ditches to gain the other side and avoid persecution. One of the most singular attributes of these creatures consists in their extreme fragility. When running up a bank, or otherwise attempting to escape from danger, if even a light glove or handkerchief is cast upon them, several inches of the terminal portion of their body comes riggling off, and will twist about among the grass for a considerable period with great liveliness, while the body with its head and four legs proceeds upon its way rejoicing. The tail even appears to rest itself from riggling for a time, and if touched with a pin, or otherwise incommoded, will then resume its movements with such an apparent character of discomposure, as if it were expressing its dislike at the annoyance.

Although several anatomists, proceeding upon their too exclusive knowledge of the higher classes of creation, in which there is no reproduction of important parts, have doubted the extent and universality of this inherent power in reptiles, there is yet no fact in natural history more satisfactorily determined. When we refer to the satisfaction of the subject, we allude chiefly to the feelings of the experimenter, those of the creatures in question being, we fear, in such a crisis, but sparingly consulted. In numerous reptiles, the limbs, and a great portion of the posterior part of the body, may be cut off without more than a temporary inconvenience, the removal being not only speedy, but complete. Blumenbach, one of our highest modern authorities, has repeated¹ the experiment alluded to by Pliny.² He destroyed with an iron point the eyes of the green lizard, and placing the poor creature in a vessel with some fresh earth, which he deposited in moist soil, he found, after the lapse of a brief period, that the organs of sight were entirely reproduced,—“in integrum restitutos.” Lizards and reptiles of the genus *Scincus*, of which the tail has been either intentionally or accidentally broken off, are found to reproduce it speedily. The newer portion is recognisable externally by the form and colour of the scales, and on dissection the vertebræ are found replaced by pieces of a more cartilaginous nature, which probably never acquire the hardness or consistency of bone. Many experiments have shown the facility with which the limbs and tail of water-newts, and other aquatic reptiles, may be reproduced.³ “Qu’il nous soit permis,” says M. Duméril, rather winningly, “de consigner ici une de nos expériences : nous avons emporté avec les ciseaux les trois quarts de la tête d’un triton marbré. Cet animal, placé isolément au fond d’un large bocal de crystal, où nous avions soin de conserver de l’eau fraîche à la hauteur d’un demi-pouce, en

prenant la précaution de la renouveler au moins une fois chaque jour, a continué de vivre et d’agir lentement. C’é-
tait un cas bien curieux pour la physiologie ; car ce triton privé de quatre sens principaux, les narines, la langue, les yeux, et les oreilles, c’était réduit à ne vivre extérieurement que par le toucher. Cependant il avait la conscience de son existence ; il marchait lentement et avec précaution ; de temps à autre, et à des grands intervalles, il portait le moignon de son cou vers la surface de l’eau, et dans les premiers jours on le voyait faire des efforts pour respirer. Nous avons vu, pendant au moins trois mois, se faire un travail de reproduction et de cicatrisation telle qu’il n’est resté aucune ouverture ni pour les poumons ni pour les aliments. Par malheur, cet animal a péri au bout des trois premiers mois d’observations suivies, peut-être par le défaut de soins d’une personne à laquelle nous l’avions recommandé pendant une absence. Mais on a conservé le sujet dans les collections du muséum, et quand nous en parlons dans nos cours, nous le faisons voir à nu pour qu’on puisse constater la singularité du fait d’un animal qui a vécu sans tête, et surtout pour démontrer la possibilité et la nécessité, même chez les Batraciens, d’une sorte de respiration par la peau.”⁴

We may observe, that in all the tentative experiments which have been hitherto made upon this subject, it has been perceived that these renewals are favoured by warmth and retarded by cold. As an article of diet, lizards are scarcely ever used in Europe, unless in years of peculiar scarcity. Their flesh is said to possess a sudorific quality.

The species of this genus are numerous in many continental countries (from fifteen to twenty different European kinds being known to naturalists), but are few in Britain. Of the former, one of the most beautiful is the ocellated lizard (*L. ocellata*, Daudin), well known in Spain, Italy, and the south of France. It likewise occurs in Barbary, and, generally speaking, over a great portion of the basin of the Mediterranean; but being extremely sensible to cold, it is not likely to extend into Kamtschatka, as some suppose. It may be kept alive within doors in Spain throughout the winter (it naturally then assumes the torpid state), but will perish if dug up from its retreat, and exposed to cold approaching to the freezing point. This magnificent reptile sometimes attains the length, even in Europe, of two feet, although its more usual length is from twelve to fifteen inches. Its proportions are rather ample, that is, somewhat thicker than usual, yet it is by no means devoid of elegance; and although it can scarcely be said to be ornamented with those tints of azure, green, and gold, which Lacépède has lavished on it, with more of poetical fancy than precision, it yet is pleasingly adorned. The back is black, beset with numerous circles of green or yellow distributed in great profusion, and showing like pearly beads upon a darker ground. The head is beautifully marbled with green and black, as are also the upper portions of the thighs and feet. The tail is brownish, and all the under parts are of a greenish yellow. “Le lézard dont il est question est innocent, mais hardi ; il fuit au moindre bruit, non lâchement, s’arrêtant de distances en distances pour observer la cause de sa crainte, et si on le presse de trop près il se jette sur l’assaillant en faisant entendre un certain soufflement qui rappelle en petit celui qui font entendre les oies en colère. Comme on en trouvait beaucoup aux environs d’une baronnie de Saint Magne, où nous avons passé les premiers temps de notre jeunesse, et que nous en avons été souvent violem-

Sauria.
Lacertini-
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¹ *Specimen Physiologiæ Comparativæ*, p. 31.

² *Historia Mundi*, lib. xxix. chap. 38 ; and Ælian, edit. Schneid. lib. v. 47.

³ On this very curious physiological subject the reader may consult the following works : Plateretti, *Su le riproduzione delle gambe e della coda delle Salamandre aquajuoie*. Scelt. de Opusc. interes. vol. xxvii. p. 18. Spallanzani, *Sopra le produzioni animali*, *Fisica Animale e Vegetabile*, 1768. Murray, *Commentatio de redintegratione partium nexu suo solutarum vel amissarum*, 1787. Boanet, *Sur la reproduction des membres de la Salamandre aquatique*, *Œuvres d’Hist. Nat. et de Philos. t. v. p. 177*.

⁴ *Erpétologie Générale*, i. 209.

Sauria.
Lacertini-
dæ.

ment mordus en leur faisant la petite guerre que l'enfance livre à tout ce qui fuit, nous pouvons affirmer que leur dent ne produit aucun mauvais effet après la douleur du moment. Il suffit d'avoir vu un seul grand lézard vert, pour s'étonner que Linné ait pu confondre cette espèce avec le lézard gris.¹

It has been observed by the prince of Musignano (C. L. Bonaparte), that the Linnæan term *agilis* has been applied by the naturalists of different countries to that species of lizard which was most common or best known in their own. In this way several distinct kinds have been described under one name, and regarded as identical. The true *L. agilis* of Linn. is a northern species, which becomes rare in Italy, but is sufficiently common in France, and extends into Denmark and Sweden. Its history as a British reptile has been clearly illustrated only within a recent period by Mr Jenyns and others; for the so-called *L. agilis* of the generality of British authors ought not to be so named.² The actual species varies as usual in colour and markings; but the most common hue of the upper parts is sandy-brown, with obscure longitudinal fasciæ of a darker brown, and a lateral series of black rounded spots, each marked with a yellowish-white dot or line in the centre. "It is more timid," says Mr Bell, "and far less easily rendered familiar, than the beautiful green lizard (*L. viridis*) of Guernsey and the south of Europe. This latter species may be readily tamed, and taught to come to the hand for its food, and to drink from the hollow of the palm of any one to whom it is accustomed. It will lie coiled up between the two hands, enjoying the warmth, and not offering to escape. But it is very different from the present species, which appears not to be susceptible of any such attachment. It will indeed attempt to bite any one who handles it, which I have never known to occur with *L. viridis*. When in confinement it ceases to feed, conceals itself with extreme timidity when approached, and ultimately pines and dies." Mr Bell has bestowed the English name of sand-lizard on this *L. agilis*.

Our only other British species is the common viviparous lizard (*L. vivipara*, Jacquin, *Zootoca vivipara*, Bell³) confounded with the true *L. agilis* by many authors. "This agile and pretty little creature," Mr Bell observes, "is the common inhabitant of almost all our heaths and banks in most of the districts of England, and extending even into Scotland; it is also one of the few reptiles found in Ireland. On the continent its range does not appear to be very extensive; it is not found in Italy, nor, I believe, in

France, and is very probably confined in a great measure to our own latitude. Its movements are beautifully graceful as well as rapid; it comes out of its hiding-place during the warm parts of the day, from the early spring till autumn has far advanced, basking in the sun, and turning its head with a sudden motion the instant that an insect comes within its view; and, darting like lightning upon its prey, it seizes it with its little sharp teeth, and speedily swallows it." This species also varies greatly in its external aspect. The prevailing ground colour of the upper parts is greenish brown, with a dark brown dorsal line often interrupted; a broad fascia extends parallel with this on each side, commencing behind the eyes, and extending to a greater or less distance down the tail; and between these and the former are often one or more rows of black dots, and similar ones occur in many individuals in the broad lateral fascia. The under side of the body and base of the tail are orange, spotted with black in the male; in the female grayish brown without spots. In reference to Mr Bell's excellent account of this reptile, we take leave to add, that although it is no doubt entitled to the character of an ovo-viviparous species, the young are not always born at once from the body of the mother, that is, already freed from the encumbrance of the egg. We have several times kept gravid females in our possession, and on two occasions the membranous eggs were deposited unbroken, and the young lay within them for from two hours till a day and a half before they made their appearance. Their movements, however, were visible through the walls of their prison from the moment they were laid.

The more limited genus *ALGYRA* of Cuvier has the tongue, teeth, and pores of the lizards; but the scales on the back and tail are ridged, those on the abdomen smooth and imbricated, and the collar is wanting. In the genus *TACHYDROMUS*, Daudin, the scales on the back, and those beneath the tail and abdomen, are square and ridged; the collar on the neck is absent, as well as the pores on the thighs, but on either side of the anal aperture there is a vesicle opening by a pore. The body and tail are both much elongated. The species run with great swiftness. See Plate II., fig. 3.)

FAMILY III.—IGUANIDÆ. IGUANAS.⁴

In this family the general form, the lengthened tail, the free and unequal toes, resemble those parts in the lizard

¹ *Dictionnaire Classique d'Hist. Nat.* ix. 339.

² See Jenyns's *British Vertebrate Animals*, p. 291; and Bell's *History of British Reptiles*, p. 22.

³ Mr Bell assigns as one of the generic characters by which this species differs from his restricted genus *Lacerta*, that the palate is toothless, while it is armed in that last named.

⁴ The great family of the IGUANIDÆ is divided by MM. Duméril and Bibron into forty-six genera, containing 146 species, the detailed descriptions of which occupy about 550 closely-printed pages in the work of those authors. (See *Erp'tologie Générale*, tom. iv.). We regret that our restricted limits debar us from following their extended system, but we shall here present a tabular view of the genera and amount of species, partitioned in accordance with their geographical distribution.

Genera.	Europe.	Asia.	Africa.	America.	Australasia and Polynesia.	Total Species.
Sub-Family PLEURODONTES.						
<i>Polycrus</i>	0	0	0	3	0	3
<i>Lamantcus</i>	0	0	0	5	0	5
<i>Urostrophus</i>	0	0	0	1	0	1
<i>Nerops</i>	0	0	0	1	0	1
<i>Anolis</i>	0	0	0	25	0	25
<i>Corythophanes</i>	0	0	0	2	0	2
<i>Basiliscus</i>	0	0	0	2	0	2
<i>Aloponotus</i>	0	0	0	1	0	1
<i>Amblyrhincus</i>	0	0	0	3	0	3
<i>Iguana</i>	0	0	0	3	0	3
<i>Metopoceros</i>	0	0	0	1	0	1
<i>Cyclura</i>	0	0	0	3	0	3
<i>Brachylophus</i>	1	0	0	0	0	1
<i>Enyalius</i>	0	0	0	2	0	2
<i>Opryssa</i>	0	0	0	1	0	1
<i>Uperanodon</i>	0	0	0	1	0	1
Carry over.....	0	1	0	54	0	55

Sauria. tribe, and the eyes, ears, and other characters are similar, but the tongue is thick, fleshy, not extensible, and, instead of being terminated by two filaments, is merely notched at the extremity.

Iguanidæ. marked by spots resembling stars, and was probably in no way allied to the genus to which in after times the title was applied.

The genus *DORYPHORUS*, Cuv. (a name too nearly resembling one already bestowed upon a group of insects), resembles the preceding in the absence of pores, but the body is not beset with groups of spines. (See Plate II., fig. 4.) The azure lizard (*L. azurea*, Linn.) may serve as an example. The genus *UROMASTIX*, Cuv., may be described as composed of stellions, of which the hind head is not inflated; all the scales of the body small, smooth, and uniform, except those of the upper surface of the tail, which are large, spiny, and projecting. There is a series of pores upon the thighs. *Stellio spinipes* of Daudin is a *Uromastix*. It is found in the deserts which encompass Egypt, and is supposed by Belon, although without sufficient proof, to have been the *land-crocodile* of the ancients. It measures from two to three feet, has an inflated body of a fine grass-green colour, with small spines upon the thighs, as well as on the upper portion of the tail.

SECT. I.—*No teeth on the palate.* AGAMIANS, Cuv.
a. Tail surrounded by rings composed of large scales, which are frequently spiny. *Stelliones*, Cuv.
In the genus *CORDYLUS* of Gronovius, not only the tail, but even the back and abdomen, are furnished with large scales placed in transverse rows. The head, as in the common lizards, is provided with a bony buckler, and covered with plates. In several species the points of the scales of the tail form spinous circles, and there are also little spines on the sides of the back, on the shoulders, and outside the thighs. The last-named parts have a line of very large pores. The Cape of Good Hope produces several species, which have been long confounded in systematic works under the name of *Lacerta cordylus*, Linn. They are somewhat larger than the common green lizard of Europe, and like it feed on insects.

In the genus *STELLIO* of Daudin, the spines of the tail are of medium size, the back part of the head is bulged by the muscles of the jaws, the back and thighs are here and there beset with scales of larger size, sometimes spiny, and little groups of spines surround the ears. The thighs want the pores. The tail is long and pointed. Only a single species seems distinctly known to naturalists,—*St. vulgaris* (*L. stellio*, Linn.), a reptile very common in Egypt, and throughout the Levant. It measures about a foot in length, and is of an olive hue shaded with black. It is the *koscordylus* of the modern Greeks (*hardun* of the Arabs), and is not unfrequently named the rough lizard, in consequence of the unusually hispid appearance of the whole of its upper surface. The Mahomedans slay this species wrathfully, from a feeling that a peculiar downward inclination of its head is in mockery of their own reverential motions while engaged in prayer. The species called *stellio* by ancient writers was so named on account of its being

b. Scales on the tail imbricated. *Agama*, Daud.

In the ordinary or restricted genus *AGAMA*, scales raised into points or tubercles beset different parts of the body, and especially the ears, with spiny projections, isolated or in groups. There is sometimes a row upon the nape of the neck, but not forming a compressed crest as in *Calotes*. The skin of the throat is loose, transversely folded, and susceptible of dilatation. A species from New Holland (*Ag. barbata*, Cuv.) is remarkable for its size and extraordinary formation. A series of large spiny scales, disposed in transverse bands, prevails along the back and tail. The throat, often much inflated, is furnished with long pointed scales, forming a kind of beard-like appendage; and similar scales beset the sides, and form two oblique crests behind the ears. There are yellow spots upon the abdomen, bordered with black. Another of this genus is the muricated lizard of Shaw (*L. muricata*), likewise a native of New Holland. In some the body is enlarged or inflated, so as

Genera.	Europe.	Asia.	Africa.	America.	Australasia and Polynesia.	Total Species.
Brought over.....	0	1	0	54	0	55
<i>Leiosaurus</i>	0	0	0	2	0	2
<i>Hypsibatus</i>	0	0	0	2	0	2
<i>Holotropis</i>	0	0	0	2	0	2
<i>Proctotretus</i>	0	0	0	10	0	10
<i>Tropidolepis</i>	0	0	0	3	0	3
<i>Phrynosoma</i>	0	0	0	3	0	3
<i>Callisaurus</i>	0	0	0	1	0	1
<i>Tropidogaster</i>	0	0	0	1	0	1
<i>Microlophus</i>	0	0	0	4	0	4
<i>Ecpymotus</i>	0	0	0	1	0	1
<i>Stenocercus</i>	0	0	0	1	0	1
<i>Strobilurus</i>	0	0	0	1	0	1
<i>Trachycyclus</i>	0	0	0	1	0	1
<i>Oplurus</i>	0	0	0	2	0	2
<i>Doryphorus</i>	0	0	0	1	0	1
Sub-Family ACRODONTES.						
<i>Istiurus</i>	0	2	0	0	1	3
<i>Calotes</i>	0	5	0	0	0	5
<i>Lophyrus</i>	0	4	0	0	0	4
<i>Lyriocephalus</i>	0	1	0	0	0	1
<i>Otocryptis</i>	0	1	0	0	0	1
<i>Ceratophora</i>	0	1	0	0	0	1
<i>Sitana</i>	0	1	0	0	0	1
<i>Chlamydosaurus</i>	0	0	0	0	1	1
<i>Draco</i>	0	3	0	0	0	3
<i>Leirolepis</i>	0	1	0	0	0	1
<i>Grammatophora</i>	0	0	0	0	4	4
<i>Agama</i>	0	2	3	0	0	10
<i>Phrynocephalus</i>	0	3	1	0	0	4
<i>Stellio</i>	1	1	0	0	0	2
<i>Uromastix</i>	0	1	3	0	1	5
	1	32	12	94	7	146

Sauria.
Iguanidæ. to appear orbicular, as in *A. orbicularis*, a South American reptile, which, from its thickened form and broadened head, seems at first sight a connecting link between the frogs and lizards.

The genus *TRAPELUS*, Cuv., has the teeth and general form of *Agama*, but the scales are small and spineless. There are no pores on the thighs. *T. Egyptius*, Geoff., is a small species, in which the body is sometimes inflated. It can change its colour even more rapidly than the chameleon. This genus is not easily distinguished from some thick and slightly spined species of *Agama*, to which indeed the genera *Leiolepis*, *Tropidolepis*, and *Leposoma*, are nearly allied, and for the descriptive characters of which we may refer the reader to systematic works. The genus *CALOTES*, Cuv., differs from *Agama* in being regularly covered with scales disposed tile-ways, often keeled and pointed, as well on the body as on the limbs, and tail, which is of great length. The scales on the middle of the back are more or less raised and compressed, forming a crest or ridge of variable extent. There are neither wattles nor pores upon the thighs,—characters which sufficiently distinguish them from the *Iguanas proper*. The best-known species is that called the galeot lizard (*L. calotes*, Linn.), of a variable colour, but usually of a fine light blue, with transverse lines of white upon the sides. There are two rows of spines behind the ear, and a lengthened ridge along the back. Its eggs are fusiform, or spindle-shaped. This curious reptile is native to the East Indies, and is called *chameleon* in the Moluccas, though it scarcely changes its colour. It is said to wander about upon the roofs of houses, in quest of spiders; and Lacépède observes that it is reported to prey even on rats, and to fight with serpents. When out of temper, its throat becomes so inflated as to give it a frightful aspect. If authors are correct, its distribution must be very extensive, as it is said to occur not only in the East Indies, but in Arabia and Barbary. It certainly, however, does not inhabit Spain, as some have said. In the genus *LOPHYRUS*, Duméril, the scales of the body resemble those of *Agama*, and the palisade-like ridge upon the back is even higher than in *Calotes*. The tail is compressed. To this genus belongs *Agama gigantea* of Khul, remarkable for the height of its crest above the neck. Two bony ridges continued from the muzzle terminate in a point on each side above the eye, and join upon the temples. It is a native of India. In *LYRIOCEPHALUS*, Merrem, we find a species in which the bony crest above the eyes is even more marked than in the preceding, and terminates behind on each side in a sharp point. This strange reptile is found in Bengal and other parts of the East, and is said to live on grain. (See Plate II., fig. 5.)

The preceding generic groups, from *Agama* downwards, are all more or less allied to the *Agamæ* of Daudin. We now proceed to a brief consideration of certain genera, of which the relationship is more remote.

The genus *ISTIURUS* of Cuvier is distinguished by an elevated cutting crest, which extends to a portion of the tail, and is supported by the high spinal processes of the vertebrae. This crest is scaly like the rest of the body, and the scales of the abdomen and tail are small, and rather of a square form. There are no teeth on the palate, but those of the other parts of the mouth are strong, compressed, and without dentation. The thighs bear a row of pores. The skin of the throat is loose, but does not form a dewlap. To this genus belongs that very remarkable animal the Amboyna lizard (*L. Amboinensis*, Gm.), first described by Valentyn, and afterwards with great accuracy and an excellent figure by Dr Albert Schlosser in 1768. The back is spined, but the regular ridge only commences at the base of the tail, over a portion of which it extends, like a broad upright fin. The head and neck are green, varied by transverse whitish undulations; the back and tail

Sauria.
Iguanidæ. are brown, with a slight cast of blue or purple; and the sides and abdomen are grayish, spotted by means of round white scales. It resides, according to Valentyn, in the vicinity of fresh waters, and is frequently observed on the banks of rising grounds as well as on the lowlier kinds of shrubs which vegetate near the water, but does not ascend the taller trees. When disturbed by the approach of man or beast, it instantly dives, and hides itself among the rocks or stones beneath the banks. When captured, it does not in any way defend itself, but seems stupified. It may be caught by a noose or snare, and its flesh is said to be white and sweet, although of a penetrating odour. It is highly esteemed as food by many, and is itself accustomed to prey both on insects and vegetable substances. It sometimes attains a length of nearly four feet.

The genus *DRACO*, Linn., may be distinguished at a glance from all other Saurian reptiles, by the singular peculiarity of six false ribs, which, instead of conforming as usual to the shape of the body, extend from it at right angles, and supporting a produced portion of the skin, present the appearance of a pair of wings. They support the animal in the air, as it leaps from branch to branch, but have no propelling power, and so cannot raise it in the least degree. In relation to their other characters, these so-called dragons are of small size, and covered all over by imbricated scales, of which those on the tail and limbs are keeled. The tongue is fleshy, not very extensile, and slightly notched. Beneath the throat there is a long pointed dewlap, supported by the tail of the hyoid bone; and on its sides are two others of smaller size, sustained by the horns of the same bone. The tail is long; there is a small dentation on the nape of the neck; and the thighs have no pores. Each jaw is furnished with four small incisor teeth, with a pair of long-pointed canines, and twelve triangular three-lobed grinders. The genus may be said to combine the scales and dewlaps of the *Iguanas*, with the head and teeth of the *Stellions*. (See Plate II., fig. 6.)

All the known species of *Draco* inhabit the East Indies, and have derived their generic appellation from their supposed resemblance to the fictitious Dragons of antiquity. In all ages, and in most countries, the imagination of timid or fantastic men has produced a belief in the existence of fabulous beings, of monstrous forms and irresistible ferocity, which carried devastation into provinces, guarded the entrance to sacred places, or watched over "sunless heaps" of hidden gold. The heroic history of Greece, and the darker superstitions of the Germanic people, are alike pervaded by these fond beliefs. "Rendered celebrated," says Lacépède, "by the songs of Greece and Rome, the principal ornament of pious fables imagined in more recent times, conquered by heroes, and even by youthful heroines, who were contending for a divine law, and adopted by a second mythology, which placed the fairies on the throne of the enchantress of old, the Dragon became the emblem of the splendid actions of valiant knights, and has enlivened modern as it animated ancient poetry. Proclaimed by the severe voice of history, everywhere described, everywhere celebrated, everywhere dreaded; exhibited under all forms, always clothed with tremendous power, and immolating his victims by a single glance; transporting himself through the midst of clouds with the rapidity of lightning, dissipating the darkness of night by the terrific splendour of his glaring eyes, uniting the agility of the eagle, the strength of the lion, and the magnitude of the giant serpent; sometimes presented under a human figure, endowed with an intelligence almost divine, and adored, even in our own days, in the great empires of the East,—the Dragon, in short, has been all in all, and everywhere to be found, except in nature."

The existence of these animals has not been altogether discredited even in modern times. About the middle of

Sauria. Iguanidæ. last century, a Hamburg merchant greatly prided himself on the possession of a famous dragon, which he valued at 10,000 florins. It was however discovered by the penetrating eye of the then youthful Linnæus to be a gross deception, formed by a combination of the skins of snakes, the teeth of weasels, and other absurd and heterogeneous elements, "non Naturæ sed artis opus eximium." It is said that the great Swedish naturalist was obliged to flee the city to avoid the wrath of the enraged proprietor. A similar fraud seems to have been practised in our own country towards the close of the seventeenth century, and is thus related by Dr Grainger, from a note of Dr Zachary Grey, in his edition of Hudibras. "Mr Smith of Bedford observes to me, on the word *dragon*, as follows: Mr Jacob Robart, botany professor¹ of Oxford, did, about forty years ago, find a dead rat in the Physic Garden, which he made to resemble the common picture of dragons, by altering its head and tail, and thrusting in taper sticks, which distended the skin on each side, till it mimicked wings. He let it dry as hard as possible. The learned immediately pronounced it a dragon; and one of them sent an accurate description of it to Dr Magliabechi, librarian to the Grand Duke of Tuscany; several copies of verses were wrote on so rare a subject; but at last Mr Robart owned the cheat; however, it was looked upon as a masterpiece of art, and as such deposited in the museum, or anatomy school, where I saw it some years after."

We need hardly here observe, that the actual dragons, or *Dracones* of naturalists, are harmless animals, of small size though extraordinary forms, which inhabit chiefly the insular forests of the Indian Ocean. (See Plate II., fig. 6.) In these umbrageous places they pursue their insect prey, descending but rarely to the ground, on which they walk with difficulty. According to Van Ernest, a Dutch naturalist, they couple among the branches, and the female deposits her eggs in hollow trees, under favour of a south exposure. We are doubtful regarding their amphibious propensities, as reported by M. Palisot de Beauvois, who remarked one in the *kingdom of Benin*, which he was unable to procure, because it was swimming in the water. Now Baron Cuvier states that "les espèces connues viennent toutes des Indes Orientales."

Three distinct species of *Draco* are described by M. Daudin, who was the first to discriminate their characters. *D. lineatus* (volans, Linn.) has the body varied above with blue and gray, the wings brown, with longitudinal stripes of white. *D. viridis* is green, the wings gray, with brown bands. This is the species described by Seba under the name of *winged dragon of America*, and afterwards figured by that author as the *flying dragon of Africa*, in neither of which countries is it ever found. It is said by Bontius to be not uncommon in Java, where it will shoot from tree to tree for a distance of thirty yards, producing a perceptible noise by the vibration of its wings. With a view to render itself specifically lighter, it inflates its yellowish goitres when it flies. *D. fuscus* is brown above, paler beneath; the wings likewise brown. Eight species are now known to naturalists.

The genus *SITANA*, Cuv., possesses the teeth of the preceding; the limbs and body are covered with scales imbricated and keeled, the thighs are without pores, but the false ribs are not expanded. The species are distinguished by an enormous dewlap, which extends as far as the middle of the abdomen, and is more than twice the height of the body. We know not that there is any other described than the Pondicherry species (*Sit. Ponticeriana*), a small reptile of a fawn-colour, with a range of large rhomboidal spots along the back. (See Plate II., fig. 7.)

SECT. 2.—Teeth on the Palate.

Sauria Iguanidæ

Genus IGUANA, Cuv. *Iguanas properly so called*. These have the body and tail covered with small imbricated scales. A row of spines or raised scales, compressed and pointed, prevails along the back; and beneath the throat there is a compressed and pendant dewlap, or gular pouch, of which the margin is supported by a cartilaginous production of the hyoid bone. The thighs bear a line of tubercular pores like those of lizards, and the head is covered with plates. Each jaw supports a range of compressed triangular teeth with dentated cutting edges, and there are moreover two small rows of teeth on the posterior margin of the palate.

The common iguana (*I. tuberculata*, Laur., *Lac. iguana*, Linn.) is naturally of a greenish-yellow colour above, mottled with pure green, the tail ringed with brown; the under parts of a paler hue. The scales of the dorsal crest are large and spinous, and there is a conspicuous rounded plate beneath the tympanum, at the angle of the jaws. The sides of the neck bear some pyramidal scales mingled with the others, and the anterior edge of the dewlap is dentated like the back. This species measures from four to five feet in length, and is extensively spread over many of the warmer countries of America, where it is held in high esteem as an article of diet, though by many regarded as by no means healthful. It dwells chiefly among trees, feeding on fruits, grain, and leaves, and is sometimes seen to enter the water. The female deposits her eggs in the sand. They equal in size those of a pigeon, have scarcely any albumen, and afford excellent eating. The common method of catching this reptile is by casting a noose over its head, and then drawing it from its position. It seldom makes an effort to escape, but stands staring at its antagonist, at the same time inflating its throat in a most extraordinary manner.

"Guanas," says Catesby, "are of various sizes, from two to five feet in length; their mouths are furnished with exceeding small teeth, but their jaws armed with a long beak, with which they bite with great strength; they inhabit warm countries only, and are rarely to be met with anywhere north or south of the tropics. Many of the Bahama Islands abound with them, where they nestle in hollow rocks and trees; their eggs have not a hard shell, like those of alligators, but a skin only, like those of a turtle, and are esteemed a good food. They lay a great number of eggs at a time in the earth, which are there hatched by the sun's heat. These guanans are a great part of the subsistence of the inhabitants of the Bahama Islands, for which purpose they visit many of the remote *kayes* and islands in their sloops to catch them, which they do by dogs trained up for that purpose, which are so dexterous as not often to kill them, which, if they do, they serve only for present spending; if otherwise, they sew up their mouths to prevent their biting, and put them into the hold of their sloop till they have caught a sufficient number, which they either carry alive for sale to Carolina, or salt and barrel up for the use of their families at home. These guanans feed wholly on vegetables and fruit, particularly on a kind of fungus growing at the roots of trees, and on the fruits of the different kinds of *annonas*. Their flesh is easy of digestion, delicate, and well tasted; they are sometimes roasted; but the more common way is to boil them, taking out the leaves of fat, which are melted and clarified, and put into a calabash or dish, into which they dip the flesh of the guana as they eat it. It is remarkable that this fat, which adheres to the inside of the abdomen, imbibes the colour of the fruit the animal eats last, which I have frequently seen tinged of a pale red, yellow, or sometimes of a purple colour, which last was from eating the *prunus maritima*, which fruit, at the same time, I took out

¹ He was rather superintendent of the garden than professor properly so called.

Sauria.
Iguanidæ.

of them. Though they are not amphibious, they are said to keep under water above an hour. When they swim, they use not their feet, but clap them close to their body, and guide themselves with their tails; they swallow all they eat whole. They cannot run fast, their holes being a greater security to them than their heels. They are so impatient of cold that they rarely appear out of their holes but when the sun shines."

"The guana," observes Browne, in his Natural History of Jamaica, "like most of the tribe, lives a very considerable time without food, and changes its colour with the weather, or the native moisture of its place of residence. I have kept a grown guana about the house for more than two months; it was very fierce and ill natured at the beginning, but after some days it grew more tame, and would at length pass the greatest part of the day upon the bed or couch, but it went out always at night. I have never observed it to eat anything, except what imperceptible particles it had lapped up in the air; for it frequently threw out its forked tongue, like theameleon, as it walked along. The flesh of this creature is liked by many people, and frequently served up in fricassees at their tables, in which state they are often preferred to the best fowls. The guana may be easily tamed while young, and is both an innocent and a beautiful creature in that state."

The horned iguana of St Domingo (*Ig. cornuta*, Cuv.) is distinguished from the common kind by an osseous conical point between the eyes, and two raised scales upon the nostrils. The neck is not tuberculated. This species measures about four feet in length, and is frequently found on the hills of St Domingo, between Artibonite and Gonaïves. It lives on fruits, insects, and small birds, which it seizes with surprising agility, and during the day it couches on trees and rocks to watch for its prey. During the night, and throughout the greatest heats of the hot season, it retires among the chambered rocks, or into the hollows of old trees, and there passes many months in a state of lethargy. This iguana is considered by the negroes as a great delicacy, and they accordingly search for it with avidity. According to the report of the colonists, its flesh resembles in flavour that of the roe-buck, and the maroon dogs make great slaughter among these reptiles.¹

The naked necked iguana (*Ig. nudicollis*, Cuv.) resembles the preceding species in its dorsal crest, but it does not possess either the large plates beneath the tympanum, nor the scattered tubercles on the sides of the neck. The upper part of the cranium is furnished with gibbous plates, the occiput is tubercular, and the dewlap or gular pouch is slightly dentated, and only on its anterior portion. Its native regions are Brazil and Guadeloupe, not India, as Laurenti supposes. (See Plate II., fig. 8.) Several other species are described by naturalists.

In the genus *Ophryessa*, Boié, the scales are small and imbricated; a dorsal crest, not greatly projecting, is prolonged upon the tail, which is compressed. The teeth resemble those of the preceding genus, but there is neither dewlap nor pores. The supercilious lizard of the older authors (*Oph. superciliosa*) may be named as an example. It is an American species, of a fawn-colour, with a festooned band of brown along the flanks, and measures from twelve to sixteen inches. It derives its specific name from a peculiar membranous ridge which occupies the region of the eyebrow.

The genus *Basiliscus*, Daudin, has the scales of small size, and the raised ridge on the back and tail is continuous, and supported by the spiny processes of the vertebræ, after the fashion of the tail in the Amboyna lizard, as already mentioned in our brief notice of the genus *Istiurus*.

The name of Basiliscus as naturally recalls to mind the fabled stories of antiquity as that of Dragon. It was supposed to be the most poisonous and malignant of creatures, its very aspect being regarded as fatal to the unhappy beholder. It exercised its tyrannous sway amid the burning and desert sands of Africa, and obliged each meaner reptile to keep at a respectful distance.

Sibilaque effundens cunctas terrentia pestes,
Ante venena nocens, late sibi submovet omne
Vulgus, et in vacua regnat Basiliscus arena.

But the animals now known to naturalists under the name of Basiliscus, we are happy to say, are harmless creatures, of very innocent manners, although of most extraordinary aspect. They do not occur in Africa, as Lucan feigns, nor in India, as Seba alleges, but in South America, especially Guiana, as Daudin has determined. The best known is the mitred species (*B. mitratus*, *L. Basiliscus*, Linn.), distinguished by a membranous crest upon the occiput, somewhat in the form of a eowl or hood, and supported by cartilage. It is of a bluish colour, with two white bands, one behind the eye and another behind the maxillæ. It measures from two to three feet in length, and feeds on grains.

In the genus *POLYCHRUS*, Cuv. there is no dorsal crest, the head is covered with plates, and the tail is long and slender. The extensile skin of the throat is capable of being formed into a gular pouch at the will of the animal, and this genus possesses the power of changing colour like the cameleons. Their lungs are likewise very voluminous, filling up a great portion of the body, and subdividing into various branches. Their false ribs, too, like those of the cameleon, encompass the abdomen, and so unite as to form entire circles. The marbled lizard (*Lac. marmorata*, Linn.) may be named as an example. It is of a reddish-gray colour, marbled with transverse irregular bands of brownish red, sometimes mingled with blue. The tail is of great length. This species is frequent in Guiana.

The genus *ANOLIUS*, Cuv. combines with the form of the preceding a very peculiar and distinctive character, the skin of the toes being enlarged beneath the ante-penultimate joint, into an oval disk, transversely striated on the under surface, which aids the animal in climbing, which it is otherwise enabled well to do by means of its crooked claws. The body and tail are moreover chagrined with minute scales, and the majority bear a dewlap or goitre-like expansion beneath the throat, which they not only inflate, but cause to change both in form and colour, in accordance with their various moods of love or anger. Indeed several of the species at least equal the cameleon in their power of assuming frequent and rapid alternations in the colour of their skin. Like these creatures, too, and the genus *Polychrus*, the ribs form entire circles. The species are peculiar to America, and several of them are even naturally of familiar habits, frequenting the vicinity of human habitations.

In some there is a crest upon the tail, supported by the spiny processes of the vertebræ, as in *Istiurus* and *Basiliscus*. Such is the great crested Anolis (*An. velifer*, Cuv.), which measures about a foot in length. The crest extends over one half of the tail, and is supported by from twelve to fifteen rays; the dewlap reaches to beneath the belly. (See Plate III., fig. 2.) It is found in the Antilles.

In others the tail is round, or only slightly compressed. The species of this section of the genus are numerous, and have been frequently confounded under one or two specific names. They inhabit the warmer parts of con-

¹ Griffith's Animal Kingdom, ix. 225.

Sauria. tinent America and the West Indies, and change colour with surprising facility, especially in warm weather. They feed on insects, and scarcely equal the size of the gray lizard of Europe. They capture their prey with great alacrity; and the different individuals are said to fight fiercely when they meet each other. We may mention as an example the red-throat lizard, called by Catesby the green lizard of Jamaica (*L. bullaris*, Linn.). Its muzzle is short, speckled with brown, the eyelids projecting, and the prevailing colour a grassy green. It is common in Jamaica, where it frequents hedges and trees, but does not enter houses. When approached or angered it protrudes its gular pouch, which speedily becomes as bright as a cherry. This peculiar change may be regarded as a kind of menace, to deter its enemy from closer quarters. It is incapable of inflicting the slightest injury by its bite or otherwise. Another species is Catesby's green Carolina lizard (*An. Carolinensis*), which is of a beautiful golden green, the muzzle flat and elongated. This kind is said by Catesby to be very common in Carolina, where it frequents houses, and becomes in a manner familiar, so as to sport about tables and windows, catching flies with great dexterity. It is seen chiefly in summer, retreating in winter into hollow trees, where it assumes the torpid state. Sometimes, when tempted by delusive sunshine, it re-appears, and on the return of chilly weather becomes enfeebled by the cold and dies. Its colour changes frequently from green to brown, according to the temperature.

FAMILY IV.—GECKOTIDÆ.

This family consists of what may be termed the nocturnal lizards, all of which bear a strong resemblance to each other. Baron Cuvier regards them as constituting a single genus, divisible according to the form and structure of the toes, as after mentioned.

The genus *Gecko* may be characterized as consisting of Saurian reptiles, of not so lank a form as those of the preceding genera. They are rather of a flattened shape, especially about the head; the feet are of medium size, and the toes of nearly equal length. Their gait is heavy and crawling. Their eyes are large, and the pupil extremely contractile under the influence of light, so that they usually keep themselves concealed throughout the day in dark or sombre places. Their eyelids are very short, and withdraw entirely between the eye and the orbit, which bestows on these animals a very peculiar physiognomy. Their tongue is fleshy, not extensile; the jaws are furnished all around with a row of very small close-set teeth; the palate is toothless. The skin is chagrined above with very small granular scales, among which some larger tubercles are often dispersed; the under parts are covered by flatish scales scarcely so small, and imbricated. The pores on the thigh are not here regarded as a generic character, being absent in some and present in others. The tail is marked by circular folds, as in the genus *Anolis*; but when mutilated, it has been noticed to renew itself without these

fold. This genus is numerous and widely spread, occurring both in the old world and the new.¹ The dull and doleful aspect of the geckoes, and a certain resemblance which they bear to toads and newts, render them liable to the imputation of poisonous properties,—an assumption without proof, and altogether against analogy.

The majority of the species have the toes enlarged for a greater or less extent, and furnished beneath with regular folds upon the skin, which, by some peculiar action, enable them to adhere to smooth surfaces, to ascend perpendicular walls, and even to creep in a reversed position along a ceiling. The claws are retractile in different ways, and preserve their points and cutting edges; and these characters, combined with the contractile nature of the pupil, has induced a comparison of the geckoes among reptiles to the feline tribes among carnivorous quadrupeds. The claws, however, vary in the different species, and in some are altogether wanting. It is in accordance with the particular structure of the toes in different species that the geckoes have been subdivided into several separate groups, which some authors regard as constituting so many distinct genera.²

SECT. 1.—PLATYDACTYLI. Toes widened throughout, and furnished beneath with transverse scales.

In certain species of this section of the genus the nails are entirely wanting, and the thumb is very small. They are rather ornamental in their aspect, covered over by tubercles, and adorned by lively colours. They occur in the Isle of France. Some have no pores upon the thighs: such are *G. inunguis*, Cuv., of a violet colour above, white beneath, with a black line along the sides; and *G. ocellatus*, Opper, of a gray hue, covered with brown spots, with white centres. Some possess the pores, as *G. Cepediensis*, a yellowish-red coloured species, marbled with blue, and marked with white along the sides.

In other platydactylous geckoes the nails are wanting only on the thumbs, and on the second and fifth toes of all the feet, and there are no pores upon the thighs. To this little group belongs the wall-gecko, a European species (*G. fascicularis*, Daud.), called *Terrentola* by the Italians. It is of a deep-gray colour, with a rough head; all the upper parts beset with tubercles, each of which is formed of three or four others of smaller size. It is a creature of a most unseemly aspect, which hides itself in the holes of walls, or beneath heaps of stones, and moreover covers its body with dust and ordure. It, however, delights also in sunshine, and is said not to occur in damp or very sombre situations. In winter it lies inert, but not torpid. It inhabits the countries around the Mediterranean, and ventures as far north as Provence and Languedoc. A nearly allied species occurs in Egypt and Barbary,—*G. Ægyptiacus*, Cuv. Its tubercles are round and simple, more projecting on the sides.

The greater number of the platydactylous species want the nails only on the four thumbs, and have a range of pores anterior to the anus. *G. guttatus*, Daud. has a reddish coloured body, spotted with white, and beset by round-

¹ The following table exhibits a view of the geographical distribution of the *Geckotidæ*, so far as known at this time:

Generic Groups.	Europe.	Asia.	Africa.	America.	Australasia and Polynesia.	Locality Unknown.	Total Species.
Platydictylus.....1		5	5	2	3	1	17
Hemidactylus.....1		5	1	1	3	1	12
Ptyodactylus.....0		0	2	1	0	1	4
Phyllodactylus.....0		0	1	3	3	1	8
Spheriodactylus.....0		0	0	3	0	0	3
Gymnodactylus.....0		3	2	2	2	0	9
Stenodactylus.....0		0	1	0	1	0	2
Totals.....2		13	12	12	12	4	55

² See *Erpétologie Générale*, iii. 290.

Sauria.
Geckotidæ.

Sauria.
Geckotidæ.

ed slightly projecting tubercles. The scales on the under part of the tail are square and imbricated. Seba describes this as a Ceylonese species, and adds, that the name of *gecko* is applied to it on account of its cry resembling that word. It is believed to occur throughout the Indian Archipelago. A belief prevails in the native country of this and other species, that an acrimonious fluid exudes from the lamellæ of the feet, and remaining on fruit, or other edible vegetation, is productive of injury to those who swallow it. A species is described by Bontius in his history of Java, under the name of Indian Salamander; and that old author states that the Javanese are said to hold it up by the tail until it discharges a foam or sanies from the mouth, with which they poison their arrows.

SECT. 2.—HEMYDACTYLI. Base of the toes furnished with an oval disk, formed beneath by a double row of scales *en chevron*; from the centre of this disk the second joint springs, and bears the third or nail at its extremity.

All the known species of the hemyductylous division have five nails on each foot, and a range of pores on each side of the anus. The scales beneath the tail are in the form of broad bands, like those of many serpents. A grayish red kind (*G. verruculatus*, Cuv.) occurs in the southern countries of Europe. The body is beset with small, conical, slightly rounded tubercles, and circles of the same surround the tail. A nearly allied species (*G. mabuia*, Cuv.) is widely spread over the warmer parts of the new world, where it often enters dwelling-houses, occurring apparently identical both in Bengal and Pondicherry. Cuvier presumes it may have been transported thither accidentally in ships. A species more peculiar to India is *G. marginatus*, Cuv. of which the body is margined, and the tail flattened horizontally, with its edges sharp and slightly fringed.

SECT. 3.—THECACTYLI. Toes enlarged throughout their entire length, and furnished with transverse scales, which are divided by a deep longitudinal furrow, wherein the claw may lie entirely concealed.

Such as are clearly known do not want the claws except upon the thumbs. They have no pores upon the thighs, and the scales upon the tail are small. As an example, may be named the smooth, or, as it is sometimes called, the perfoliated gecko (*G. lævis*, Daud., *Stellio perfoliatus*, Schneid.). The tail of this species in the natural or normal state is long, and surrounded by the usual fold; but it is easily fractured, and the reproduced portion often assumes a bulbous form, with a tapering termination, not unlike a small turnip with its root. In this accidental condition it was formerly described as a distinct species, under the title of *Lacerta rapicauda*.

SECT. 4.—PTYODACTYLI. Toes dilated only at the tips, and striated below. The dilatation is cleft, and the nail placed in the fissure. The whole of the toes are furnished with curved claws.

In some the toes are free, and the tail rounded. Such is *G. lobatus*, Geoff., sometimes named the house-gecko. It is smooth, or at least both scales and tubercles are very small, the general colour reddish-gray speckled with brown. This species is common in houses in many of the countries on the southern and eastern parts of the Mediterranean. It is known in Cairo by the unlovely name of *abou burs*, or *father of the leprosy*, because it is supposed to produce that dreadful malady by poisoning provisions with its feet. Hasselquist relates that he saw at Cairo two women and a girl at the point of death, in consequence of their having eaten

some cheese over which this creature chanced to crawl. Sauria. He likewise mentions a man who, having laid hold of a *Geckotidæ*. gecko, his hand became instantaneously covered with red inflamed pustules, which were as itchy as those produced by the stinging of a nettle. Cats are said to eat these reptiles; and they are driven from the Egyptian kitchens by the odour of garlic. The house-gecko feeds on insects, and its eggs are equal in size to a small nut. Its voice resembles that of a frog.

In others the tail is bordered on both sides by a membrane, and the feet are semi-palmated. Baron Cuvier is of opinion that they are probably aquatic. The species are truly singular in their external aspect. Such is the fimbriated gecko (*G. fimbriatus*, Cuv.), of which the form is much depressed, and the tail bordered by a lateral margin, which is also visible on the sides of the body, where, however, it becomes fringed or slashed. It is a native of Madagascar, where it is erroneously held in great dread. In Lacépède's opinion, it connects together the cameleons, geckoes, and water-newts. It measures eight or nine inches in length; and lives in trees, leaping from branch to branch. The colours of this species, like those of theameleon, are very changeable, at least on the upper surface, the under portion being usually of a bright yellow. "These changes," says Dr Shaw, "we are informed, have been observed in the living animal by Mons. Bruyeres in its native country, viz. Madagascar, where it is not very uncommon, and where, though a harmless animal, it is held in great abhorrence by the natives, who consider it of a poisonous nature, and fly from it with precipitation, pretending that it darts on their breast, and adheres with such force by its fringed membrane, that it cannot be separated from the skin without the assistance of a razor. The principal cause of this popular dread of the animal is its habit of running open mouthed towards the spectator, instead of attempting to escape when discovered. Its chief residence is on the branches of trees, where it lives on insects, holding itself secure by coiling its tail, short as it is, half round the twig on which it sits. It chiefly appears in rainy weather, when it moves with considerable agility, often springing from bough to bough. On the ground it walks but slowly, the fore-legs being shorter than the hinder."¹

An equally singular species of this section is the scolloped gecko (*G. caudiverbera*), which has no fringe upon the body, but a very peculiarly indented margination on each side of the tail. It is of a blackish colour, measures above a foot in length, and was found by M. Feuillé in a fountain of the Cordilleras. Some confusion exists in systematic works between this species and that figured by Seba under the name of *Salamandra aquatica ex Arabia*.

SECT. 5.—SPHERIODACTYLI. Toes terminated by a small cushion without folds; the claws retractile.

Such species as have the cushion double or notched in front are natives of the Cape of Good Hope and the East Indies. Example, *G. porphyrius*, Daud. More frequently the cushion is rounded and simple, as in the species called the spitting gecko (*G. sputator*, Lac.), a small reptile, pleasingly marked by transverse bands of brown upon a reddish ground. It inhabits houses in St Domingo. A lizard described by Sparman under the same specific name, if not identical with the species just named, no doubt pertains to this genus. It is said when disturbed by a near approach to eject from its mouth a black and acrimonious fluid into the face of the spectator, causing an inflammation of the skin, which, however, is allayed by rubbing the part affected with camphorated spirits of wine.

Finally, there are Saurians which, with all the characters

¹ General Zoology, iii 274.

Sauria.
Chamæ-
leonidæ.

of the geckoes, exhibit no enlargement of the toes, although their claws, five in number, are nevertheless retractile. They at present compose three genera, as follows :

In *STENODACTYLUS* the tail is round, the toes striated beneath, and dentated on the edges. *Sten. guttatus* is an Egyptian species, of a gray colour, sprinkled with whitish spots; the skin smooth. In *GYMNODACTYLUS*, Spix, the toes are slender and bare, and the tail rounded. Example, *Gym. geckoides*, Spix. In *PHYLLURUS*, Cuv., the toes resemble those of the preceding; but the tail is flattened horizontally, and shaped like a leaf. The only known species is *Ph. platyura*, from New South Wales, described by White under the name of broad-tailed lizard.¹ It measures about six inches in length, and is of a brownish-gray colour, beset with tubercles. (See Plate III., fig. 3.)

FAMILY V.—CHAMÆLEONIDÆ. CAMELEONS.

This family consists solely of the genus *CHAMÆLEO*, distinguished by the following characters. The entire surface is ehagrined with small granular scales, the body is compressed, the dorsal edge narrow; the tail is rounded and prehensile. There are five toes on each foot, arranged as it were in two groups, three in one, and two in the other, in some measure resembling the foot of a seansorial bird; but the toes of each group are connate, or enclosed within the skin, as far as the claws. The tongue is fleshy, cylindrical, extensile, and of great length. The teeth are trilobed. The eyes are large in themselves, but almost entirely covered over by the skin, except a small opening opposite the pupil; and each eye has the power of movement independent of the other. There are no external ears, and the occiput rises in a pyramidal form. The first ribs unite with the sternum, and the succeeding ones meet each other so as to form a circle around the abdomen. The lungs are of vast extent, and according to their state of collapse or inflation, greatly affect the form and aspect of the animal. This, with its long power of abstinence, may have given rise to the common belief that it feeds on air.²

Cameleons are insectivorous reptiles, of which the slow pace, the extraordinary form, the awkward movements, the vivacity of eye, and the marvellous rapidity of tongue, have excited the wonder of mankind from the earliest ages. Their change of colour, by no means so marked or sudden as supposed, has nothing to do with the hue of the objects by which they are surrounded, but bears relation physically to the degree of light or obscurity to which they are exposed, morally to the state of their own feelings of fear or anger, and physiologically and directly to the action of the lungs upon the circulating system. "En effet," says Cuvier, "leur poumon les rend plus ou moins transparents, contraint plus ou moins le sang à refluer vers la peau, colore même ee fluide plus ou moins vivement, selon qu'il se remplit ou se vide d'air." "The general or usual colour in the chameleon," says Dr Shaw, "so far as I have been able to ascertain from my own observation of such as have been brought into this country in a living state, are from a bluish-ash colour (its natural tinge) to a green and sometimes yellowish colour, spotted unequally with red. If the animal be exposed to a full sunshine, the unilluminated side gene-

rally appears, within the space of some minutes, of a pale yellow, with large rounded patches or spots of red brown. On reversing the situation of the animal the same change takes place in an opposite direction, the side which was before in the shade now becoming either brown or ash colour, while the other side becomes yellow and red; but these changes are subject to much variety, both as to intensity of colours and disposition of spots."³

Authors of all ages have differed greatly in opinion regarding the causes of the change of colour in cameleons. The phenomenon, though remarkable, and strongly exemplified in these creatures, is by no means peculiar to them, but occurs, as we have noted in the course of this article, among many others of the reptile race, especially in such as, the general envelope not adhering closely to the muscles, receive a portion of air beneath the skin. It is also observable in many mollusca, particularly the cuttle-fish tribe. But to recur to the camelcon. Aristotle and many other authors have maintained that the change of colour only took place when the animal inflated itself. Pliny repeats the opinion (which has since prevailed) that it assumed the colours of the bodies by which it was surrounded, with the exception of red and white. Wormius was among the first to maintain that the changes in question were due to the emotions of the reptile. Solinus assigns as the cause the reflexion of the luminous rays. Kireher supports the theory of volition and emotion. Goddard adopts the same explanation, with the addition that the colours at the same time bear a relation to neighbouring bodies. Hasselquist and Linnæus refer to the pigmentum as the cause. Finally, the majority of modern authors who have written on the subject (and their name is legion) have sought to explain the phenomenon either by the modifications of the respiratory system, by these modifications combined with the state of the pulmonary circulation, or by the transposition of the various layers which are believed to exist in the pigmentum.⁴

We may state briefly in regard to the geographical distribution of the cameleons, that Africa is their characteristic country. Of the fourteen species known to naturalists, the whole occur there or in the adjacent islands, especially Madagasear; three species, however, are not exclusively African, *Cham. dilepis*, Leach, being found in Georgia, *Cham. vulgaris* in the south of Europe, and *Cham. bifidus* in continental India, the Moluccas, Isle of France, and New Holland. They are thus entirely unknown in America.

These reptiles dwell habitually among shrubs or trees. "Nous avons observé," says M. Bory de St Vincent, "des caméléons en liberté, fixés sur les rameaux des arbustes, qu'ils tenaient fortement serrés entre leur doigts, à peu près comme le font les perroquets dont le pied présente une certaine analogie avec les leurs; ils étaient aussi immobiles que s'ils eussent été des imitations artificielles. Leurs yeux seulement, dont la prunelle brillait comme une pierre précieuse au milieu d'une globe blanchâtre percé d'un petit trou étincelant, roulaient en tout sens, et tandis que l'un regardait par devant, l'autre observait les objets situés en arrière. Quelquefois le mouvement anguleux d'une patte comme disloquée, lentement suivi de celui de la suivante et du déroulement de la queue, qui servait de cinquième point d'appui au caméléon, déterminait un tardif avancement de quelques lignes. Dans cet état de paix, au milieu du feu-

¹ *Voyage to New South Wales*, pl. 32; and *Naturalist's Miscellany*, pl. 65.

² "All which considered," says Sir Thomas Brown, in his *Vulgar Errors*, "severer heads will be apt enough to conceive the vulgar opinion of this animal to be not much unlike that of the *Astomi*, or men without mouths, in Pliny; suitable unto the relation of the mares in Spain, and their subventaneous conceptions from the western wind; and in some way more unreasonable than the figment of *Rabican*, the famous horse in *Aristo*, which, being conceived by flame and wind, never tasted grass, or fed on any grosser provender than air; for this way of nutrition was answerable unto the principles of his generation; which being not airy, but gross and seminal in the *chameleon*, unto its conservation there is required a solid pasture, and a food congenerous unto the principles of its nature."

³ *General Zoology*, iii. 256.

⁴ For a summary on this subject, see a paper by Dr Spittal in the *Edin. New Phil. Journ.* for 1829, p. 292.

Sauria.
Chamæ-
leonidæ.

Sauria.
Chamaeleonidae.

lage des lentisques, sa couleur était d'un blanc assez pur, tirant sur le jaunâtre. Saisi, il se gonflait d'abord et ne faisait nul effort pour éviter le danger; sans doute il en sentait l'inutilité; mais bientôt on voyait circuler sur toutes les parties de son corps des teintes diverses dues au sang, poussé vers la peau par la dilatation de ses vastes poumons. Le caméléon, rendu à lui-même, ne tardait point à reprendre sa couleur blanchâtre que la mort rembrunit. Du reste, le plus innocent de tous les animaux, ce caméléon changeant, qui ne cherche jamais à mordre, vit de mouches qu'il guette; lorsque celles-ci passent à sa portée, son corps, sa tête, ses membres demeurent immobiles; mais il a calculé la portée de sa langue, il la lance comme un trait; et l'animal ailé, malgré son agilité et la promptitude de son vol, se trouve collé au bouton visqueux qui le rapporte en un clin d'œil dans la bouche de son ennemi.

"On a imprimé, dans la plupart des livres d'histoire naturelle, qu'on ne trouvait des caméléons que dans les parties les plus chaudes des régions intertropicales. Ces animaux s'y plaisent sans doute, mais non seulement ils dépassent les tropiques, ils s'élèvent encore beaucoup au nord dans la zone tempérée, puisque nous en avons trouvé fréquemment dans le midi de l'Espagne. L'espèce de Barbarie y est aussi commune autour de la baie de Cadix, où lorsque, pour les opérations de la siège, nous faisons abattre des pins sur la rive gauche du Guadalète, nous en trouvions communément entre les rameaux dont se formaient la cime de ces arbres. On en voit dans quelques maisons, qui demeurent fort longtemps, sans remuer, suspendus à des ficelles sur lesquelles on les a placés comme objets de curiosité; les chats en sont assez friands, et ceux qu'on tient en captivité finissent ordinairement par les griffes de ces tigres domestiques."¹

The best-known species is *Cham. vulgaris*, often called the African cameleon (*Lac. Africana*, Gm.), an ill-selected name, in as far as several other kinds occur in Africa, and the species in question spreads from the south of Spain through many intermediate countries into India. The hood is pointed, and raised into a ridge on its anterior portion, the dorsal ridge is dentated as far as the middle of the back, the inferior one as far as the anus. The granules of the skin are equal and closely set. In the female the hood is of smaller size, and the dentations of the ridge less strongly marked. It is to this species, which measures about a foot and a half in length, that our preceding quotations apply, and that is also referred to in most of the general observations on cameleons found in books. (See Plate III., fig. 1.)

The female deposits her eggs to the number of thirty, in an excavation which she hollows in the ground, and afterwards covers over with loose earth, "servendosi," says Valisnieri, "a questo lavoro delle sole zampe di dietro, come i gatti, quando nascondono et cuoprono le loro sozzure, non contenta della cavata terra vi ramassò e ammonticello delle foglie secche, della paglia, e degli stecchetti avendovi inalzato sopra una collinetta di copertura."²

We shall here mention briefly a few of the most distinctly known of the other species of the genus.³ *Cham. tigris*, Cuv., has the hood or helmet small, and is distinguished by a compressed dentated wattle beneath the end of the lower jaw. Its body is beset with black points, and the granules are fine and equal. It inhabits the Seychelle Islands. An allied species (*Cham. verrucosus*, Cuv.) has larger granules mingled with the others, and there is a series of parallel warts on the sides of the back. It is a native of the Mauritius. *Cham. pumilus*, Daud., has the hood directed backwards, and scattered warts upon the sides, limbs, and tail; and beneath the throat are numerous compressed finely-

toothed wattles, which vary in different individuals. It occurs in the south of Africa, the Isle of France, and the Seychelles. Cuvier is of opinion, that *Cham. Seichellensis* of Khul is merely the female of this species. The Senegal kind, *Cham. planiceps*, Merr. (*Lac. chameleon*, Gm.), has the hood flattened, almost without ridge, and horizontally of a parabolic form. It occurs in Barbary, and has likewise been seen in Georgia. *Cham. pardalis*, Cuv., from the Isle of France, is marked irregularly with black round spots, bordered with white. A peculiar species from the Moluccas is distinguished by two large compressed prominences projecting in front of the muzzle. It is the *Cham. bifurcus* of M. Brogniart.

Sauria.
Scincidae.

FAMILY VI.—SCINCIDÆ.

Distinguishable by their short legs, their unextensible tongue, and their scales of equal size, which cover the body and tail like tiles.

In the genus *Scincus*, Daud., the legs are rather short, the body of almost equal size with the tail, without any occipital enlargement, crest, or dewlap, the scales uniform, shining, and disposed like those of a carp. Some of the species assume a fusiform or spindle shape, others are nearly cylindrical, and more or less lengthened, resembling certain Ophidians, especially those of the genus *Anguis*, with which they are likewise connected by several internal relations. The tongue is fleshy, little extensible, and but slightly cleft; and the jaws are furnished all around with small close-set teeth. The toes are free.

A few have teeth upon the palate. Of these is the common or official scink (*Sc. officinalis*, Schn., *Lac. scincus*, Linn.), which measures six or eight inches in length. The tail is shorter than the body, and the proportional length considerable from the snout to the shoulder. The general colour is a silvery yellow hue, with transverse blackish bands. It is very abundant in Libya, Syria, Arabia, and Egypt, and is frequently imported from Alexandria into Europe. It frequents rather dry and sandy soils, and is remarkable for the extraordinary rapidity with which it burrows, vanishing almost instantaneously, and seeming, as Bruce has well expressed it, "rather to have found a hole than to have made one." This is the reptile called *el adda* by the Arabs. It was once held in high estimation as an article in the *Materia Medica*, its flesh being regarded as advantageous in leprosy and many other cases. A much larger species (*Sc. Cyprius*) occurs in the Levant, and some of the Mediterranean Islands, *Sc. rufescens* is widely spread over India, and *Sc. trivittatus* is common at the Cape of Good Hope. To this group also belongs the galley-wasp of Jamaica (*Sc. occidua*, Shaw), a large reptile of nearly two feet in length. We are not acquainted with its modern history, and it possesses no poison apparatus, though Browne in his *Natural History of Jamaica*, informs us that it is reckoned the most venomous reptile in the island, and that it is believed no creature can recover from its bite. The author, however, justly regards this as a popular error.

Other species of this genus have no teeth upon the palate. Such is *Sc. ocellatus*, Schncid., well known in the southern countries of Europe, the Mediterranean Islands, Egypt, &c. The West Indies, the Moluccas, and New Holland, produce analogous kinds, some of them remarkable for their size.

The genus *Seps* of Daudin differs from the preceding in having the body so elongated as to resemble that of a serpent (a conformation well expressed by the names *Lacerta*

¹ *Diction. Class. d'Hist. Nat.*, iii. 96.

² See a paper by Mr Gray, in the *Philosophical Magazine*, vol. ii. p. 209; and *Ereptologie Générale*, iii. 203.

³ *Istoria del Cameleonte Africano*.

Sauria. *serpens*, *Anguis quadrupes*, &c., which certain species bore); their legs are extremely small, and the two pairs placed at a great distance from each other. (See Plate III., fig. 4.) The lungs in this genus begin to exhibit an inequality of size. Indeed, we may here observe that in the few remaining groups of Saurian reptiles with which we are still to be engaged, there is a manifest approximation to the true serpents or Ophidian race, in the diminution of the feet, the entire disappearance, in certain species, of either the anterior or posterior pair, and the elongated form of the body. Indeed, on the one hand, *Lacerta apoda* of Pallas is actually now classed with the Ophidians (being placed at their head), although on each side of the anus there is a prominence containing a small bone analogous to the femur, and pertaining to a true pelvis concealed beneath the skin; while on the other, certain systematic writers range our *Anguis fragilis*, and other snakes usually so called, among the Saurian reptiles. But to return to our remaining genera, which may really be said to hold their legs and feet by a precarious tenure, so subject are they to variation—the five-toed seps (*S. pentadactylus*, *Lac. serpens*, Linn.) inhabits the East Indies, while a four-toed species (*S. tetradactylus*), and a third with only three toes (*S. tridactylus*), both being viviparous, occur in the Isle de Crès. Another three-toed species (*S. chalcides*) is native to the south of Europe, and is named *cecilla* by the Italians. It dwells in meadows, feeding on spiders, slugs, &c., and runs rapidly by means of a snake-like wriggling motion, without using its feet. It is also viviparous. A more peculiar kind, known under the name of serpent-lizard (*S. monodactylus*, *Lac. anguina*, Linn.), occurs at the Cape of Good Hope. Its legs are nothing more than small footless undivided appendages. This is the *vermis serpentiformis ex Africa* of Seba, said by some authors to be found “in great plenty in the water and about the rocks in Table Bay.”

The genus *BIPES*, Lacép., makes a still nearer approach to the serpents, as its name indicates. It scarcely differs from *Seps*, except in the entire absence of the fore-legs. It forms, as it were, the stepping-stone to *Anguis*. (See Plate III., fig. 5.) A species from New Holland (*B. lepidopoda*, Lacép.), examined by Baron Cuvier, although its hinder extremities showed themselves externally only under the form of a pair of small oblong scaly plates, was yet found on dissection to possess a femur, tibia, peroneum, and four metatarsal bones without phalanges. To this genus likewise belongs an African species, the *Anguis bipes*, Linn., and another of larger size from Brazil, described by Spix under the name of *Pygopus cariococca*.

The genus called *CHALCIDES* by Daudin is likewise characterized by a long and serpent-like body, but there are four legs (as in *Seps*), and the scales, instead of overlapping like tiles, are rectangular, and form transverse bands, which do not encroach upon each other. (See Plate III., fig. 6.)

Certain species have a groove on each side of the body, and the tympanum still very obvious. Of these, an East Indian kind (*Chal. seps*, *Lac. seps*, Linn.) has five toes, while another (*Chal. tetradactylus*) has only four. Others have the tympanum concealed, and conduct directly to *Chirotes*, and through it to the ophidian genus *Amphisbæna*. Examples, *Chal. pentadactylus*, which, as its name implies, is a five-toed species, and *Chal. heterodactylus* (*Het. imbricatus*, Spix), which has four toes to the front feet and five to the hinder. *Chal. abdominalis*, Thunberg, has four toes on each foot. Lastly, *Chal. flavescens*, Gray (*Chal.*

monodactylus, Daudin), is distinguished by five anterior and three posterior toes, so reduced in size as to resemble small tubercles, and so ill defined by nature (to our perceptions, though no doubt wisely formed in relation to the end in view), that zoologists still differ as to their exact amount. The species alluded to is native to Guiana.

The genus *CHIROTES*, Cuv., resembles *Chalcides* in its verticillated scales, and is allied to *Amphisbæna* by the blunted form of its head; but it is distinguished from the former by the absence of the hind legs, and from the latter by the presence of the fore ones. (See Plate III., fig. 7.) The only known species is the lumbriciform lizard of Shaw (*Chir. lumbricoides*,—*canaliculatus* of Lac.), a native of Mexico, and first described by Lacépède. It has two short anterior feet (each with four toes, and the rudiments of a fifth), well organized interiorly, and attached to a small sternum by means of shoulder-blades and clavicles; but the head, vertebræ, and the general skeleton closely resemble those of the genus *Amphisbæna*. It is of a flesh colour, and measures eight or ten inches long, with a circumference like that of the little finger. It is surrounded by about 220 semi-rings upon the back, and as many on the abdomen, which meet upon the sides in alternation. The tongue of this species is but slightly extensile, and terminates in two little horny points. Its eye is extremely small, and the tympanum invisible outwardly, being covered by the skin. On dissection, Baron Cuvier could detect in this reptile only a single large lung, with the vestige of a small one, as in serpents. It preys on insects.

ORDER III.—OPHIDIA, OR SERPENT-SHAPED REPTILES.

The exact lines of demarcation which separate the primary orders of the reptile race are somewhat difficult to draw, as in truth must always be the case wherever there are strong affinities of form and habits. *Natura non facit saltum* is a saying the truth of which the student of her manifold wonders must ever remember; and in our present department especially there are several very singular creatures, which so combine the characters of two contiguous orders that well-instructed naturalists differ as to whether they should terminate the one or commence the other. Thus Baron Cuvier's last Ophidian genus is *Cæcilia*, which Professor Bell regards as a Batrachian reptile, or rather as belonging to his separate class AMPHIBIA, which, after the example of Blainville and Latreille, he constitutes by means of the entire Batrachian order.¹ Thus also *Lacerta apoda* of Pallas, though furnished on each side with a small bone analogous to the femur, and pertaining to an actual pelvis concealed beneath the skin, is yet classed by the great French anatomist with the Ophidians, being, so to say, the “very head and front of their offending;”² while several systematic writers range our *Anguis fragilis*, and other snakes commonly so called, among the lizards. An American reptile, *Anguis ventralis* of Linn., now forms Daudin's genus *Ophisaurus*, the name of which (derived from *ὄφis*, *serpent*, and *σαυρος*, *lizard*) implies the peculiar combination now referred to. The Saurian genus *Seps*, described at the conclusion of our former order, is characterized by Cuvier as having an elongated body, “tout-à-fait semblable à celui d'un orvet” (*Anguis*); and, on the other hand, the same author enters upon his Ophidian order by means of the *Anguidæ*, or slow-worms, which he simply describes as “des seps sans pieds.” These, and other

Ophidian
Reptiles.

¹ *Encyclopædia of Anatomy and Physiology*, part i. p. 91. These amphibian orders are as follows:—1st, *Amphipneusta*, containing the Sirens and Proteans; 2d, *Anoura*, the frogs and toads; 3d, *Urodela*, the salamanders; 4th, *Abranchia*, the genera *Menopoma* and *Amphiuma*; and 5th, *Apoda*, the genus *Cæcilia*. “It is easy,” adds Mr Swainson, “to perceive that this last passes into the first by means of the dipod Sirens, and thus the whole form a circular group more or less perfect in its connecting links.” (*Cabinet Cyclopædia*, vol. cxvi. p. 86.)

² See *Règne Animal*, ii. 69.

Ophidian
Reptiles.

examples which it would be easy to adduce, demonstrate the close connection which subsists between the Saurian and Ophidian orders.

It has indeed been customary to class among serpents whatever reptiles combined the absence of limbs with an extremely lengthened form of body; but a more rigorous observation will demonstrate that several species which, in accordance with that principle, will take their place as serpents, are yet in their prevailing organic structure removed from them in most essential points, the chief resemblance being that of the external and extremely lengthened form. Now this attenuated aspect, and absence of all the ordinary locomotive members, are likewise exhibited by several Saurian reptiles, and of course in an increased degree as they actually approach the serpent or Ophidian tribes; but the two characters just mentioned do not convert them from one order to another, being still held as it were in subordination to the general structure.¹

We commence our description of OPHIDIANS with the animals that have the general form of *serpents*; but yet differ from them anatomically so much that they cannot be considered as true SERPENTS; and have been judiciously separated from them by M. Schlegel. We divide Ophidians into the groups CÆCILIA, AMPHISBÆNA, ANGUIS, and SERPENS.

CÆCILIDÆ, OR BLIND WORMS.

The character of this group is fully given in the description of the only genus.

Genus CÆCILIA. Eyes extremely small, almost concealed beneath the skin, sometimes wanting. Skin smooth, viscous, furrowed by annular folds, apparently naked, but exhibiting in its thickness certain slender scales, regularly disposed on many transverse ridges between the wrinkles of the skin. Head depressed, anus nearly terminal, tail consequently short or almost wanting. Ribs too short to surround the trunk. Vertebrae articulated by facets like hollowed cones filled with gelatinous cartilage, as in fishes and some Batrachia; the cranium united to the first vertebra by two tubercles, also as in Batrachian reptiles. The orbits, covered by the maxillary bones, are only pierced by a very small hole; and the bones of the temples cover the temporal fossæ in such a way that the head exhibits superiorly nothing but a continuous bony buckler. (See Plate IV., fig. 1 d.) The hyoid bone, composed of three pair of arches, is so constructed as almost to lead to the belief that in early age there were gills. The maxillary and palatine teeth are ranged on two concentric lines, as in the genus *Proteus*, but are frequently sharp and curved backwards, as in true serpents. The nostrils open at the back part of the palate, and the lower jaw has no moveable pedicle, the tympanic bone being encased with the other bones in the buckler of the cranium. The auricle of the heart is not sufficiently divided to be described as double; but the second lung is rudimentary, as among the genuine Ophidians. The liver is divided into many transverse foliations.

We know nothing of the natural history or habits of the animals of this genus. They are said to dwell in marshy ground, several feet below the surface. They probably prey on worms and insects, although vegetable matters, mould, and sand, have been found in their intestines.

Ophidian
Reptiles.

In certain species the muzzle is obtuse, the skin loose, the folds conspicuous, and there are two small hairs near the nostrils. To this section belongs *Cæc. annulata* of Spix, a Brazilian species of subterranean habits. It is of a blackish hue, with upwards of eighty annular folds, and circularly marked with white. The teeth are conical. Others have the folds more numerous, or rather in the form of serrated transverse striæ. Such is *Cæc. glutinosa*, Linn., from Ceylon, a blackish-coloured reptile, marked by a longitudinal band of white on either side, and characterized by 350 folds, which unite beneath in an acute angle. We have figured a nearly allied species from America, *Cæc. bivittata* of the French naturalists. (See Plate V., fig. 3.) Finally, a few have the folds almost effaced, the body long and slender, and the muzzle projecting. *Cæc. lumbricoides*, Dandin,² is entirely blind, of a blackish colour, two feet long, and not thicker than a quill. Baron Cuvier possessed the skeleton of a *Cæcilia* more than six feet long.³ There were 225 vertebrae, but the external characters were unknown.

AMPHISBÆNIDÆ, PROGRESSING EITHER WAY.

The lower jaw still continues, as among the preceding groups, supported by a tympanic bone, articulated directly to the cranium, the two branches of that jaw being soldered together anteriorly, while those of the upper one are fixed to the cranium and the intermaxillary bone. This formation both produces an equality of dimension between the head and the rest of the body, and also prevents that peculiar power of dilatation for which the genuine serpents are so remarkable. (See Plate IV., fig. 1 a.) Their general form, according to Cuvier, "leur permet de marcher également bien dans les deux sens," a fact, however, which that great observer does not seem to state as from the "ocular proof;" and for the confirmation of which we have sought in vain in the work of any well-instructed traveller. The bony frame-work of the orbit is incomplete behind, the eye is extremely small, and the body is covered with circular plates. The windpipe is elongated, the heart placed far backwards, and the anus situate close to the extremity of the body. None of the known species is venomous. Of the two genera, the one is closely related to *Chalcis* and *Chirotis*, the other to *Anguis* and *Acontias*.

Genus AMPHISBÆNA, Linn. The entire body covered by circular ranges of plates. A range of pores anterior to the anus. Teeth of a conical form, numerous on the jaws, none upon the palate; only a single lung.

The species are South American reptiles, to which an ancient classical name has been with no great propriety applied. (See Plate IV., fig. 2.) The white one, *Amph. alba*, Linn., measures from a foot and a half to two feet in length, and is proportionably of a bulky form.⁴ It inhabits Brazil, where its native name of *Ibriaram* signifies "lord of the earth." It was first described by Marcgrave, who, however, states erroneously that it is venomous, and will wound either with head or tail. It preys on insects, and is often found near ant-hills. Another species, from Martinique (*Amph. cæca*, Cuv.), is stone-blind.

It may be observed in passing, that the genus *Leposternon* of Spix is composed of *Amphisbænæ*, of which the anterior part of the body is furnished below with several

¹ "Un examen comparatif," observes M. Schlegel, "des objets m'a démontré que ces Sauriens anomaux, c'est-à-dire, à formes allongées et à extrémités rudimentaires, appartiennent toujours par l'ensemble de leur organisation à quelque espèce de l'une ou l'autre des familles de cet ordre, parmi lesquelles ils doivent être distribués. On ne peut nier, par exemple, qu'il y a un passage graduel des Scinques à l'Anguis et aux Acontias, par l'intermède des Scinques brachypus, decreensis, serpens, seps, du Pygodactyle et du Bipes,—êtres moins différens entre eux par leur organisation que par leurs formes, et qui ne composent qu'une seule famille, celle des Scincoïdes, de laquelle on ne saurait exclure ni les Ablephares ni les Gymnophthalmes. Le même passage graduel existe dans la famille des Lézards, des genres *Lacerta* et *Tachydromus* au *Monodactyle*; on y peut ajouter comme espèce anormale le *Pygopus*. On pourrait rapprocher dans la méthode le *Tetradactyle*, le *Chalcis*, le *Pseudopus*, et l'*Ophisaurus*. Viennent enfin la famille des *Amphisbænæ*,—*Chirotis*, *Leposternon*, *Amphisbæna*, et celle des *Typhlops*,—*Typhlops*, *Rhinophis*, *Uropeltis*." (*Physionomie des Serpens*, i. p. 2.)

² *Reptiles*, viii. 92, 2.

³ *Règne Animal*, ii. 101, note.

⁴ *Lacép.* ii. pl. 21, 1.

Ophidian Reptiles. plates, which interrupt the ranging of the circular rings. They have no pores anterior to the anus, the head is short, and the muzzle slightly projecting. Example, *Lep. microcephalus*, Spix,—*Amph. punctata* of Prince Maximilian (Neuwied).

Genus *TYPHLOPS*, Schneider. Body covered with small imbricated scales (as in *Anguis*, with which group the species were for a long time combined). Muzzle advanced, furnished with plates. Tongue long and forked; eye in the form of a minute point, scarcely visible through the skin; anus almost terminal; one lung four times larger than the other.

These, as Cuvier remarks, are small serpent-like creatures, which bear a great resemblance to earth-worms. They inhabit the warmer countries both of America and the old world. Some have the head obtuse, and of equal diameter with the body. Such is *T. braminus*, Cuv., the punctulated slow-worm of Shaw, and *Rondos talooloopan* of Dr Russel.¹ It is a diminutive reptile, measuring about six inches in length, with the thickness of a hen's quill. It is of a cream-colour, powdered over with innumerable black dots. It is common in Vizagapatam, and, according to the author last named, is vulgarly reputed mischievous. It is described as moving with great swiftness; and a specimen immersed in spirits remained alive for more than ten minutes. Others (and these the majority) have the muzzle depressed and obtuse, and furnished anteriorly with several plates. Example, *T. reticulatus*.² A few have the front of the muzzle covered by a single broad plate. Such is *T. subargenteus* (*Anguis lumbricalis*, Linn. and Lacép.), the silvery snake of Brown.³ Finally, there are one or more peculiar species, in which the muzzle terminates in a small conical point, and the posterior extremity is enveloped by a horny buckler of an oval form. We here place *T. Philippius*, Cuv., which measures about eight inches in length, and is entirely of a black colour. We presume that Dr Shaw's snouted slow-worm, *Anguis nasuta* (*A. rostrata* of Weigel⁴), though differing in colour, is nearly allied, and ought to be placed in the same genus.

ANGUIDÆ, OR SLOW-WORMS.

These still exhibit the bony head, the teeth, the tongue of *Seps*, and the eye is furnished with three eyelids. They correspond to the ancient unrestricted genus *ANGUIS* of Linnæus, and are characterized externally by imbricated scales covering the whole body. The species now form four minor genera, of which the first three still exhibit beneath the skin certain small bones corresponding to those of the shoulder and pelvis.

Genus *PSEUDOPUS*, Merrem. Tympanum visible externally. A prominence on each side of the anus, containing a small bone analogous to the femur, and appertaining to a true pelvis hid beneath the skin. Rudiments of the anterior extremities barely manifested by an inconspicuous fold, containing no interior humerus. One of the lungs is a quarter less than the other. The scales are thick and imbricated, and between those of the back and belly are some smaller scales, which produce a longitudinal furrow on either side.

Of the species, the earliest known is *P. Pallasii*, Cuv., *Lacerta apoda*, Pallas,—discovered in the south of Russia by the naturalist last named.⁵ It measures from one to

two feet in length, and the colours are ferruginous above, pale yellow beneath. The scales of the back are smooth, those of the tail carinated. This species occurs also in Hungary and Dalmatia, and the specimen figured by Dr Shaw⁶ was procured in Greece by Dr John Sibthorpe, the professor of botany in the university of Oxford. M. Durville discovered another species (which bears his name) in the Archipelago.⁷ (See Plate IV., fig. 1.)

Genus *OPHISAURUS*, Daudin. No external appearance even of the hinder extremities, but the tympanum is still apparent, and the scales exhibit a plication or folding upon each side of the trunk. The smaller lung only equals a third of the greater.⁸

The best known species is *Oph. ventralis*,—*Anguis ventralis*, Linn.,—an American reptile, common in the southern states of the Union. It is of a greenish yellow, spotted above with black. Its tail is longer than its body, and the creature itself is so brittle and easily broken, even in the living state, as to be known by the name of glass serpent. According to Catesby, "a small blow of a stick causes the body to separate, not only at the place struck, but at two or three other places, the muscles being articulated quite through the vertebræ."⁹

Genus *ANGUIS*, Cuv. No extremities visible externally. Tympanum concealed beneath the skin. Maxillary teeth compressed and hooked,—no teeth upon the palate. Body surrounded by imbricated scales, without plication on the sides. One of the lungs is a half less than the other.

The English slow-worm, *Anguis fragilis*, is common over a great part of Europe.¹⁰ It is very smooth, of a shining brownish-gray above, inclining to reddish on the sides, and bluish-black upon the under surface. It rarely measures more than a foot in length. It lives on insects and small mollusca, excavates circuitous holes in the earth, of several feet in extent, and with more than one issue. It is an innocent and gentle creature, remarkable for stiffening itself so much when seized as sometimes to break in two. Hence its specific name of *fragilis*.

Genus *ACONTIAS*, Cuv. No osseous pieces corresponding to the sternum and pelvis, the shoulder-blades and clavicles. Anterior ribs united to each other inferiorly by cartilaginous prolongations. Teeth small and conical: "Je crois," says Cuvier, "leur en avoir aperçu quelques-unes au palais."¹¹ Muzzle inclosed in a kind of mask. One lung of medium size, and another of very small dimensions.

To this genus belongs the speckled slow-worm of Shaw, *Anguis Meleagris*, Linn., a native of the Cape of Good Hope.¹² Its tail is much shorter and more obtuse than that of the British slow-worm. Its upper surface is spotted longitudinally with brown. Africa produces other species, one of which, according to Cuvier (*Ac. cæcus*), is entirely blind.

We now reach Baron Cuvier's second great division, the *OPHIDIANS*, consisting of all those genera which exhibit no vestige of either shoulder or sternum, but have a great portion of the circumference of the body surrounded by the ribs. The vertebræ articulate by means of a convex facette at one end, entering into a concave facette of that which follows. (See Plate V., fig. 2 *a* and 2 *b*.) The third eyelid and the tympanum are wanting, but the osselet of

Ophidian Reptiles.

¹ *Serpents of the Coast of Coromandel*, p. 48, pl. 43.

² *Civil and Natural History of Jamaica*, p. 460, pl. 44, fig. i.

³ *Nov. Com. Petrop.* xix. plate 9, fig. i.

⁴ *General Zoology*, iii. plate 86.

⁵ Scheuchzer, *Physica Sacra*, pl. 747, 4.

⁶ *Berlin Transactions*, iii. p. 190.

⁷ Griffith's *Animal Kingdom*, ix. 307

⁸ Of the cranium of this genus Cuvier has remarked, "C'est une vraie tête de Saurien." (*Règne Animal*, iii. 430.)

⁹ *Carolina*, ii. plate 59.

¹⁰ Lacépède, *Quadrupèdes Ovipares*, ii. plate 19, 1.

¹¹ *Règne Animal*, ii. 7

¹² *Theaurus*, ii. tab. 21, fig. 4. It is not found in the East Indies as both Seba and Shaw opposed.

Ophidian
Reptiles.

the ear exists beneath the skin, and its handle passes behind the tympanic bone. Several still manifest a remnant of the posterior members hid beneath the skin, or even showing themselves externally under the form of small hooks.¹ The first two genera are scarcely entitled to the designation of *True Serpents*; and Baron Cuvier has himself drawn a line between them and those which he names *Serpents properly so called*, although the two terms seem not particularly distinctive. The reptiles in question form the tribe *Double Marcheurs* of Cuvier.

We now arrive, "by lingering steps and slow," at the genuine serpents.

SERPENTES, OR TRUE SERPENTS.

The principal characteristic of the serpent race consists in an extremely elongated body, clothed with scales, destitute of limbs, and furnished with a tail, or caudal extremity. Locomotion is effected by lateral undulations, aided by the scales externally, and by the ribs within. Although the general form, viewed in relation to its transverse dimensions, is concentrated to an extremely small diameter, the different parts are capable of great enlargement, which admits in many cases of their swallowing bodies bigger than themselves. In conformity with this peculiar structure, even the bony portions of the head are not so knit together as in other animals, but, with the exception of the parts which protect the brain, are capable of a certain degree of separation. (See Plate IV., fig. 1 b.) The development of the tympanic bones, their mode of attachment, the mobility which they enjoy from not being fixed to the cranium by their lower extremity, and finally, the structure of the under jaw, the two branches of which are capable of separation in consequence of being united by elastic ligaments instead of symphysis, all combine to produce the vast swallowing powers of these reptiles. The entire absence of limbs is accompanied by an equal absence of those solid portions, such as the sternum and pelvis, which unite the limbs with the body. The ribs are free for the same reason, and thus readily admit both of the occasional enlargement of the intestinal cavity, and of that extreme pliancy of form for which all the species are remarkable, whether they creep, climb, or swim. To facilitate these various movements, the general envelope is minutely subdivided into numerous compartments, the scales of the lower surface being usually much larger than those of the upper, and subserving the place of feet, the ribs being attached to the lateral margin of the inner surface of these abdominal plates. The space of bare skin between the scales is greater among serpents than other reptiles, and on the throat this bare expanse forms a longitudinal cleft, known by the name of *gular furrow*.

The true serpents are closely connected to the Saurian order by the preceding genera *Amphisbæna* and *Typhlops*, which certainly form a passage from one of those great ordinal groups to the other. It is these connecting links that render precise definitions, drawn from a few apparent characters, so difficult, if not impossible. "Il est très facile," observes M. Schlegel, "de se faire une idée d'un serpent, lorsqu'on prend pour type une des espèces où tous les caractères de l'ordre se trouvent réunis; mais il est difficile de consigner des marques distinctives qui separent d'une manière tranchée les Ophidiens des Sauriens."² Thus the gular furrow which characterizes all serpents except the genus *Acrochordus*, exists also among lizards, and several

other Saurian reptiles. A few Ophidians even exhibit vestiges of the hinder extremities analogous to what we may observe among the so-called apodal Saurians, although there is reason to suspect that the parts alluded to represent, in the latter the pelvis, in the former the actual extremities.³ Perhaps the characters deduced from the bones of the cranium would afford the best distinctions between the two orders, were it not that in these, too, certain species of the genera *Typhlops* and *Uropeltis* make a near approach to the true Ophidians. It may be well, however, to state briefly the distinguishing features in the cranial osteology of the latter order. The bones of the face in serpents never form a fixed mass perforated by the nostrils, and incased by sutures in each other; and the intermaxillary bone, trigonal, and compressed in its form, is always free, and to a certain extent moveable, that is, never soldered by sutures to the maxillaries on either side. The maxillaries themselves, when united to the anterior frontals, are so merely by a narrow attachment, always preserving a certain mobility; and the lateral margins of the nasal bones are free throughout their whole extent. No Ophidian reptile has thick conical teeth perpendicularly incased; they rather resemble hooks curved backwards, with sharp points; and we believe that all serpents, with the exception of the genus *Oligodon*, have the palate armed with teeth resembling those on the maxillæ, whilst in the Saurian order the palatine teeth exist only in the form of small irregular asperities.

From the preceding brief sketch, it may be inferred that the most peculiar character of serpents consists in their mode of locomotion, and their extraordinary powers of deglutition. These conditions modify their entire organization, for the former determines the general shape of the body, and the latter that of the internal parts. On examining the position of the intestines, we find that these organs, which in the majority of other vertebrated beings occupy several spacious cavities, are in the Ophidians inclosed within a long and narrow cylinder. It is obvious that this disposition cannot prevail without great changes in the form of the viscera; and the disturbance alluded to is even destructive of bilateral symmetry. We thus find the heart sometimes far removed from, at others closely approached towards, the head, according as the stomach is more or less extended; it is thus also that most frequently there is only a single lung, sometimes extending in front of the heart, but usually placed behind that organ, and almost always terminated by a species of sack of greater or less extent, and serving as a reservoir of air. The liver, for the same reason, assumes a narrow ribbon shape, extending from the heart to the pylorus. The gall-vessel, that it may not be interrupted in its functions by the repletion of the stomach, is removed from the liver, and placed in the same curve of the duodenum as that which receives the pancreas and the spleen. The stomach resembles a lengthened narrow cylinder. Then follow the intestines, of which the numerous inflections are filled with fat, and which, after descending in a straight line, terminate in the cloaca. The lower portion of the abdominal cavity not being sufficiently spacious for the reception of the rest of the organs, there thence results an anomalous disposition of the kidneys, testicles, and ovaries. "La verge enfin, et un organe sécréteur, sont logés dans la queue." These peculiar forms, however, of the majority of the internal parts of serpents exercise no influence over their functions; for, on more minute investigation, we find

Ophidian
Reptiles.

¹ Naturalists, as we shall afterwards take occasion to notice, differ in their views regarding the exact nature of these outward appendages. They are described by M. Mayer in the twelfth volume of the *Academia Naturæ Curiosorum* of Bonn.

² *Essai sur la Physionomie des Serpens*, par H. Schlegel, La Haye, two vols. 8vo, 1837. Of this the most recent and complete work on our present department with which we are acquainted, we have availed ourselves largely in the following treatise.

³ We have exhibited these parts as they exist in the genus *BOA*. See Plate V., figs. 1, 1 a, and 1 b.

Ophidian
Reptiles.

Ophidian
Reptiles.

that they vary not only in distinct species, but in different individuals of the same species.

The disposition of the external organs, on the contrary, present much more constant forms; but these parts are modified by the habits of the species, whether arboreal, terrestrial, or aquatic. The mode of locomotion is, however, very uniform, the movement being nearly the same which aids a serpent while gliding on the surface of the ground, traversing the depths of lakes and rivers, or climbing around the umbrageous branches of forest-trees. The lateral undulations of the body suffice for these progressions; and it is chiefly the sea-snakes that make use of their tails, which are expressly organized for that special purpose, acting as a scull. The degree of rapidity depends in a great measure on the nature of the surface in which the motion is exercised. Serpents drag themselves along with difficulty over glass or any polished body, but make their way with great alacrity over any earthy irregular surface, or through tangled vegetation. For the exercise of these movements, it is of course necessary that the bones and muscles should be fitly disposed; and every one who has examined a properly prepared serpent must have been struck at once by the multiplicity and uniformity of its parts. The ribs and vertebræ are almost all alike in their formation, and it is only towards the caudal extremity that the bones diminish in bulk.

As all the vertebræ of serpents carry two ribs, the usual distinctions of cervical, dorsal, and lumbar do not exist. As the scaly plates or scuta of the abdomen have each two ribs as their levers, their number corresponds to that of the vertebræ, and the ribs are double that of the scuta. This number varies not only with the species, but the individuals, and to so surprising an extent that we not unfrequently find a difference in the same species, amounting to thirty or even fifty vertebræ. The number of vertebræ of the body, properly so called, rarely exceeds 300, and is never fewer than 100; the vertebræ of the tail, on the contrary, are sometimes reduced to five, although in other cases they amount to from 150 to 200. The ribs are more numerous in serpents than in any other class of created beings, several having above 500,—that is 250, or upwards, on each side of the spinal column. We here figure the skeleton of the common ringed snake of England,—*Tropidonotus natrix*. (See Plate V., fig. 2.)

The muscles exhibit various modifications in the different species. In some they are remarkable for their considerable size, and for the extraordinary development of tendons, especially among the venomous kinds. This organization is necessary for the production of that force and energy with which their undulating movements are often executed. The muscles which produce these effects are situated along the sides of the back, and on the anterior face of the vertebræ; but as the ribs likewise exercise the function of locomotive organs, the numerous muscles which are attached to these parts greatly facilitate the lateral movements. The muscles of serpents being greatly interlaced, it becomes difficult to describe them singly, and their comparison with analogous parts in their higher orders is by no means easy. These anatomical details, however, are not to be expected in the present publication. We therefore refer the reader to the works of Home,¹ Hübner,² Dugès,³ Duvernoy,⁴ Meckel,⁵ and Schlegel.⁶

The muscles of serpents, as of other reptiles, preserve their irritability for a long time after what we may regard as the actual death of the animal; for these creatures, although deprived of their head, and divested of their skin, will continue to exhibit muscular movements for several

weeks, if kept in a moist condition. Swammerdam, in his *Biblia Naturæ*, has proved, both by his figures and descriptions of frogs, that even at that early period (1666), peculiar galvanic effect was demonstrated in the muscles of these reptiles which at a future period gave rise to so much important discoveries regarding the phenomena of voltaic electricity.

A few words may be said regarding the supposed vestiges of the hinder extremities observable in certain serpents. Several species exhibit on each side of the anus a small hook or crotchet, half concealed by scales. The existence of these parts has been long recognised, but we believe it is to Professor Mayer of Bonn that we owe a more precise knowledge of their nature. The only Ophidian genera in which they have been hitherto precisely observed are *Tortrix*, *Python*, and *Boa*. They are most developed among the Boas, and the huge size of these reptiles admits of a more satisfactory examination. (See Plate V., figs. 1, 1 a, and 1 b.) These vestiges, then, consist of an assemblage on each side, of three principal osseous pieces, and of two small accessory portions attached at the point of articulation of the tibia and tarsus. The terminal bone, which alone appears externally, is in the form of a crotchet, covered by a hard and scaly skin. When a longitudinal incision is made in the flesh, we find that the interior piece, which is the most developed, more or less S-shaped, and comparable to the tibia, is prolonged with its free extremity into the abdominal cavity. The middle portion, on the contrary, which seems to represent the tarsus, is thick, short, slightly arched, and completely concealed within the flesh. This apparatus is moved by flexor and extensor muscles of a sufficiently simple structure. The use of these vestiges of the posterior members is still unknown. Their feeble development debars the idea of their contributing in any way to locomotion. Certain observers maintain that they are prehensile organs, which give firmness of position on whatever bodies are embraced by the circumvolutions of the tail and trunk; or that they may even subserve the generative process. They exist in both sexes.

When in a state of entire repose, the majority of serpents love to roll themselves into a spiral mass, with the head in the centre, slightly raised above the other portions. Possessing the power of bending their bodies in all directions, except directly backwards, we at the same time frequently find them simply extended on the ground or herbage in a sinuous curve. To produce progressive motion, they merely unroll the body, and bending it into successive lateral sinuosities, bring into play the numerous points of contact presented by the anterior extremities of the ribs, and thus push along with great facility. These reptiles are frequently observed to raise the anterior portion of their body into an erect position, supporting themselves on the tail and part of the abdomen, as if with a view to survey the scene around them. The body itself is then usually quite stiff and straight, although some assume a more curved attitude, besides exhibiting a peculiar swelling or enlargement of the neck. When suspended perpendicularly from the branch of a tree, the great Boas exhibit scarcely any sign of life or motion. They descend simply by dropping themselves downwards, their peculiar form and great elasticity of structure preventing their receiving any injury from the fall; and when they reach the ground, this rapid movement, so far from proving hurtful, aids by its impulsion their terrestrial progress.

The majority of serpents (both of the innocent and the colubrifrom venomous kinds) defend themselves against the

¹ Phil. Trans. vol. x.; and Lectures on Comp. Anat.

² Ann. des Sciences Nat. vol. xii.

³ Vergl. Anat. vol. iii. p. 130, et suiv.

⁴ De Organis motorii Boæ caninæ.

⁵ Ibid.

⁶ Physiognomie des Serpens, vol. i. p. 18.

Ophidian
Reptiles.

attack of their enemies by darting upon them, with the head elevated, so as to enable them to bite with greater energy. A few, such as the *Najas*, raise a considerable portion of the anterior of the body, so as to assume a very singular position. Most of them give utterance to a sharp hissing sound as a prelude to battle; and they also produce a peculiar blowing, by forcing the air rapidly through the nostrils. Several species throw themselves upon their prey with a great and sudden bound, usually seizing it by the throat; while others encircle it by a tortuous embrace, thus pressing it to death by sinewy folds. The venomous kinds make use of the same means to obtain their food as they do to defend themselves from threatened danger. Quietly stretched along the earth, they will attack indifferently whatever incommodes them; but knowing the potency of their empoisoned fangs, they are satisfied by the infliction of a murderous bite, without recourse to muscular pressure.

As snakes swallow their food entire, and without mastication, their teeth serve merely to wound and retain their prey, or to instil into it the envenomed fluid. This deadly matter is the product of certain glands of the head. These are of two kinds; the one composed, like the salivary glands of quadrupeds and birds, of numerous small granules, which secrete a fluid analogous to saliva, and destined to prepare the food for digestion; the other, of a very different nature, forming a thick sack, of which the interior is divided into numerous compartments, and distilling a liquid which, by its fatal effects on the principle of life, becomes a dreadful instrument of destruction. The salivary glands are common alike to all Serpents, but scarcely a fourth of the entire species are provided with those which secrete the poison. The teeth which conduct this fatal fluid into the wound are hollow and pierced at each extremity. They are always situate towards the anterior end of the maxillary bone, are covered by the gums, which there form a kind of sheath, and are always kept bent when in repose. The rest of the teeth, and the whole of those of the innocuous kinds, are solid, with the exception of the hollow which contains the nutritive organ of the tooth. Although these large anterior fangs are characteristic of the poisonous kinds, we yet find a considerable number of innocuous species, of various genera, which have the jaws armed with one or two teeth larger than the others, and usually furrowed by a cleft extending along the anterior face. These grooved teeth are always situate at the base or posterior extremity of the maxillaries, and it is but seldom that we perceive a second on the middle portion of the jaw. Their sole function is believed to be the pouring into their wounded prey an abundant supply of saliva secreted by the posterior part of the salivary glands, which are most voluminous in the region occupied by the teeth in question. The organization of these posterior glands entirely resembles that of the ordinary salivary ones; and recent observation has demonstrated, that the bite of species belonging to the genera *Dryophis*, *Dipsas*, and others with furrowed teeth, is followed by no fatal results, at least to the human race.¹

In studying in detail the teeth of the Ophidian reptiles, we may perceive a gradation from the solid to the hooked teeth. Each tooth in fact consists, in its earliest development, of a kind of lamella with curved margins, so as to open as it were on its anterior face. In the so-called solid teeth, this opening has become filled by the union of the margins at an early period; it continues open for a longer time in the hooks of the most venomous kinds, but in the completed state they exhibit only the two orifices destined for the entrance and emission of the poison,—the lower one

continuing to preserve the character of a longitudinal cleft. In other poisonous species we find analogous fangs, but with a continuing vestige of the groove which formerly united the two orifices. Finally, the furrow in the lengthened posterior teeth of certain innocuous species, is nothing more than the permanence of the groove now mentioned.

The solid teeth occur indifferently in all Ophidian reptiles; but their number, form, and position, vary in the different species. With the exception of the genus *Oligodon*, which is unprovided with palatine teeth, there are always four rows of teeth in the upper jaw (see Plate IV., fig. 1 c), and two in the lower. Intermaxillary teeth are not observable, except in the genus *Python*, and occasionally in *Tortrix scytale*,—the number rarely exceeding four (see figure last referred to). These solid teeth are usually all of equal length; but in the Boas they enlarge towards the extremity of the muzzle (fig. 11), while the reverse is the case in several species of *Coluber*, *Tropidonotus*, &c. The *Lycodons* exhibit some teeth more largely developed than the others at the anterior extremity of the maxillaries; those of *Dryophis* and *Psammophis* are rather unequal, several being even greatly elongated towards the centre of the jaw; those of certain species of *Dipsas*, *Homalopsis*, &c. are often furrowed; while other genera, such as *Xenodon*, *Coronella*, and several kinds of *Homalopsis*, have the base of the maxillaries armed with a strongly developed tooth of a solid structure. The number of teeth, in general, obviously varies in relation to the development of the maxillaries, and of the dental bone of the lower jaw.

The poison-gland, which forms so peculiar a character of the noxious kinds, is enclosed in a thickish tendinous envelope, hard and tenacious to the touch, and diminishing backwards into the form of a narrow ribbon, by which it is attached to the articulation of the lower jaw. Anteriorly this envelope is also restricted to a canal-shaped space, which stretches along the maxillaries, and then descends towards the orifice already mentioned, of the anterior face of the base of the hooked fang. (See Plate IV., fig. 10.) Among the poisonous serpents properly so called, this canal is folded when the fangs are in a state of repose, but easily extends in conformity with the movement of the maxillary bones. The interior of the poison-gland is subdivided into a great number of minute cells, produced by very slender partitions, which cross each other at an angle more or less acute. To this peculiar structure, so dissimilar to that of the salivary glands, is due the secretion called poison, from its fatal effect when mingled with the blood of any living creature. It is true, that the bite of even the most innocent animal may sometimes produce the most disastrous results, by a concurrence of peculiar circumstances, such as the temperature of the climate, the psychological or pathological condition of the creature bitten, or the rabid fury of that which has aggressed, and for this reason the bite of innocuous serpents may have sometimes proved deleterious even to the human race; but the poison of the injurious kinds holds its noxious qualities in its very nature, although the circumstances just alluded to may render more deadly its destroying powers.

The poison of snakes, when fresh, may be described as a transparent limpid fluid, of a greenish-yellow colour, slightly gluey, viscous, adhering to other objects when dried, and evaporating without burning when exposed to fire. It sinks in water, and when mingled with it by shaking, produces a troubled and somewhat whitish appearance. It partakes greatly of the nature of mucus; and when placed in contact with any re-active substance, we discover that it

Ophidian
Reptiles.

¹ The glands in the head of serpents have been discussed in numerous publications. See, among others, Ranby, *Phil. Trans.* No. 401, p. 377; Tiedemann, *Mém. de l'Acad. de Munich*, 1813, p. 25; Cloquet, *Mém. du Mus.*, vii. p. 62; Demoulin ap. Magendie, *Journ. de Physiol.* iv. p. 274; Meckel, *Archiv.* i. 1; and Duvernoy, *Ann. des Sciences Nat.* xxvi. and xxx. Various observations bearing on the subject will also be found in the well-known writings of Redi, Mead, Fontana, and other physiologists.

Ophidian
Reptiles.

is neither acid nor alkaline; there is nothing peculiar in its odour, and when applied upon the tongue it produces a sensation resembling that of fresh fat. Our recorded notices on the subject are, however, somewhat contradictory. Dr Mead and his associates, in certain experiments on the poison of the viper, inform us that that fluid, "when diluted with a little warm water, was very sharp and fiery when tasted with the tip of the tongue, as if the tongue had been struck through with something scalding or burning; this sensation went off in two or three hours; and one gentleman who would not be satisfied without trying a large drop undiluted, found his tongue swelled, with a little inflammation, and the soreness lasted two days." The Abbe Fontana, on the contrary, describes it as of no particular acrimony of taste, but rather resembling oil or gum; and Dr Russel makes the same statement regarding the poison even of the Cobra de Capello, a species much more venomous than any viper. The accounts of its effect upon the stomach, when taken internally, also show that doctors differ. It is long since Celsus said, "nam venenum serpentis non gustu sed in vulnere nocet." Boerhaave quotes the well-known case of Jacob Sozzi, who, at the court of the Duke of Tuscany, is alleged to have taken three drams of this poison, without experiencing any bad consequences; while Fontana affirms, that although its internal effect is not like that of a bite or puncture, it cannot be swallowed with impunity. On this point the older authors, as Dr Shaw informs us, also disagree. Matthioli asserts, that even when sucked from a wound it has proved fatal; while others confirm the prevailing opinion of ancient writers, and the experience of Cato's soldiery, that it is harmless when so received. The practice, indeed, of the Psylli and Marmarides of old,

Tame, at whose voice, spell-bound, the dread Cerastes lay,

probably proceeded upon this principle of suction. These Psylli were African tribes, and were employed, according to Lucan, by Cato, for the recovery of such of his men as had been bitten by serpents during their march among the Libyan deserts. The heroic Roman is also said to have assured his followers, who feared to drink, even in "a dry and desert land," of the translucent fountains, lest they too should be infected by serpents, that, however noxious might be the bite of these venomous reptiles, yet the poison must lose its effects when mingled with so pure an element.

And now with fiercer heat the desert glows,
And mid-day gleamings aggravate their woes;
When, lo! a spring amid the sandy plain
Shews its clear mouth to cheer the fainting train.
But round the guarded brink in thick array
Dire Asps roll'd their congregated way,
And thirsting, in the midst, the dreadful Dipsas lay.
Blank horror seized their veins, and at the view
Back from the fount the troops recoiling flew.
When, wise above the crowd, by cares unquell'd,
Their awful leader thus their fears dispell'd:
Let not vain terrors now your minds enslave,
Nor dream the serpent brood can taint the wave;
Urged by the fatal fang their poison kills,
But mixes harmless with those bubbling rills.
Dauntless he spoke, and bending as he stood,
Drank with cool courage the suspected flood.

The poison of the viper, according to Boerhaave, is rendered inactive by digestion in the stomach and bowels, so that it will not afterwards exert its fatal influence on the blood; "for a whole ounce of this venom taken by the mouth will not kill an animal, while at the same time a small needle only dipped in the same fluid, and taking up perhaps not more than the hundredth part of a drop, when thrust into the blood of a living creature, almost infallibly destroys."¹ The following is Bruce the traveller's well-

known but extraordinary narrative. "I will not hesitate to aver that I have seen at Cairo (and this may be seen daily, without trouble or expense) a man who came from above the catacombs, where the pits of the mummy-birds are kept, who has taken a cerastes with his naked hand from a number of others lying at the bottom of the tub, has put it upon his bare head, covered it with the common red cap he wears, then taken it out, put it in his breast, and tied it about his neck like a necklace; after which it has been applied to a hen, and bit it, which has died in a few minutes; and, to complete the experiment, the man has taken it by the neck, and beginning at the tail, has ate it as one would do a carrot or a stock of celery, without any seeming repugnance."

This opinion, however, that the poison of snakes may be taken internally without producing any troublesome effects, has been recently contradicted by the experience of Dr Hering, at Surinam. This traveller took at different times various doses of the poison of a rattle-snake (*Crotalus mutus*) mixed with water, and suffered from its effects for upwards of eight succeeding days. These manifested themselves by pains in the larynx and other parts of the body, by an increased secretion of mucus in the membranes of the nose and œsophagus, and by frequent diarrhœa, accompanied by pain in the rectum. To these symptoms were added several others of a rather curious kind, attributable to the influence which this poison seemed to exercise even over the moral faculties.

By far the most deleterious effect, however, of this subtle fluid is produced by its mingling with the blood, through the medium of an inflicted wound. It then shows its morbid influence with a rapidity often frightful, and usually proportioned to the quantity of the poison instilled, and to the abundance with which the wounded part is furnished with those vessels which bear the stream of life. For this reason, of course, the bite of a large snake is more dangerous than that of a small one; and so also a wound in the tongue, or in any vein, is almost always mortal, while it not unfrequently happens, that when a hard or callous part is bitten, no injurious results are found to follow. Cold-blooded animals are much less affected by the bite of a snake than are quadrupeds or birds; and in the majority of invertebrated tribes it produces no effect whatever. Generally speaking, however, the smaller the victim, the more deadly are the consequences of a wound. In Europe, the human race seldom suffers fatally from the bite of a viper; and it is supposed that the poison of several would be required to kill a bullock or a horse. So at least say many modern writers; yet we cannot help remembering what Boerhaave tells us regarding a viper, which, "being enraged by the members of the Tuscan Academy," and then suffered to bite the nose of a strong bull, the ponderous creature died in a very short time. A small quadruped dies rapidly from an infliction of the slightest wound. In tropical countries, however, where the poisonous species are often of considerable size, and their venom is both more abundant and in a state of higher concentration, the effects are fatal both to man and beast. The activity of the poison, in truth, increases with the temperature of the climate.

Various experiments have been tried, with a view to ascertain the strength of this animal poison in different species of serpents, and the best means of arresting its fatal influence. The observations of Laurentius, Fontana, Russel, Davy, and Lenz, are familiar to the student of physiology, but less satisfactory in their results than might be desired, from the modifying effects of special circumstances. To obtain well rectified general inferences, it would be necessary that numerous experiments should be tried with serpents of corresponding size, existing under similar circum-

Ophidian
Reptiles.

¹ See Shaw's *General Zoology*, iii. p. 371.

Ophidian
Reptiles.

stances, and in relation to victims of the same constitution; and by repeating these experiments with various kinds of serpents, and taking the average effect of each kind as a result, we might in a measure ascertain the different characters of these animal poisons, of which we have as yet but a meagre knowledge.

The effect of a serpent's bite usually manifests itself without delay. A sharp pain is felt in the part pierced by the fangs, although the puncture is extremely minute, and scarcely a drop of blood may flow; swelling follows, and inflammation soon declares itself. The progressive effects upon other parts of the system are exhibited by a general feebleness; walking becomes painful, and respiration laborious and constrained; the patient suffers from ardent thirst, followed by nausea, vomiting, glimmering of the sight, and other symptoms, which, combined with acute bodily pains, often deprive the victim of his senses. Livid spots sometimes surround the wound, the dread precursors of that fatal gangrene which, spreading more extensively, ere long puts a period to existence. "His strength is poured out like water, and all his bones are out of joint; his heart is like wax, it is melted in the midst of his bowels. His strength is dried up like a potsherd, and his tongue cleaveth to his jaws, and he is brought unto the dust of death." Then, instead of the bloom of youth, the power of manhood, or the pride of beauty, we behold but a bloated corpse, the sad repulsive remnant of humanity. It may be remarked, however, that the poison of these subtle reptiles seems to deprive us of life under a considerable variety of aspects. A lethargic torpor without pain is said to follow the bite of the asp; and hence, we presume, its preference by that luxurious queen for whom Antony "lost the world." The fact, though doubted by medical observers, seems in a great measure confirmed by the examples adduced by Captain Gowdie, as recorded by Dr Russell.¹ Lucan of old has distinguished the poisonous serpents that infested the march of the Roman army over the deserts of Libya by the various symptoms which they produced; but his dreadful catalogue should perhaps be regarded rather as a piece of poetical embellishment than as a historical relation. Yet it seems now believed, that however the symptoms may vary, the nature and action of the poison is the same in all, and is in most cases to be counteracted by the same means. The virulence of the bite even of individuals of the same species probably varies according to the season of the year, just as their manners and external aspect also vary, as so beautifully described by Virgil:—

Potsquam exhausta palus, terræque ardore dehiscunt;
Exilit in siccam, et flammantia lumina torquens
Sævit agris, asperque siti, atque exterritus, æstu.
Ne mihi tum molles sub dio carpere, somnos,
Neu dorso nemoris libeat jacuisse per herbas:
Cum positis novus exuviis nitidusque juvenu,
Volvitur, aut catulos tectis aut ova relinquens,
Arduus ad Solem, et linguis micat ore trisulcis.²

The excessive rapidity with which death was frequently produced by the bite of venomous serpents induced Dr Mead to conclude that its fatal influence affected the nervous rather than the circulating system. But the experiments of Fontana go far to demonstrate that the venom of the viper is perfectly innocent when applied to the nerves only; but that it acts immediately upon the blood, and through the medium of that fluid destroys the irritability of the muscular fibre, and so produces death.

In further illustration of this singular subject, we may here give a brief account of the effect produced by the bite of some remarkable salt-water snakes belonging to the

genus *Hydrus* (*Hydrophis* of our present treatise). Soon after the opening of the bar in the month of October 1815, reports prevailed at Madras that a great shoal of sea-snakes had entered the river, and that many natives while crossing had been bitten, and had died in consequence. A reward was offered for each of these creatures captured and carried to the superintendent of police. Pandauls were erected opposite to the two principal fords, and skilful natives, under the direction of Dr M'Kenzie (to whom we are indebted for the information), were provided with *eau-de-luce* and other remedies, and ordered to afford immediate aid to those who might be bitten. Many were bitten accordingly (the snakes seeming in no way loathe to expedite the result), and all exhibited the symptoms usually consequent upon the action of a powerful animal poison; but none died. We shall state a couple of cases, with the mode of treatment. A native woman, while crossing near the custom-house, was seen, on emerging from the water, to shake off something from her foot. This to several spectators appeared to be a water-snake. The woman, after advancing a few paces from the river, fell down, and was immediately carried insensible to the pandaul. On examining her feet, two small but distinct wounds were perceived on the ankle of the right leg; her skin was cold, her face livid, her breathing laborious, her pulse scarcely perceptible. A ligature was immediately placed above the wound, which had been previously enlarged with a lancet, and a piece of the carbonate of ammonia well moistened with pure nitric acid applied, while thirty drops of the *eau-de-luce* were administered nearly at the same time in a glass of water. In five minutes more a similar dose was poured down the throat, which seemed rather to increase the spasmodic affection of the chest; but the pulse at the wrist became distinct, though feeble. A third dose was repeated in three minutes more, on which she uttered a scream, and began to breathe more freely. Ten minutes had now elapsed since she had been carried to the pandaul, and in about three minutes more a tea-spoonful of the *eau-de-luce* was given, which almost immediately produced violent nausea, and a profuse perspiration. When a little salt was put into her mouth, she declared it was not salt, but sugar; and this the natives deemed an infallible sign of still-continued danger. She soon, however, entirely recovered, and merely complained for three or four days of a numbness in the limb above the wound. Another case was that of a Lascar, who was bitten by a snake while in the middle of the river. He advanced a few paces after quitting the bank, and then fell down in violent convulsions. When brought in, his breathing was laborious, his skin cold and clammy, his countenance livid, and his pulse feeble at the wrist, but distinct at the temples. A quantity of froth and foam was ejected from between his closed teeth. He too recovered, after a similar mode of treatment; but he complained for many days that he had no left leg. On another occasion a large healthy chicken was exposed to the bite of a *Hydrus major*, four feet long. It was bit in the foot, and in about ten minutes began to droop, and to show a slight convulsive flutter of both wings. In three minutes more it became convulsed, and at the end of seventeen minutes from the infliction of the wound it suddenly dropped down dead.³

Dr Russel has figured and described forty-three of the most common serpents of Hindustan, and of these he found only seven that were provided with poison-fangs. He informs us that a quantity of warm Madeira taken internally, with an outward application of *eau-de-luce* on the punctures, was generally successful in curing the bite of even the most venomous species. He also states that the me-

Ophidian
Reptiles.

¹ In his work on the *Serpents of the Coast of Coromandel*.

² *Asiatic Researches*, vol. xiii., p. 329.

³ *Geor. lib. iii., l. 432.*

Ophidian
Reptiles.

icine called the Tanjore pill was equally efficacious. Each pill contains three-fourths of a grain of arsenious acid. On comparing the effects of the poison of five of the oriental species on brute animals, with those resulting from the rattle-snake and European viper, Dr Russel remarked that they all produced morbid symptoms nearly the same, although they might differ in the degree of their deleterious power, and the rapidity of its operation.

The tongue of serpents is remarkable for its great extensibility. It is protected by a rather firm skin, becomes very slender towards the anterior extremity, where it divides into two slender filaments, and is capable of being withdrawn into a kind of sheath, which opens in front of the glottis. The position of these parts varies in the different species, being placed, for example, very near the muzzle in the genus *Hydrophis*, but much further backwards among both the terrestrial and the tree serpents. The tongue of the Ophidians in general, though extremely similar to that of certain Saurians, such as *Monitor*, *Tejus*, and other genera, yet differs in the far greater simplicity of the harder parts by which it is supported; for we find, in place of a hyoid bone, composed of several pieces, merely a simple cartilaginous thread attached to the internal face of the general integument of the gular region, with its two extremities prolonged greatly backwards. This cartilage is sometimes, as in *Boa*, intimately united to the muscles of the throat, of which it intersects the fibres, its posterior extremity being then attached to the skin on the sides of the neck; but in the majority of cases, the horns of the hyoid are free, closely approached, and prolonged into the cavity of the chest, even as far as the heart. The tongue of these reptiles seems in truth, by its construction, to be a genuine organ of touch, and serving neither for taste nor deglutition, being during the latter act inclosed within its sheath. A little notch-like aperture at the end of the muzzle, which exists in most serpents except the aquatic kinds, admits the protrusion of the tongue without the necessity of opening the mouth. This movement is usually made very leisurely, although with extreme rapidity when the individual is excited either by fear or passion.¹

The use of the tongue in serpents is not exactly known. Its narrow and cylindrical form would render it unapt to aid the process of mastication, even were the teeth of a nature to perform that process. They are continually lancing it into the air, and may possibly in this way also gather moisture from grass or other herbage. It is, however, believed that they never drink. "On ignore," says M. Schlegel, "si les serpens boivent, et s'il est juste d'opiner pour la négative; toutefois on n'a jamais aperçu des fluides dans ceux dont on a examiné l'estomac."² Other authors, however, are of a somewhat different opinion. "Tout au plus," say MM. Dumeril and Bibron, "cette langue fort longue sert-elle, comme on l'a observé quelquefois, à faire pénétrer un peu de liquide dans la bouche, car nous avons vu nous-même des couleuvres laper ainsi l'eau que nous avions placée auprès d'elles dans la cage où nous les tenions renfermées pour les observer à loisir."³

The alimentary canal of the Ophidians is remarkable for its great simplicity.⁴ The cesophagus and stomach form a continuous canal, to the special parts of which it is difficult to assign precise limits. The pancreas, according to M. Schlegel, is always placed "dans la première courbure qui fait l'intestin à partir du pylore," and varies in different species both as to size and form. The spleen is of an oval or somewhat globular shape, of a rather firm consistence, and frequently concealed among the lobes of the pancreas, with which it is sometimes intimately united. The liver in

Ophidian
Reptiles.

Ophidian reptiles assumes a long ribbon-shaped form, more slender at either end, sometimes imperfectly divided into a couple of lobes, and extending along the cesophagus and stomach, from the heart as far as the pylorus. The hepatic canal descends from its interior face towards the pancreas, to conduct the bile into the small intestine. The gall-bladder, which is abundantly supplied, discharges its fluid by a short conduit, which joins the hepatic canal at an angle more or less acute. The kidneys, remarkable for their lengthened form and symmetrical position, are divided into a great number of small lobes, adhering to each other by means of the cellular tissue.

Digestion, notwithstanding the activity of the gastric juice, is sufficiently slow in serpents. It would appear, in fact, that the juice in question exercises its influence chiefly in the regions near the pylorus; for it has been found that an animal withdrawn from the abdomen of a snake is always decomposed towards its lower extremity, while the portion lying nearer the cesophagus continues unconsumed. Indigestible portions, such as hair, feathers, &c., are said to be sometimes ejected by the mouth; and, according to M. Dieperink, when a serpent in a wild state is pursued soon after it has swallowed a considerable prey, it will disgorge it to facilitate the means of escape. In regard to the digestive faculty of serpents, one of the most remarkable characters consists in the strong absorbing power of the intestines. When we examine their fecal remains, we find that these exhibit as it were a dry extract of the entire prey, of which the parts incapable of liquefaction remain not only unaltered, but occupying precisely the same relative positions which they held in the living animal. If, for example, a rat has been swallowed, we find, in what at first appears a dry and unformed heap, the muzzle, the long hairs upon the cheeks, the down which covers the thin cartilage of the ears, the hair, of various length and colour, which has clothed the back, abdomen, and especially the tail, and finally the nails, in a perfectly entire state. All fleshy or softer substances have been completely absorbed; and the earthy salts, which, by their union with the gelatine, give consistence to the bones, still indicate by their colour the position formerly occupied by these osseous portions. The most complete natural analysis has been effected by means of dissolution, compression, and absorption,—and of this the desiccated mass already mentioned is the sole residuum.⁵ The infrequent meals of serpents are thus in a measure compensated by the great profit which they derive from each.

The mode in which these reptiles swallow their food is sufficiently simple. They commence by getting the head within their throat, and while the teeth of one jaw adhere to the prey, the other jaw makes a forward movement, and, fastening its teeth, draws the object inwards, till, by this alternate action of the jaws, and chiefly of the under one, deglutition is effected. The jaws, as we have already hinted, are capable of a certain separation from each other even at their basis, and an abundant supply of saliva being at the same time poured out upon the victim, a body larger in bulk than the snake itself is sometimes swallowed; and as in this case the process is slow, and but a small portion can enter the throat at a time, the reptile reposes for a considerable period, even till, with distended mouth, it seems gorged with putrefaction, presenting a hideous and disgusting picture of gluttony and sloth. When the venomous kinds swallow their prey, they do not use their poison-fangs, but lower these beautiful and highly-finished instruments of destruction into the hollow of the gums,—“sheathing them as a sword.”

¹ See Helmann, *Über den Tastsinn der Schlangen*.

² *Physiognomie des Serpens*, i. 97.

³ *Erp. Gén.* i. 135.

⁴ The digestive organs are described by Duvernoy in *Ann. des Sciences Nat.*, and by Meckel in his *Vergl. Anat.*

⁵ *Erp. Générale*, i. 145.

Ophidian
Reptiles.

The heart of Ophidian reptiles is usually of an elongated form, and is remarkable for its distant position from the head.* It is composed of two spacious auricles, separated from each other by a membranous division; the ventricle, on the contrary, is imperfectly divided into two rather narrow cavities by a partition which takes its origin from the base of the heart, and loses itself amid the fleshy fibres of that region. The walls of the auricle, although fleshy, are slender,—those of the ventricle are of considerable thickness, especially on the left side of that portion which extends in the form of a conical appendage beneath the left auricle. Each auricle communicates with the ventricle by means of a broadish opening, susceptible of being closed by a valve. The right auricle receives all the veins, which form, with the exception of the left jugular, prior to passing through the wall of the auricle, a kind of sac of greater or less extent, which, in addition to the ordinary tunics, exhibits a distinct muscular coat. Two large valves serve to close the common entrance of the veins into this auricle. When the blood has attained the right chamber of the ventricle, it is driven into the pulmonary artery, of which the embouchure offers two valves; comprised at its base in the common trunk of the aortas, this artery curves itself beneath the left aorta, and approaches the lung, of which it margins the posterior face before entering the interior of that organ. A single pulmonary vein, piercing the lung behind the artery of the same denomination, carries the oxidized blood into the left auricle, which is of a conoid form, and less spacious than the right one. This oxidized blood, after having passed into the left cavity, is pushed towards the right side, where we find the embouchures of the two aortas, of which each exhibits a pair of semicircular valves, even when these openings are united into one.

We shall now devote a few lines to the respiratory organs. When we observe a serpent in a state of repose,—

“as on the grassy herb
Fearless, unfear’d, he sleeps,”—

we may see that its body alternately dilates and contracts by the play of the ribs, and that this movement is repeated slowly, yet at regular intervals. But we may also perceive that the nostrils are closed for a longer, and consequently an unconforming period, during one of which the body is contracted and dilated perhaps thirty times. It results from this observation that the lungs of Ophidians, besides their ordinary function, fulfil that of serving as reservoirs of atmospheric air, which, though replenished only by a single inspiration, contain a quantity sufficient to admit a continuous oxidation of the blood by the contraction of the lungs. When the oxygen is totally absorbed, expiration takes place, and a supply of fresh air is drawn in. The configuration of the lungs undergoes many modifications in the different races of Ophidian reptiles. The form is usually that of a simple conical sac, extending from the heart toward the lower regions of the stomach, where it ends in a membranous pouch. The trachea, composed of numerous demi-rings united anteriorly by a membrane, terminates in the origin of the lungs by an oblique opening. The latter organ is divided more or less completely into two *bronchi* in *Boa*, the majority of *Tortrix*, the genus *Dipsas*, and others; and in these we may perceive the vestige of a second lobule of the lung, sometimes half as large as that on the other side. A singular peculiarity is observable among the sea-serpents. In *Hydrophis colubrinus*, for instance, the tracheal pipe is prolonged into the hypochondriac region, where it terminates in a membranous sac, extending to within a couple of inches of the anus; but in place of a membrane uniting the rings of the trachea, it is the lung itself that envelopes that tube throughout its whole length.

Ophidian
Reptiles.

The small size of the brain in serpents is obvious in all, and becomes very conspicuous in relation to the size of the head, when we select for observation any of those species in which the organs of manducation are strongly developed. The two hemispheres are prolonged by restriction into the olfactive lobule, so that the latter part is borne as it were upon a pedicle. We observe the optic lobules on their posterior face, and passing beneath the hemispheres towards the eye, to form the optic nerve. The cerebellum is a very small organ, situated behind the optic lobules almost uniform with the spinal cord, or offering but an inconsiderable enlargement. The grand sympathetic nerve is interlaced at so many points with the *par vagum*, that it is next to impossible to trace its origin with any certainty.

As to the intellectual faculties of these reptiles, we know that Satan found

“The serpent, subtlest beast of all the field;”

and we doubt not that, even in our own days, they may be placed at least upon an equality with the Saurian and Chelonian orders. The reproductive power with which their separate parts are said to be endowed has probably been the subject of some exaggeration; and it seems certain that when the tail or other important portion has been destroyed by mutilation it is altogether incapable of being reproduced. The sense of smell is believed to be by no means acute in these reptiles. The nostrils vary in the different genera in respect to form, size, and position. It may, however, be stated as a constant rule, that the purely aquatic species have the nostrils small, directed upwards, and for the most part susceptible of being closed by means of a valve, while those of the terrestrial and arboreal kinds are usually lateral and open. Among the burrowing serpents these openings are almost always of an orbicular form, and of very small dimensions. In the genera *Trigonocephalus* and *Crotalus* there is a cavity on each side of the muzzle, behind the nostrils, of which the use is still unknown. The eye is probably defective in the power of distant vision, though sufficiently acute for all the ordinary purposes of a serpent's life. It is covered over by the external skin, of which, however, the tunics in that quarter are extremely thin and diaphanous, and present themselves under the form of a hemispherical lamella adhering to the scaly plates which surround the orbit. There is thus no apparent eyelid to the visual organs of serpents, a slight edging of the skin forming their only protection.¹ The supposed absence of this part was presumed by the ancients, and has been recorded in the writings even of modern anatomists of the greatest skill. But more recent researches, undertaken by M. Cloquet, and verified by Baron Cuvier and M. Dumeril, have demonstrated that the eye of Ophidians is provided with a single lid, large though immoveable, and incased in a projecting frame, which forms around the orbit a series of scales, variable in number, though usually amounting to seven or eight. When the general covering is renewed, we find that a delicate coating of the eye is likewise thrown off as a portion of the exuviae. The structure of the ear in serpents seems to demonstrate that these creatures are dull in their sense of hearing.

The general envelope of Ophidian reptiles forms a kind of cuirass, which enables them to withstand the influence of the elements and the effects of external accidents. To conform to the movements of the body, and the occasional enlargement of its parts, this covering, we need scarcely say, is composed of a multiplicity of separate compartments, of which the smaller are called scales, the larger plates. These parts are composed of much thicker layers of the integument than the intervening portion, which consists of a delicate skin, seldom visible except when the body is more

¹ “Nous avons déjà dit qu'il n'y avait pas de paupières apparentes dans les serpents, et que ces animaux semblent, par cela même avoir l'œil fixe, et être toujours éveillés.” (*Erp. Gén.* i. 102.)

Ophidian
Reptiles.

than usually distended, and for this reason almost always colourless, being unsubjected to the influence of light. In certain species of the genus *Tropidonotus*, however, the mucous membrane of the neck is so tinted as to exhibit a beautiful vermilion red between the scales; and the scales themselves in many species exhibit colours, both fixed and iridescent, of great brilliancy:—

“With burnished neck of verdant gold, erect
Amidst their circling spires.”

The general tinting depends in a great measure upon the condition of the epidermis, and is always freshest and purest immediately after the casting of the slough or superficial skin. The total amount of longitudinal rows of scales is almost always an unequal number, there being a single range rather larger than the rest along the centre of the dorsal region, with an equal number on either side; but to this rule *Herpetodryas carinatus* forms an exception (the only one perhaps throughout the order), there being a double central row of scales along the back. The form of the scales is greatly varied, some being rounded on the margins, others truncated at the extremity, or prolonged into a sharpish point. The greater number are what naturalists call *imbricated*, that is, lying slightly over each other like the tiles of a house; but almost all sea-serpents have the scales of a hexagonal form, with the epidermis very thin.

The median line of the lower parts is usually covered by a range of broad scaly plates, of much larger dimensions than the ordinary lateral and dorsal scales; and the caudal plates are generally different from those of the abdomen. The latter form a single uniform range from the anus to the throat, where they disappear. They are sometimes narrow, as in the genera *Boa*, *Tortrix*, &c., and in such cases resemble the scales of the back; but in the far greater number they are so broad as to encroach even on the flanks, and thus occupy a large proportion of the circumference of the body. The plates beneath the tail do not form a single central range, except in *Boa*, *Eryx*, and a few other Ophidians, the majority of the order having the part in question provided with a double row of plates. We may add that the terminal plates of the abdomen also not unfrequently partake of this divided character.

The head of Ophidian reptiles is rarely clothed with scales of a character similar to those of the body. They are larger, and of a more determinate and symmetrical form; and as they offer distinctive characters of easy application, they have received from M. Schlegel various names, in accordance with the position they occupy, such as vertical, occipital, superciliary, frontal, rostral, labial, ocular, frenal, temporal, mental, and gular.¹

The system of coloration which prevails among these insidious creatures is very varied, and admits of numerous exceptions to any general laws which we might attempt to establish in its illustration. In numerous species there is a beautiful accordance between the tinting of the body and the colour of the places they inhabit; thus many tree-serpents are of a uniform greenish hue, exactly similar to that of the foliage by which they are overshadowed, while several kinds of *Dendrophis* and *Dryiophis* seem rather to imitate the small and leafless branches. In the genus *Dipsas* the colours recall to mind those of the mossy trunks of ancient trees; fresh-water snakes are usually of a sombre uniform hue; while the marine species partake of those clearer tints of green and blue which beautify the pellucid billows of the up-heaving sea. Such as dwell in dry and desert lands are often to be scarcely distinguished from the parched sand by which they are surrounded; while others, which affect a more varied soil and richer vegetation, are adorned with the gay and gorgeous colour-

ing of flowers, or the metallic splendour of the mineral kingdom. Several have their bodies encircled by alternate bands of crimson and black upon a pearly-white or delicate yellow ground, and present an aspect as richly adorned as any we can discover throughout the entire range of the animal world. Among the more beautiful may be mentioned *Coronella venustissima* and *coccinea*, *Lycodon formosus*, several species of *Tortrix* and *Heterodon*, the majority of the genus *Elaps*, *Naja lubrica*, *Dendrophis ornata*, and *Dipsas macrorhina*. Numerous other species are equally remarkable, both for the splendour and diversity of colour by which they are adorned; but as these bright hues are subject to numerous causes of variation, from age, sex, and season, it results that among no order of created beings is the always uncertain character of colour to be less depended on than among the subjects of our present dissertation. It seems, however, established as a general law, that the younger individuals have the liveliest and most distinct tints, and that these in more aged examples are not unfrequently effaced, or fade away, as we find in *Coluber canus* and *melanurus*, *Homalopsis buccata*, *Xenodon severus*, and others. The power of speedy and spontaneous change of colour does not, however, seem to be a possession of the Ophidian order, as it is of so many of the Saurian tribes. Yet a few of the arboreal serpents have been occasionally observed to modify their living tints from time to time.

The natural colours of these creatures can scarcely be judged of from specimens imported to our cabinets from foreign climes. The spirit in which they are preserved is not the spirit of beauty. Black, brown, ochry-yellow, and several other tints, do not altogether lose their lustre; and *Calamaria arctiventris* and *brachyrrhos*, *Tortrix maculata* and *xenopeltis*, *Coronella rufula*, *Lycodon Hebe* and *subcinctus*, *Coluber constrictor*, *Æsculapii*, and *melanurus*, and several kinds of *Naja*, *Homalopsis*, and *Vipera*, may be named among those which are most easily preserved.

In discussing the various branches of natural history, it is the practice of authors to state the *uses* of each particular tribe of animals to the human race. We fear that in relation to our present subjects a single paragraph may suffice. Serpents certainly confer benefit by destroying other injurious creatures, such as small mammiferous vermin, worms, insects, and mollusca of various kinds. They were formerly used in medicine, though that practice, we believe, is now confined to the ignorant and superstitious; yet it has been recently stated that Dr Marikrosky, of Rosenau in Hungary, has employed the gall of serpents with success in epileptic cases.² It is well known that the flesh of the viper has been highly esteemed, both by ancient and modern physicians, as a restorative and strengthening diet. This idea, as Dr Shaw has well observed, seems to have originated from the reptile casting its skin, a natural process, viewed by the vulgar as a renovation of youth; and a snake being made the emblem of health, and consecrated to Æsculapius, may have depended on the same idea. The flesh of the viper was used by the ancients in leprous and other cases. “The Greek physician Craterus, mentioned so often by Cicero in his Epistles to Atticus, cured, as Porphyrius relates, a miserable slave, whose skin in a strange manner fell off from his bones, by advising him to feed on vipers’ flesh in the manner of fish. Antonius Musa, physician to Octavius Cæsar (Augustus), is said by Pliny to have ordered the eating of vipers in the case of otherwise incurable ulcers, which by this method were quickly healed; and Galen says that those who are afflicted with elephantiasis are wonderfully relieved by eating vipers’ flesh dressed like eels.”³ According to Lopez, the Negroes of the coast of Congo eat roasted adders, and regard them as delicious

Ophidian
Reptiles.

¹ See *Physiognomie des Serpens*, i. 60.

² Hufeland, *Journ. Ann.* 1831, cah. 10.

³ *General Zoology*, iii. 372.

Ophidian
Reptiles.

food. It is well known that the credulous Sir Kenelm Digby, with a view to recover his wife, the Lady Venetia, from consumption, caused her to feed on capons fattened with vipers. The flesh of the viper is still used in Italy and Spain as a remedy in consumption. But we need not detain our readers with more of these, at best, ambiguous views. To proceed with our natural history.

In European countries the copulation of serpents usually takes place, in fine weather, during the months of April and May, and three or four months elapse before the eggs are laid. Incubation is effected within the body of the female; for, on opening an egg immediately after exclusion, we almost always find a fœtus more or less developed, sometimes entirely formed. In the latter case, the so-called shell is merely a delicate membrane, through which the young can force their way, even at the moment of parturition. In the greater number of species, however, the eggs are composed externally of a resistant covering resembling parchment, the young being very imperfectly formed at the period of deposition, and requiring sometimes a month or more before they are hatched. It is merely this difference in the times of final exclusion that constitutes the distinction between the viviparous and oviparous kinds, these being otherwise essentially the same. All Ophidians are in truth oviparous; and those naturalists are in error who compare this seemingly viviparous generation to that of mammiferous animals, in which the young are nourished by the placenta of the mother. According to M. Herholdt,¹ the conditions most favourable to the development of these embryos are humidity, produced by a feeble vegetable fermentation, with a proportional temperature (between + 20° and + 6° R.), and under circumstances likely to favour absorption and evaporation through the external tunic of the egg. Hence their love of dunghills, or heaps of leaves piled up in places open to the sun.

The supposition entertained by many is incorrect, that poisonous serpents always produce living young, and that the innocuous kinds as constantly deposit eggs. This diversity in the generative process does not seem to bear any relation to the organization of the species; at least we find the two modes exemplified in nearly-related species of the same genus. Thus the harmless *Coronella levis* produces young as lively as those of the common viper; *Boa murina* is also viviparous; while the deadly *Najas* and several others lay eggs. The number of young ones varies in different species. M. Schlegel did not find above ten in several kinds of *Calamaria*, from twenty to twenty-five in the genus *Coluber*, and above thirty in *Trionocephalus atrox*. The offspring usually differ from their parents in being of more lively colours, with the head blunter and rounder, the eyes larger, and the scales and other appendages of the epidermis less raised. They are, however, furnished with teeth exactly like those of their respective parents, and of which they do not fail, when occasion offers, to make speedy use. The venomous kinds instinctively elevate and depress their poison-fangs, as if ready from the first to defend themselves against that persecution to which their race is subjected. The European kinds are known to change their skins about five times every summer; that is, once a month from the end of April to the beginning of September. They are capable of long-continued abstinence, independent of the lethargic state into which the northern species fall in winter. A *Boa constrictor* sent from Surinam to Holland fasted continuously for six months. The age to which serpents attain is to us unknown.

Destitute of the power of long-continued locomotion, serpents never attempt to travel far from the places of their birth; and thus, even in our own days, they still represent more accurately than do the other classes of the animal kingdom the positions in which they may be supposed to have been originally placed.

One of the most curious general facts in the distribution of serpents is their apparent absence (at least so far as the land species are concerned) from the numerous islands of the vast Pacific Ocean,—a circumstance not altogether to be accounted for by the isolation of these various groups, seeing that those of the Indian Archipelago particularly abound with serpents. Another fact seems still more firmly established, that the reptiles of the New World are all specifically different from those of the Old,—a peculiar feature in the history of their class, in so far as some quadrupeds and birds are common to both countries. At the same time it may be borne in mind, that it is only the species of very northern portions of the two continents which are in any case identical, and that as these northern portions are almost, if not entirely, destitute of reptile life, the field is greatly narrowed, so far as that form of existence is concerned. The snakes of South America are in general very distinct from those of the northern portions of the New World, although a few are identical. Several of the southern species inhabit the West Indies and the warmer parts of the United States, where they form what may be termed *climatic varieties*. Other species more characteristic of a large extent of North America, reach as far south as Mexico and the Antilles. America in general, especially its equatorial districts, is almost as rich in snakes as the Indian islands. It is otherwise with New Holland, where these reptiles are by no means numerous, but where the species are peculiar to the country. The serpents of Japan seem, without exception, to belong to a particular species not hitherto observed in other quarters of the world. The numerous islands of the great archipelago of the Indian Ocean produce in several instances identical species, and these, moreover, are not unfrequently the same as those of Malacca, Bengal, Hindustan, and Ceylon. If we may judge from the few known species, the serpents of Madagascar may be regarded as peculiar to that vast island. Africa, compared with other great equatorial continents, cannot be said to be very rich in these reptiles. Its southern portions produce species entirely different from those of Europe and of other countries; but these species have a wide range in Africa itself, being in many cases spread over all its intertropical regions, and even its northern parts. These comparatively northern countries, in addition to some peculiar species, produce several others which likewise inhabit the shores of both sides of the Mediterranean. Many of our European serpents are found over a large portion of temperate Asia,—a region which appears to produce but a small proportion of peculiar species.

The geographical distribution of families and genera,—these being viewed as representing various leading forms,—affords an equally curious subject of observation. We may notice, in the first place, that the venomous sorts are distributed, with the exception of a few islands, over whatever countries produce serpents of any kind. These venomous species bear no determinate co-relation, as is often supposed, to intense heat; for they occur in cold and temperate countries equally with innocuous kinds. But their aggregate number is much more limited than that of the latter; for while we reckon the total number of known Ophidians at 263,² we do not find above fifty-seven

Ophidian
Reptiles.

¹ *Oversigt*. 1830, p. 4.

² We here follow the computation of M. Schlegel, who probably proceeds upon the idea, that the actual species have been nominally multiplied by the misapplication (and duplication) of various names. The amount must have been considerably greater in Humboldt's opinion, as that illustrious writer incidentally states that equatorial America produces 115 serpents out of the 320 which form the Ophidian order. Daudin, even in his time, described about 313 supposed species, of which 80 are regarded as venomous and 233 as in-

Ophidian Reptiles. of these endowed with injurious attributes,—that is, the proportion is not much more than one to five. This proportion, however, is not maintained throughout the various countries of the globe,—the venomous kinds seeming to be comparatively more numerous in open sterile countries. Of this, Africa and New Holland furnish examples,—the venomous species of the former continent being to the innocuous kinds as one to two or three, while of the ten species (or thereabouts) of ascertained New Holland species, not fewer than seven are venomous. In general, the number of individuals of each species is much more limited among the venomous kinds, as these live in an isolated manner, and rarely multiply so as to become abundant. Local circumstances sometimes favour an exception to this rule, as in the case of the *Trigonocephalus lanceolatus* of Martinique and St Lucia, and that of the Dalmatian *Viperus ammodytes*. The sea-snakes, all of which are poisonous, are likewise of a gregarious nature.

Excepting the anomalous group called *Tortrix*, there does not seem to exist any genus of serpents which is spread over all countries capable of maintaining reptile life; and this restriction seems to illustrate the intimate relation which subsists between the organization of these beings, and the countries they inhabit. For example, the Colubers properly so called, which are destined to dwell in countries which are either well wooded, or marshy with abundant vegetation, have not yet been observed in New Holland, and are so rare in South Africa that only a single species has been found there, and that of a somewhat anomalous nature, in so far as its characters exhibit an approach to those of species which dwell by preference in sandy deserts. A similar observation applies nearly to the genus *Coronella*, composed of species which inhabit marshy plains, or such as are covered by brushwood. None of these occur in New Holland (which is noted for its frequent want of water), while the South African kinds differ from the typical species of the genus. The *tree-serpents* are characteristic of equatorial countries, inhabiting of course only those portions which fulfil the conditions of their existence,—that is, are well wooded. The three genera which compose the family are found both in the Old and New World; but it is noticeable that the species of the genus *Dipsas* of America do not attain to so great a size as the majority of those of India; while the genus *Dryophis* in America forms a true geographical division of the group, in so far as the dental system and muzzle are less developed, and the pupil of the eye is orbicular. The fresh-water snakes, comprised in the genera *Tropidonotus* and *Homalopsis*, occur abundantly in countries rich in permanent lakes, and watered by continuous rivers. They are thus well known in Asia, America, and even Europe, but are extremely rare in Africa, and unknown in New Holland. The genus *Homalopsis*, indeed, which contains the essentially aquatic species, does not occur in Africa, but predominates in the New World, so rich and unrivalled in its mighty reservoirs of water.

The geographical distribution of the *Boas* exhibits some facts worthy of record. The whole are peculiar to warm countries. The genuine species are confined to South America; their analogues in the ancient world being the *Pythons* of India, although in the latter country we also find several serpents very similar to Boas, but of very small size, and of which none exists in the Western World, except a single representative in the island of Cuba. The genus *Acrochordus* forms a limited group, entirely confined to the East Indies. Of the venomous serpents, it is chiefly the vipers, and perhaps a few rattle-snakes, which make their way into temperate or colder countries, the majority of the genera occurring in intertropical regions. Of the colubri-form venomous serpents, the genus *Elaps* is the only one which occurs in both worlds; and it is not improbable that the American species will be found to constitute a geographical group, distinguished by their peculiar coloration, and certain small distinctions even in form. The Indian species of the genus last named are longitudinally striped, instead of being ringed with red and black, while those of New Holland present some anomalous features. The genus *Bungarus* is proper to the East Indies, where also are found certain *Najas*, although the majority of these prefer a drier and more sandy soil,—a circumstance which explains their greater predominance in Africa and New Holland. The fact does not seem to admit of easy explanation, that *salt-water serpents* should be found almost exclusively in the Indian seas, from Malabar to the great Pacific Ocean. In regard to the venomous kinds properly so called, of the three genera of which that division is composed it may be observed, that one, *Viperus*, is proper to the ancient world; that another, *Crotalus*, is confined to the new; while a third, *Trigonocephalus*, occurs in both. These last-named reptiles dwell in great forests or in well-wooded countries, and for that reason are not observed either in Africa or New Holland, where they are replaced by vipers; but it may be mentioned that the viper of New Holland is an anomalous species, while such as inhabit Europe equally depart from the typical form, and tend towards that of *Trigonocephalus*. In the genus just named two divisions may be established,—one composed of species with the head clothed with scales, and which inhabit more particularly tropical countries; another formed of species with the head covered by scaly plates, and which extend into temperate regions.

The preceding are a few of the most general facts in the distribution of Ophidian reptiles. We shall now notice some of those peculiarities which distinguish particular continents,—and, first, of Europe. We here find no species of the genera *Calamaria*, *Heterodon*, or *Lycodon*, no genuine tree-serpents, no species of *Homalopsis* or *Boa*. We never meet in Europe with any salt-water serpents, nor with any of the colubri-form venomous kinds; and the poisonous tribes in general are represented merely by a few vipers. That the entire order of Ophidian reptiles has its great centre of dominion in sultry regions, is made manifest by the fact,

Ophidian Reptiles.

nocuous, which gives a greater proportion to the former than they are at present entitled to. Nearly 400 different kinds of serpents are believed to exist in the Paris Museum, although we know not with what degree of critical accuracy that enumeration has been made; but several Ophidians, not true serpents, are included in the lists of others, which are excluded in the enumeration of Schlegel.

We do not ourselves possess the means of ascertaining the total number of reptiles now known to naturalists; but the following table exhibits the amount (as in 1834) in the National Museum of Paris, compared with the number described in the works of three principal writers on the class in question:—

	Lacépède, 1790.	Daudin, 1805.	Merrem, 1820.	French Museum, 1834.
* Chelonians.....	24	62	62	97
Saurians.....	56	88	83	168
Ophidians.....	172	315	348	391
Batrachians.....	40	91	87	190
	292	556	580	846

We may conclude this note by observing, that the unfortunate Wagler, in his *Natürliches System der Amphibien*, 4 vols., Munich, 1830, with folio atlas of plates, has described no fewer than 248 genera of the reptile race.

Ophidian
Reptiles.

that the temperate and northern parts of Europe produce no peculiar species, that is, no species which do not occur equally, if not more abundantly, in the southern districts of the continent, where we likewise find several kinds native to the neighbouring countries of Asia and Africa. Limits, however, may be assigned to several species, and this circumstance naturally gives rise to some curious observations. The common viper, for example, inhabits all the central parts of Europe, and is even spread over temperate Asia as far as Lake Baikal. It is well known in Sweden, spreads westwards into Britain, is frequent in Jura, Islay, and some others of our western islands, but is unknown in Ireland. The western boundary, however, of the great mass of individuals of this species may be stated to be the river Seine, while the Alps appear to form its southern limit.¹ In the southern portion of western Europe our viper is replaced by another species called the aspic (*Vipera aspis*), which spreads from Trieste over Italy into Sicily, through Switzerland and over France, passing beyond the Seine towards the Pyrenees, and into Spain. The southern parts of the east of Europe produce a third species of this genus, *Vipera ammodytes*, which we find to spread from Styria as far as the south of Hungary, and into Greece, Dalmatia, Sicily, and probably likewise Calabria. This distribution of so nearly-allied species seems modified by, if not dependent on, the nature of the territories which each inhabits. The first prefers, in general, heathy lands and places of a rather moist and wooded character, the second affects a dry and arid country, while the third rejoices in a rocky region. No local or climatic varieties of these vipers have been yet observed; but it is otherwise with several other snakes, which have a widely extended distribution over Europe; for example, *Coronella lavis*, and *Tropidonotus natrix* and *viperinus*. These species, of which the former two inhabit almost the whole of northern and central Europe, the last not extending further than the fiftieth degree of north latitude, occur equally in the south of Europe, where they form well-marked local varieties. Thus, in Spain, *Trop. viperinus* has the back longitudinally rayed; and a corresponding character occurs in Sardinia in relation to a species common in that island, while the Sicilian individuals present some slight additional disparities. *Coronella lavis* forms in Italy a peculiar climatic variety, of a paler hue than usual, which extends as far north as Marseilles. *Coluber Aesculapii*, which inhabits the south of Germany, is also found in Dalmatia, Italy, and Provence. *Col. viridiflavus* has been observed over all the south of Europe, Greece, Hungary, Dalmatia, Italy, Sicily, Sardinia, and as far north as France and Switzerland. *Col. hippocrepis* occurs in Spain and Sardinia, while *Col. leopardinus* is a native of Sicily, Dalmatia, and Greece; but, so far as known, neither of these kinds is met with in Italy. Neither has *Psammophis lacertina*, so common in Dalmatia, in Spain, and a large portion of France, been ever found either in Italy or the adjacent islands. The southern countries of Europe produce several serpents which are not characterized by a great extent of distribution. Such are *Xenodon Michahellis* of Spain, and *Psammophis Dahlia* of Dalmatia (the latter, however, which approaches the tree-serpents in its slenderly elongated form, being found also in Greece), and *Tortrix eryx*, confined to Greece as a European species, but elsewhere well known amid African and Asiatic deserts.

A careful and more extended study of the distribution of animal life in Africa would be found to illustrate many curious relations both in descriptive zoology and physical geography. No other continent furnishes more striking proofs of the connection between the natural characters of

a country and its animal inhabitants. Thus, after acquiring some knowledge of the physical constitution of Africa, we might almost predicate the prevailing features of its natural history. The leading character of this continent is the presence of vast sandy plains or deserts, and elevated plateaus, of which the vegetation is either entirely extinguished, or held by a precarious tenure. Acted upon continually by a burning sun, the flat unvaried surface is altogether unfit for the production of those vapours which, in a state of atmospheric condensation, produce our refreshing showers of frequent moisture, and the more stormy accessories of hail and snow. The great mountain ranges being few and far between, the intermediate regions possess no perennial fountains of refreshing water, no "clouds of morning dew," to clothe their arid wastes with verdure. Hence the absence of that mighty power which in America slumbers amid the most uncopied wilderness, and makes, when aided by the hand of man, the "desert blossom as the rose." It results from the fact of so large a portion of Africa being destitute of rivers, and consequently of forests and other lowlier vegetation, that we there find but a small number of those animals which inhabit woods and fresh waters, while such as are fitted to scour over vast plains occur in great abundance. Hence the absence of stags and the existence of vast troops of antelopes; hence also the scarcity of squirrels and other wood-haunting Rodentia, and the increase of certain swift-footed terrestrial kinds. The characters of reptile life exhibit an equal conformity with the spirit of these observations. Africa produces perhaps a greater number of land-tortoises than all other portions of the world combined; but the fresh-water kinds, with the exception of a single *Emys*, and one or two species of the genus *Trionyx*, are nearly unknown, while frogs and toads are also few in number. The same observation applies in reference both to the aquatic serpents and the wood-loving kinds. The genera *Dryiophis* and *Homalopsis* are entirely wanting, and not more than one or two species are known of each of the genera *Dipsas*, *Dendrophis*, and *Tropidonotus*. In so vast a continent, however, in spite of its prevailing character of aridity, there must be numerous exceptions; and we know how far-flowing are the waters of the Nile and the Niger, how lofty and continuous the mighty mountains of Abyssinia. Many an umbrageous river, we doubt not, still rolls its crystal waters directly towards the all-absorbing sea, or fills up the glassy depth of unimagined lakes, whose beautiful shores are haunted by many unknown forms of existence,—

Fair creatures, to whom Heaven
A calm and sinless life, with love, hath given.

Our knowledge of African snakes, however, is still insufficient to admit of any accurate geographical sketch of their distribution being laid before our readers, for we have no data on which to assign limits to the majority even of the best-known species. Egypt and Abyssinia, Algiers, a part of Senegambia, the coast of Guinea, and the Cape,—these are the chief points from which any precise knowledge has been derived. Yet we may hazard the assertion, that Africa in general is much poorer in reptiles, particularly serpents, than either Asia or America. The number of genera is equally circumscribed; and the same observation applies to our present class as has been made in relation both to the higher animals and plants of Africa, to wit, that the species of certain genera are very numerous, and that several different kinds often inhabit the same places. Towards the southern extremity of the continent we meet with four species of the genus *Coronella*, as many of the genus *Naja*, and three *Vipers*. The other genera which

Ophidian
Reptiles.

¹ It is indeed alleged to have been met with, though sparingly, in the valley of the Po, and as far as the Florentine territory.

Ophidian
Reptiles.

Ophidian
Reptiles.

occur there have each only a single representative. These reptiles belong almost without exception to species peculiar to the African continent. *Lycodon Horstokii* and *Naja rhombeata* occur on the coast of Guinea, which produces likewise *Psammophis moniliger*,—but a local variety, resembling that which is found in Egypt. In Senegambia we find three species of tree-serpents, of the genus *Dendrophis*, which differ from those of the Cape, but of which one (*Den. picta*) is spread over a vast extent of the Asiatic world, as far south-eastwards as New Guinea. The inter-tropical countries of Africa produce *Python bivittatus*, characterized by an equally great extension, as it is found both in Java and the Chinese empire. *Viperus arietans* of the Cape is found as far north as Abyssinia, where it forms a variety of a paler hue. Northern Africa produces several serpents of species different from those of other parts of that continent. Such are *Tortrix eryx* and *Viperu echis*, which elsewhere inhabit as far south as Hindustan,—the *Cerastes*, a species of *Dipsas*, and several kinds of *Coluber*. Other species, such as *Naja haje* and *Psammophis moniliger*, differ more or less from their southern representatives. The Mediterranean countries of Africa nourish several kinds which occur in the south of Europe; and this analogy between the two continents is very striking when we compare, not the serpents alone, but the zoological productions in general, of Barbary, with those of Portugal and Spain. No serpents have been yet observed in the islands situate within the radius of Africa, and it appears certain that they do not exist in the Canary Islands.

The great island of Madagascar, of which the natural productions are as yet but slightly known, appears to be zoologically allied to Africa chiefly by the species of its western side; and although the eastern slopes of its great mountain chain exhibit features of an Asiatic character, its totality presents a very distinct and peculiar complexion. With the exception of *Tropidonotus schistosus*, all the known serpents belong to particular and elsewhere undiscovered species. For example, the *Langaya*, an anomalous and very remarkable species of *Dryophis Herpetodryas Goudotii* and *Rhodogaster*, and *Dipsas Gaimardii*, are all peculiar to Madagascar. The Mauritius produces a very beautiful species, *Coluber miniatus*, and a small Boa (*B. Dussumieri*) of an extremely attenuated form. From the Seychelles Islands we know of no serpent but a species of the genus *Psammophis*.

With the exception of its two magnificent Indian peninsulas, Asia is not so productive as might be expected of the reptile race. The temperature of a vast portion of the loftier and central, and a *fortiori* of the northern districts, is subjected to a low temperature during many months of the year. We know that Northern Asia, Siberia more especially, produces several animals of the higher orders, identical with some which inhabit the more rigorous parts of Europe; but the alleged identity of the Siberian species of *Tropidonotus* and *Viperus* may possibly require confirmation. A curious Ophidian, peculiar to the southern countries of Siberia, is *Trigonocephalus halys*, intermediate organically between the vipers of Europe and those species of its own genus which have the head furnished with scaly plates. The deserts to the south of the Caspian Sea, which are prolonged on the one side into Hindustan, on the other by means of the Iran, into Arabia and Syria, thus connecting with the desert tracts of Africa, produce a few species common alike to corresponding portions of both continents. We are still in almost total ignorance of the snakes of the great plateaus and other portions of Central India.

The reptiles of Japan present this peculiarity, that while the Batrachian and Chelonian orders exhibit several species identical with those of Europe (*Rana esculenta* and *temporaria*, *Hyla arborea*, *Emys vulgaris*, &c.), the Saurian and Ophidian groups seem to consist of species alto-

gether unknown in Europe. However, we know as yet but in part, for the Japanese species hitherto collected comprise, in addition to the genus *Hydrophis*, merely three species of *Coluber*, two of *Tropidonotus*, and a single *Trigonocephalus*.

The island of Ceylon, though not extremely remote from the coast of Coromandel, produces several serpents not known in continental India, such as *Tortrix maculata*, *Calamaria scytale*, *Lycodon carinatus*, and two species of *Trigonocephalus*.—*Trig. hypnale* and *nigromarginatus*. It is along the Ceylonese shores that we first perceive certain species of the genus *Hydrophis*, those singular snakes which dwell exclusively in the sea, and occur from the island in question over all the intertropical marine waters east of Malabar, and as far as Polynesia. The number of Ophidian species which inhabit the Gangetic Peninsula, without spreading into the great islands of the Indian Archipelago, is limited. Such, however, are *Tortrix eryx*, *Coronella Russelii* and *octolineata*, several species of *Coluber* and *Lycodon*, *Dipsas trigonata*, several kinds of *Tropidonotus*, *Elaps trimaculatus*, and some vipers. The great islands themselves, with their smaller dependencies, are regarded by M. Schlegel as presenting a most interesting field for the study of zoological geography, and the observation of those local races, constituted by the diversities observable in apparently identical species placed in different localities. These islands are of the first rank as to size, situate within the tropics, covered by an abundant vegetation, and inhabited by innumerable tribes of living creatures of every class and kind. They are separated from each other by seas of no great breadth, yet sufficient to present, as matters are now constituted, an insurmountable barrier to the migration of the majority of species. Now when we find the same creatures inhabiting many different and distant islands having no communication with each other, we may reasonably infer that each insulated tract of land has borne its own inhabitants since the relations of our earth's surface became as they now exist, and that the individuals of each species form in every island a family group, which will exhibit, when compared with the corresponding species in other islands, certain modifications produced by the disparities of their position. Experience has proved the accuracy of this assumption. It has not unfrequently happened, that the same species has been discovered to inhabit Sumatra, Java, Borneo, Timor the Celebes, the Philippine Islands, and continental Asia, and in each locality has been observed to present some constant though extremely slight distinction. Now it would never do to regard these as so many distinct species. They are only local or climatic varieties, the origin of which may be obscure or incomprehensible (as are many things besides), but which we doubt not would show their identity, by each recognising the individuals of their kind, and by breeding together, could they be transported from one to another of their sea-girt isles. Innumerable examples of these climatic differences might be adduced, were we to extend our observations throughout the vast range of the animal kingdom; but here a few examples from the reptile races must suffice. The *Najas* from the isles of Sunda constantly differ in several characters from those of Bengal and the Philippine Islands. *Tortrix rufa* from the Celebes is distinguishable from individuals of the same species from Bengal and Java, by the uniform tint of the back, and by two small spots upon the occiput. *Calamar oligodon* of Java exhibits in Sumatra a difference in the dorsal tinting, and forms in Ceylon and the Philippine Islands a third local variety of great beauty. Analogous differences exist between the individuals of *Coronella baliodeira* of Java and Sumatra. *Lycodon Hebe* of Java is smaller in size, and not so pale in colour, as that same species in Bengal, while those from Timor are still more diminutive, and of darker hue. The

Ophidian
Reptiles.

beautiful *Coluber melanurus* inhabits Java, Sumatra, and the Celebes; but the individuals from the last-named locality have the nape of the neck constantly adorned by an angular black mark. *Herpetodryas oxycephalus* is of a beautiful grass-green colour in Java; but this pure tint becomes embrowned in Borneo, and in Celebes appears almost black upon the dorsal region. *Dendrophis picta* inhabits almost all the intertropical countries of the Old World, from Senegal to New Guinea, but varies considerably at distant points of such a vast and surprising distribution. *Dryiophis nasuta* of Bengal and the Mariannas has in Java the abdomen rayed with yellow. *Dryiophis prasina*, common in the isles of Sunda, exhibits a local variety in the Celebes; and *Tropidonotus quincunciatus*, a species widely spread through India, has in Java the spots confluent, so that the dorsal portion seems rayed with black. *Trop. chrysargos* of Sumatra bears a different aspect from that species in the Celebes, while both vary from the individuals found in Java. *Homalopsis Schneideri*, which is spread from India to New Guinea, exhibits several varieties in different regions. The great *Python bivittatus* occurs in China, the isles of Sunda, both the Indian peninsulas, and Ceylon, and is, moreover, distributed across Africa as far as Senegambia. In this vast extent of territory it exhibits some considerable variations, which, when the extreme differences merely are regarded, and the intermediate links kept out of view, have caused it to be described, in its different aspects, as distinct species, all however referable, in Mr Schlögel's opinion, to one and the same. *Elaps furcatus* and *bivirgatus* exhibit a different distribution of colours in Sumatra from what they do in Java; but it may be stated as a general fact, that almost all the known serpents of the former island have been found also in the latter. Indeed a considerable number of these insular Ophidians occur likewise both in Hindustan and Bengal.

It is a singular circumstance, that the two most remarkable species of the genus *Trigonocephalus* (*Trig. puniceus* and *rhodostoma*) have hitherto been observed only in Java; while *Trig. viridis*, so common in India, Bengal, Sumatra, and Timor, does not occur in the first-named island. The genus *Bungarus*, on the other hand, which inhabits Ceylon, Hindustan, and Bengal, does not occur in any other of the great eastern islands, except Java. In the Celebes we find many peculiar forms of animal life, combined with others well known elsewhere. Among the serpents we find there a beautiful species of *Herpetodryas* (*Herp. dipsas*), and *Dipsas irregularis*, which also occurs in Amboyna. Several species are absolutely the same as those of Java and Sumatra, although a few form permanent local varieties, which exhibit some slight disparities of colour. Such are *Tortrix rufa*, *Coluber melanurus*, *Herpetodryas oxycephalus*, *Dryiophis prasina*, *Dipsas dendrophilus*, and *Tropidonotus chrysargus*. Of the Moluccas our knowledge is extremely slight, being confined chiefly to the island of Amboyna. We there find three or four serpents, likewise known as Javanese species; but it does not appear that the isles of Sunda produce *Lycodon modestus*, *Boa carinata*, *Dendrophis rhodopleuron*, or *Python amethystinus*. Timor is in some measure intermediate in its productions between Java and the Moluccas. Its *Python* is perhaps different from that of Amboyna, and it produces a singular *Homalopsis* (*H. leucobalia*). *Lycodon Hebe* is there of a deeper tint than in Java; and *Coluber radiatus* is represented in Timor by *Col. subradiatus*,—a species analogous, but not the same. New Guinea and the adjacent islands produce several new species. We know little of the reptiles of the Philippines, though a few have been collected in the environs of Manila, in the island of Luçon; and these clearly establish the curious fact, that the species of that island bear a strong analogy to those of Ceylon,—not a few being identical. The *Naja* of the Philippines belongs to the ordinary variety

of *N. tripudians*, as it occurs in India, and which always differs in some measure from the same species from the isles of Sunda.

The vast insular continent of New Holland is as yet but slightly known, most of its ascertained productions having been sent only from a few limited localities; but the anomalous and extraordinary character of its productions may even now be fairly inferred. The snakes seem peculiar, and almost all belong to the venomous division. No water species have as yet been seen there. It has already been observed, that the innumerable islands of the great Pacific Ocean are believed to be unproductive of serpents. The Mariannas, however, form an exception to this general rule, and Dampier mentions green serpents as inhabitants of the Gallipagos.

A few brief notices of the serpents of the New World may terminate the geographical department of our subject. On comparing the species of the two great continents of America with each other, we observe some interesting parallels. The rattle-snake, *Crotalus horridus*, so common over a large extent of South America, is represented in the northern territories by *Crot. durissus*, as is *Coronella venustissima* by *Cor. coccinea*. This kind of comparison, however, applies but to a few species, for the majority of kinds produced by one of the continents differ from those of the other. Thus, the genera *Tortrix*, *Dipsas*, *Dendrophis*, *Boa*, have as yet been found only in South America, or as far north as the Antilles, while *Tropidonotus*, on the contrary, is not found in the southern continent, though frequent in the northern, from which it likewise extends to parts of the West Indies. A small number, however, of southern species are found also in North America, such as *Calamaria melanocephala*, *Lycodon clelia*, *Coronella cobella*, *Herpetodryas cursor*, *Dryiophis Catesbyi*, *Elaps corallinus*, *Homalopsis carinicauda*; while in like manner *Heterodon platyrhinus*, and *Herpetodryas æstivus*, which may be regarded rather as northern species, have been ascertained to inhabit Brazil. The following species of North American reptiles also inhabit the Antilles; *Calamaria striatula*, *Coronella coccinea*, *Heterodon platyrhinus*, *Coluber constrictor*, *Herpetodryas æstivus* and *cursor*, *Tropidonotus bipunctatus*, *fasciatus*, and *saurita*. Those next named also occur in the Antilles, although their proper country is South America; *Calamaria melanocephala*, *Coronella regine*, *Lycodon clelia*, *Dendrophys liocercus*, *Dryiophis Catesbyi* and *aurata*, *Dipsas annulata*, *Homalopsis angulata*, *Boa constrictor* and *cenchræa*, and *Elaps corallinus*. The species peculiar to these West Indian islands are very few in number, the most characteristic being *Psammophis Antillensis*, *Trigonocephalus lanceolatus*, *Dendrophis Catesbyi*, and *Boa melanura*. On comparing the snakes of Guiana with those of Brazil, we find many species common to both countries, several, however, forming local varieties more or less distinct, as in the cases of *Herpetodryas lineatus* and *Olfersii*, *Coluber poëcilostoma*, &c. Certain species are peculiar to one or other of the countries above named,—for example, *Calamaria badia*, *Xenodon typhlus*, *Coluber corais*, *Herpetodryas Boddaerti*, *Dendrophis aurata*, *Dryiophis Catesbyi* and *argentea*, *Homalopsis plicatilis*, *Elaps lemniscatus* and *Surinamensis*, &c. have never been seen except in Guiana; while *Calamaria Blumii*, *Coronella Merremii*, *Xenodon Scholtii* and *rhinostoma*, *Lycodon formosus*, *Herpetodryas serra*, *Homalopsis carinicauda* and *Martii*, are found only in Brazil. Other species, again, appear as it were to represent each other in these parts of South America, so that we may place in parallel, *Coronella venustissima*, *Dipsas Mikani*, *Wegeli*, *leucocephala*, and *Nattereri*, and *Trigonocephalus Jararaca*, of Brazil, with *Coronella venusta*, *Dipsas nebulata*, *Catesbyi*, *macrorrhina*, *punctatissima*, and *Trigonocephalus atrox* of Guiana. The other parts of South America are too little known to admit of any detailed comparison; but it

Ophidian
Reptiles.

Ophidian Reptiles. may be observed, that of the species discovered in Chili, several are entirely new, and distinct from such as exist on this side the Cordilleras.¹

Notwithstanding the interest of the subject, we must now bring our general observations to a close, and proceed with a brief systematic sketch of the principal genera and species, referring the reader to M. Schlegel's work (and to those of the other Erpetologists here quoted) for more minute details. In conformity with the views of the author just named, we preserve the ancient subdivision of venomous and non-venomous kinds. The constant character of the former consists in being provided with a gland of a cellular structure, which secretes a very deleterious poison. Maxillary teeth, called fangs, of much greater length than the others, hollow interiorly, and furnished with openings at either extremity, for the entrance and exit of the poison, are the potent weapons with which these insidious reptiles inflict their fatal wounds. It is difficult, if not impossible, to assign to these serpents any certain character of external distinction, although there is something in their general aspect which points them out, even to the uninitiated, as dangerous neighbours. Their natural habits also offer this distinction, that the venomous kinds are almost always either terrestrial or marine, although *Trig. viridis* is slightly arboreal, and certain species of *Naja* occasionally occur in fresh water. But the colubrine venomous kinds so greatly resemble the innocent species, that professed naturalists have sometimes combined them with each other. Their most common characters consist in a thickish rounded muzzle, and a short, thick, conical tail. The marine serpents may be recognised by their flattened tails.

The constitution of the following families bears relation rather to the habits of life than the organic structure of the species they respectively contain. We follow the classification of M. Schlegel.

FIRST PRIMARY DIVISION. NON-VENOMOUS SERPENTS.

Family I.—Burrowing Serpents.

Genus *TORTRIX*. Body cylindrical, of nearly equal dimensions throughout; head small, obtuse, and covered by imperfectly developed plates; eyes small; nostrils narrow; gape not widely cleft; teeth short and conical; tail short. (Plate V., fig. 6.)

The species of this genus (which in M. Schlegel's work includes also *Eryx* and *Xenopeltis* of other authors) inhabit the warmer countries of both the Old and New World, preferring dry and sandy districts, in which they form narrow excavations. *T. eryx* occurs over a vast extent of territory, from Egypt to Hindustan, and is met with in the southern parts of Europe. The ground colour of the dorsal region is a beautiful red with numerous confluent spots, and bands of blackish brown; the under parts are yellow, the whole covered by small scales. The muzzle is obliquely truncated at the end. Length about two and a half feet. Abdominal plates 195, caudal twenty. Six other species are known, of which *T. scytale* is American, and, of all undoubtedly Ophidian reptiles, makes the nearest approach to those ambiguous genera *Typhlops* and *Amphisbena*.²

Family II.—Worm-like Serpents.

Genus *CALAMARIA*. Body small and cylindrical, terminated by a short conical tail. Head uniform with the body. Plates in the muzzle few in number.

The majority of the genus have the lower surface of a fine vermilion hue, a colour frequent among reptiles which

inhabit low and moist abodes. They seldom exceed a foot in length, and are found in both the Americas, in Africa, Southern Asia, New Holland, and the Indian Archipelago. There are eighteen described species, of which one of the most curious is *Cal. lumbricoidea* of Boié.³ Its body, though sometimes several feet long, does not exceed the thickness of a swan's quill. The colour is blackish-blue above, bluish below, with blackish spots, and a yellow ray along the sides. The scales are smooth, square, and disposed in thirteen rows. Abdominal plates from 190 to 217, caudal from sixteen to twenty-three. Eighteen species are known.

Family III.—Terrestrial Serpents.

Genus *CORONELLA*. Body somewhat pentagonal, thickening towards the centre. Head distinguishable from the neck, sometimes very broad at the base, depressed, the muzzle short, obtuse, and slightly truncated. Scales smooth, and disposed in from seventeen to nineteen longitudinal rows. Abdominal and caudal plates about 180 + 40.

The species of this genus are very alert in their movements, and defend themselves, when attacked, with great energy and perseverance. They are dispersed over almost all parts of the world (preferring plains and humid places), but have not as yet been observed in Japan or New Holland, and are rather rare in Asia. Specimens from South America are very frequent in collections. *Cor. levis* is a well-known European species, which occurs in France, Germany, Switzerland, Italy, and, from Sparrmann's description, appears to be among the number of the few Ophidians which inhabit Sweden.⁴ It is of a shining bay colour, ornamented by irregular black marks, which form a peculiar design upon the head. The under surface is yellowish, marked with square black spots. There are twenty-one rows of scales, and the plates are 175 + 55. This species is viviparous, that is, the young are hatched within the body of the mother. When attacked, it attempts to escape with great celerity, and when foiled in that intention, it fights with energy, bites furiously, and will scarcely allow itself to be taken alive. It cannot be lifted by the end of the tail (at least with impunity), as many serpents may, as it possesses the power of bending its body upwards, and wounding the hand of its captor. However, its bite, though disagreeable, is in no way dangerous. It is an excellent swimmer, but does not enter the water willingly. It is very fond of mice. About fourteen other species are known to naturalists.

Genus *XENODON*. General form heavy, head broad, muzzle short and truncated, body thick, abdomen flattened. Upper jaws provided posteriorly with a solid, elongated, compressed tooth. Scales smooth, and dispersed in rather oblique ranges, especially on the neck, which is capable of expansion. Plates of the head short and broad.

Of this genus the species are eight in number, and of these the individuals are by no means abundant. They are of large size, sometimes measuring from three to four feet in length, and, being thick in proportion, present a somewhat formidable aspect. They are usually characterized by a grayish-blue tint, and occur chiefly in Java and intertropical America. None have been as yet found in Africa or New Holland, but *Xen. Michahelles* inhabits the south of France and Spain.⁵ This species is distinguished by its short conical head, terminated by a prominent rostral plate. It has twenty-seven rows of scales, and 216 + 60 plates.

Genus *HETERODON*. Head not very distinguishable from the general form, which is slightly pentagonal, and almost of equal thickness throughout. Abdomen somewhat angular, and narrower than in *Xenodon*. Tail very short, and furnished beneath with divided plates. Rostral plate al-

Non-venomous Serpents.

¹ See *Physiognomie des Serpents* (distribution géographique), i. p. 195, et seq.

² *Erpétologie de Java*, pl. 22.

³ *Museum Adolph. Fred.* pl. 6, fig. 2.

⁴ *Neue Schwed. Abhandl.* xvi. 180, pl. 7, f. A, B.

⁵ Figured by Wagler under the title of *Rhinechis Ajassizii*. *Icones*, pl. 25.

Non-venomous
Serpents.

ways prominent, sometimes prolonged into a small up-turned trunk. Three species are known.

All the species are natives of the New World. The prevailing colour is red, ringed or spotted by a deeper hue. Their manners are unknown, but it is presumed that they inhabit a dry and sandy soil. We shall here name only the harlequin snake of America (*Het. coccineus*), which inhabits Louisiana and the southern states.¹ The ground colour is a bright yellow, tending more or less to brown upon the back, which is adorned with above twenty broad round or oval spots, of a purplish-red colour, bordered with black. Its brilliant tints are effaced soon after death. "This beautiful snake," says M. Audubon, alluding, we believe, to our present species, "is rather rare in the United States, where I have observed it only in the south. It glides through the grass with ease, and ascends to the tops of bushes, and among the branches of fallen trees, to bask in the sun. Children are fond of catching it on account of its beauty. It feeds principally on insects, such as flies, and small Coleoptera."² This seems the species described by Herrera in his History of the West Indies, as inhabiting Mexico and the Floridas, where it is known by the name of *Madre de Hormigas*, on account of its frequenting the society of ants.

Genus LYCODON. Form usually thin, sometimes extremely slender. Anterior maxillary teeth longer than the others. Vertical and anterior frontal plates small and shortened, the occipitals rather long.

The species inhabit both the Old and New World. The prevailing tint is of an earthy hue, passing more or less into brownish or ochry-yellow, the majority of species being ornamented by a collar of a clearer colour. Several kinds are ringed with black, white, and red. The abdominal plates usually amount to 200, the caudal vary from fifty to a hundred. We know little of the habits of these reptiles, of which above a dozen species have been collected in different parts of the intertropical world.

Genus COLUBER. This genus, as originally established by Linnæus, contained all the Ophidian reptiles with subdivided caudal plates. The venomous kinds were afterwards removed, and the genus itself partitioned into several groups; but even then the genus Coluber properly so called continued to contain a vast amount of species. MM. Boie and Schlegel restricted it still farther; and although it is difficult to apply the distinctive notes of these writers, the genus is natural in itself, when we seek to recognise it rather by the general bearing and physiognomy of the species, than by means of isolated characters.

It contains all those innocuous serpents of considerable size, which hold, as it were, by the form and proportion of their particular parts, a central position among the other Ophidians. Their bodies, less contracted than those of the fresh-water kinds, are yet by no means so slender as those of the arboreal species. Their head is not so lengthened as that of the latter, but is less broad than that of the aquatic sorts. The tail, modified in accordance with the nature of the species, varies in its form, as these resemble or recede from the conterminous groups in their mode of life. It is thus that certain species of the genus Coluber are closely connected with *Tropidonotus*, or even *Homalopsis*, while others are linked with *Herpetodryas*, *Psammophis*, *Coronella*, or *Xenodon*. The muzzle is usually broad, thick, rounded, rather short, the nostrils lateral, open, and oblong. The head is always laterally angular, from whence results the lateral position of the eyes, of which the pupil is orbicular in form. The body varies in proportional thickness in the different species, but is usually compressed, and slightly

pentagonal. The abdomen is generally broad, convex, rarely angular, and is covered by numerous plates, more closely set together than in other serpents, and sometimes amounting to nearly 300. The tail is almost always cylindrical and pointed, generally of medium length, rarely slender and elongated, occasionally short and conic, its inferior portion furnished with divided plates. 12 sp. are known.

Almost all the countries of the earth, of which the nature of the soil and climate is not altogether opposed to the existence of the Ophidian order, are inhabited by the genus Coluber. Only a single species, however, has been found in Southern Africa, and not one has yet occurred in New Holland. Their habits are what may be termed terrestrial, that is, they rarely enter water of their own accord, although several climb among shrubs and bushes with some celerity in search of prey. Several kinds occur in Europe, and those from intertropical countries measure in some instances from seven to eight feet. They are rarely adorned with brilliant colours, brown being the prevailing hue. Of some the markings are uniform, while others are spotted or longitudinally rayed. Of the European species, one of the best known and most extensively distributed is *Col. Æsculapii*, which sometimes attains to the length of from four to five feet. The colour of the upper parts is olive-brown, beneath yellowish, or marbled with gray, with a paler collar. Abdominal plates 228, caudal seventy-nine.³ We have notes on the history of this species from MM. Host and Lenz. It is described as being extremely active in its movements, climbing trees with facility, but avoiding contact with water. It is oviparous, and feeds on lizards, frogs, and small birds, but takes no nourishment in captivity. When attacked, it defends itself with great determination; but when captured, becomes tame in a few days. In the museum of Vienna, several specimens of this Æsculapian snake are preserved alive; and their manners are so gentle that children make playthings of them, and handle them for hours at pleasure.

The ancient Greeks adored the god of medicine in various places under diverse forms, but frequently in the guise of a serpent, as an emblem of sagacity, and an animal endowed with so many sanatory qualities, that several Hellenic peoples regarded the creature itself as the very Deity. It was especially so with the inhabitants of Epidaurus (a flourishing city of Peloponnesus), who in a sacred grove, the favourite abode of serpents, erected a magnificent temple in honour of these by us abhorred reptiles. The Roman people, when terrified by a great pestilence, which ravaged the capital (in their year 461), sent an embassy to Epidaurus in search of this imaginary god, whom they might have found in sufficient abundance near at hand. They entertained these slimy deities in the island formed by the Tiber, and where we may still see their figure sculptured in marble in the gardens of St Bartholomew.⁴ Chandler tells us, in his Travels, that the environs of Epidaurus still abound in harmless serpents.

The only other species we shall here notice is *Coluber quater-radiatus*, remarkable as being the largest of the Ophidian reptiles of Europe. According to Metaxa (in his *Monograph of the Serpents of the Environs of Rome*), it sometimes attains the length of seven feet. It occurs in Italy, the south of France and Spain, Dalmatia, Hungary, &c. Its prevailing colour is an ochry-yellow passing into brown, and somewhat deeper on the under surface. Two lines of darker brown run along the flanks, and a blackish line passes from the eye to the corner of the mouth. This species, in spite of its great size and formidable aspect, is

Non-venomous
Serpents.

¹ Catesby's *Carolina*, pl. 60.

² Jacquin, *Collectan.* iv. 356, pl. 26 (Fem.), 27 (Mas).

³ Metaxa, p. 37;—and Aldrovandus, *Serp.* pl. 240. The above is not the species called *Col. Æsculapii* by Linnæus, who misapplied the title to one of the coral snakes of America,—*Coronella venustissima* of modern authors.

⁴ *Ornithological Biography*, vol. i. p. 278; and *Birds of America*, pl. 52.

Non-venomous
Serpents.

Non-venomous
Serpents.

extremely gentle in its manners, and does not attempt to bite even when seized in its native haunts. It is very common in the fields near Tivoli, but is usually found on hill-sides. There is a passage in Pliny¹ which relates that the Boas of Italy sometimes attain to so great a size that the entire body of an infant was found in the interior of one slain during the reign of the Emperor Claudius. The species just noticed is certainly the largest of all the Roman serpents, but its natural attributes in no way favour the reception of this preposterous story.² The largest species of the genus is *Coluber corais* of Surinam. There are twenty-seven different species described by M. Schlegel.

Genus HERPETODRYAS. This genus was established by the late M. Boié for the reception of certain species of *Coluber* (*Col. carinatus*, &c.), which combine the aspect and physiognomy of the preceding genus (to which they are closely allied) with the lengthened form and much of the habits of the arboreal serpents. Their colours are usually of a uniform greenish hue, sometimes passing into brown, or occasionally longitudinally rayed. The tail is generally long and slender, a character which, combined with the narrow and very angular abdomen, announces their arboreal disposition. Their manners are wild and distrustful, and they inhabit the warmer regions of both the Old and New World, with the exceptions, so far as yet known, of Africa and New Holland. We shall here name only *Herp. carinatus*, a Brazilian species, also common in Surinam. It is remarkable for having two central rows of dorsal scales, so that the total number of rows forms an *equal* number, a character unique in the Ophidian order. It varies greatly in its external markings.³ Schlegel describes nineteen species.

Genus PSAMMOPHIS. This little group may also be regarded as a dismemberment from *Coluber*, and brings us into still closer contact with the genuine tree-serpents. They offer an anomaly in their dentition, in as far as their posterior teeth, and those of the centre, are usually longer than the others, and furrowed. The head is elongated, the vertical plate very narrow. Some have the body thin and long drawn out, while others are more compact like *Coluber*. The species occur in India, Africa, and America; and *Psam. lacertina* is an European example well known in Dalmatia.⁴ They all prefer sandy soils, and prey chiefly upon Saurian reptiles. Green and brown are the prevailing colours, although several are longitudinally rayed, or have the head adorned by linear figures. Schlegel mentions eight species.

Family IV.—Arboreal or Tree-Serpents.

The members of this family are characteristic of the great forests of the tropical countries of Asia and America. They are rare in Africa, still more so in New Holland, and Europe produces only a few anomalous species. Their form is in general extremely elongated, they pass the greater portion of their time in trees and bushes, and prey both on birds and lizards.

Genus DENDROPHIS. Body compressed; abdomen (and sometimes the tail) angular, and furnished with very broad plates; scales narrow and elongated. Tail very slender. Head lengthened. Eye large, the pupil orbicular. (See Plate IV., fig. 5.)

These reptiles inhabit both the western and eastern world, but are rare in New Holland, and unknown in Europe. They climb trees with great facility, and are extremely quick in their general movements. They are frequently adorned by lively colours. Nearly a dozen species are known to naturalists. Schlegel has ten species.

Genus DRYIOPHIS. Muzzle slender and projecting. General form greatly elongated, the body compressed, the abdomen convex. Eye of moderate size.

The species of this genus are among the most remarkable of the innocuous serpents, their shape being so extraordinarily lengthened out, that many measure nearly five feet in length, and are yet no thicker than the little finger. Hence their Anglo-American name of coach-whip snakes, of one of which, first described by Catesby, it was absurdly believed by the Indians, "that it will by a jerk of its tail separate a man in two parts."⁵ The tail, of extreme slenderness, always measures half the length of the whole body; and the muzzle is often drawn out in the form of a pointed proboscis. These reptiles inhabit the torrid zone, or the countries near the tropics, in Asia and the two Americas. Although unknown in the continent of Africa, a species (*D. langaha*) occurs in Madagascar. The genus admits of a geographical division,—those of the ancient continent being characterized by grooved maxillary teeth, and the pupil of the eye elongated horizontally, while such as inhabit America have the teeth less developed, and the pupil orbicular. We may briefly notice *Dryiophis nasuta* (the *Passeriki* of Russel),⁶ a remarkable species of a beautiful grass-green colour above, the lower surface paler, and marbled with red. A white or yellow ray extends from behind the eye to the commissure of the lips, and another very distinct one passes along each side of the abdomen and tail. The muzzle is very sharp, and is terminated by a moveable fleshy appendage. (See Plate IV., figs. 7 and 9.) This kind occurs over a great extent of India and the great eastern islands, and is frequent in the environs of Vizagapatam. It lives in trees, and its manners are described as being even ferocious. Its bite, however, is attended by no other bad consequences than the pain of the wound; but the common people deem it dangerous, as directing its attacks chiefly at the eyes of the passers by. There is an Indian whip-snake (probably not of this genus) common in the Concan, where it is described as concealing itself among the foliage of trees, from which it darts at cattle grazing below, generally also aiming at the eye. A bull which was thus wounded at Dazagon tore up the ground with extreme fury, and died in half an hour, foaming at the mouth. This habit of the reptile is truly singular,—for it seems to proceed neither from resentment nor from fear, nor yet from the impulse of appetite, but seems, "more than any other known fact in natural history, to partake of that frightful and mysterious principle of evil, which tempts our own species so often to tyrannize for mere wantonness of power."⁷

The species already named as a native of Madagascar, *Dryiophis langaha*, Schlegel, partakes of those anomalous attributes which characterize so many animal products of that extraordinary island. It measures between two and three feet in length, and is of a beautiful reddish-brown colour above, the under surface being of a deep though lively yellow, spotted with brown, especially beneath the tail; but its most peculiar character is seen in the muzzle, which is prolonged into a fleshy appendage of half an inch in length, covered with small scales, and of variable form, being in some cases sharp-pointed, in others compressed and enlarged, or leaf-shaped. This curious reptile seems to have been first (we believe inaccurately) described by M. Bruguières,⁸ and has since been banded about through various genera.⁹ It is classed by M. Schlegel (we presume after due examination),¹⁰ among the innocuous, that is, the non-venomous kinds,—although the natives of Madagascar

¹ Lib. viii. c. 14.

² *Quadrupides Ovipares*, ii. 163, pl. 7, fig. 1.

³ *Wagler, Serp. Braz.* pl. 7 and 12.

⁴ *Langaha Madagascariensis*, Lacép. *Quad. Ovip.* ii. 499:—*Langaya nasuta*, Shaw, *Gen. Zool.* iii. 571, plate 127:—*Amphisbæna langaha*, Schneid. *Hist. Amphib.* ii. 151.

⁵ *Physiognomie des Serpents*, ii. 143.

⁶ *Fleischman, Nov. Gen.* pl. 2.

⁷ *Carolina*, ii. plate 54.

⁸ *Indian Serpents*, plate 12 and 13.

⁹ *Quarterly Review*, xii. 183.

¹⁰ *Journal de Physique*, xxiv. 132, plate 2.

Non-venomous Serpents. are said to hold it in great dread, from the belief of its being a highly poisonous species.¹ Schlegel has 7 species. Genus *DIPSAS*. Head thick, broad, obtuse; the body vigorous, but much compressed. Pupil of the eye usually vertical. (Plate V., fig. 7.)

This genus comprises all those tree-serpents which, resembling the Colubers (and so far differing from the two preceding genera) in the bulkier proportion of their parts, are distinguished by their compressed bodies and more slender tails. Both the size and colours differ greatly according to the species, some of which do not measure more than fourteen inches, while others extend to five or six feet. South America and the East Indies are their characteristic countries, although a somewhat anomalous species is found in Egypt and Dalmatia. The genuine *Dipsas* dwell habitually in trees, concealing themselves amid dense foliage, from whence they dart upon their unsuspecting prey. The largest species known to naturalists is *Dip. dendrophila*, a Javanese reptile, which sometimes measures seven feet in length. The ground-colour is a beautiful lustrous black, with steel-blue reflections, paler on the under surface; and the body is encircled by from forty-five to fifty transverse narrow bands of a fine golden yellow.² *Dip. fallax* is, we presume, the sole European species,—if the reptile so named really pertains to our present genus.³ Its habits offer great disparity, at least M. Cantraine found it in Dalmatia in the month of December, creeping slowly among the ruins of an ancient castle. It had previously been found in the Levant by Olivier, and was more recently observed in the Morca by M. Bory St Vincent. Fleischman informs us that it lives under stones, stirs abroad only in the early morning and towards evening, avoids water, and feeds on insects, lizards, and mice. Twenty-five species of this genus are described by M. Schlegel.

Family V.—Fresh-water Serpents.

The members of this group are more or less allied to Coluber in their organization. They inhabit the water, or at least frequently enter into that element, and prefer the banks of rivers and the shores of lakes to situations more remote from moisture. It does not follow that all snakes endowed with analogous instincts and manners belong to this group, because the majority of the Boas, and almost all the Colubers, nearly correspond in their habits of life, and are yet very dissimilar in their structure. In this family there are combined those serpents which, having many mutual relations in their form and physiognomy, constitute a very natural assemblage, though by no means distant separated from all other subdivisions. It is composed of two genera, of which the first exhibits, with few exceptions, nothing remarkable in its organization,—while the second is characterized by several singular features.

Genus *TROPIDONOTUS*. Head broad, body rather bulky, abdomen broad and convex, tail short.

The majority of this genus inhabit Asia, especially the Indian Archipelago. Southern Africa produces only a single species; Europe two, which occur on both sides of the Mediterranean basin. The same restricted number is found in Japan, and several are native to North America. None is known to inhabit either South America or New Holland. Certain species are widely distributed, while others are confined within narrow limits. They usually occur along the shady, wooded banks of lakes and rivers, where they prey on frogs and fishes. They swim with great dexterity, and are capable of continuing for a length of time beneath the surface. Although they can both creep

and climb with considerable swiftness, they usually prefer to escape from threatened danger by plunging into water. Many species never remove from the close vicinity of that element; others inhabit plains subject to inundation; and a few are found to dwell in moist umbrageous forests, even on the sides and towards the summits of high mountains. Certain species are gregarious; while some are solitary, dwelling in the deserted holes of small quadrupeds. Such as inhabit temperate climates fall into a lethargic state in winter. The whole are oviparous; but the eggs of many, even when newly laid, contain young in a state of considerable advancement. Schlegel describes nineteen species.

The first species we shall notice is *Tropidonotus natrix* (*Coluber natrix*, Linn., *Natrix torquata*, Ray), the best-known and most generally-diffused of European serpents, and one of the few which inhabit the cold and cloudy clime of Britain. We have exhibited its osteology on Plate V., fig. 2. It is subject to great variation of colour, but the prevailing tint is a pale ashy-blue tinged with green, and relieved by a series of black spots or bands. The under surface is dusky blue, with mottlings of yellowish white. The collar is white or yellow, bordered posteriorly by deep black; and the plates of the head are extremely regular in their form. The length ranges from two and a half to four, or occasionally five feet. The female is always the larger. This reptile has been studied and described by a host of European writers. It is not characterized by any wildness or ferocity, is easily tamed, and rarely bites even when seized. “Il m’est cependant arrivé,” says M. Schlegel, “qu’étant encore très-jeune, et m’étant approché du bord d’un bois, où une société nombreuse de ces serpents s’était établie pour faire leur ponte, un *Tropidonote* d’une taille énorme m’attaqua avec fureur, tandis que plusieurs autres s’échappaient dans les trous dont la terre était percée.” The ringed snake, as our present species is generally named, prefers to take possession of the subterranean dwelling of a mouse or mole to commencing an excavation for itself. Being fond of warmth and shelter, it often approaches human habitations, and readily lays its eggs in dunghills. Yet it is often met with in the remotest wilds, or in thick umbrageous forests, and sometimes at a height of several thousand feet above the level of the sea. But on the whole it prefers the vicinity of tranquil waters, where it dives frequently in search of fishes, as well as of frogs and other batrachian reptiles. Although it possesses the power of remaining under water for nearly half an hour, it is not organized for a continued abode in that element; and when frequently forced from shore, its swimming powers become exhausted, and it is “found drowned.” It is extremely voracious, and will swallow a great number of frogs at a meal. It hibernates, in cold and temperate countries, from the month of October or November, seeking profounder excavations, where frost can scarcely enter. It leaves its retreat in March or April, according to the region it inhabits, and casts its skin once a month till the end of August. In that month also it lays its eggs, to the number of two dozen or more. As the species pairs in April, it follows that these eggs take five months to be developed in the oviducts, though they are hatched in about three weeks after deposition. Their form is oval, and they measure about an inch and three lines in length. The young, when first visible, measure from six to eight inches. This species abounds over all France and Germany. It does not inhabit the maritime parts of Holland, but is common in Guelderland and the province of Drenthe. It is well known in Italy, Sicily, and Sardinia, as well as in Denmark, Sweden, and Norway, and extends over a great portion of temperate

¹ Gen. Zool. iii. 572.

² Wagler, *Icones*, i. pl. 8.

³ It is the *Tarbohis fallax* of Fleischman's *Dissertatio*, pl. 1.

⁴ *Physiog.* ii. 304.

Non-venomous
Serpents.

Asia, as far as Lake Baikal. It is a common species in England, where it occurs in woods and hedges, as well as in marshes. Mr Jenyns informs us, that it is particularly abundant in the fens of Cambridgeshire, where it sometimes attains a great size.¹ We shall merely add, that it is eaten in several continental countries. *Col. viperinus*, another European species, pertains to this genus; as do also a considerable amount of exotic kinds, which we cannot here so much as name.

Genus HOMALOPSIS. Body bulky, head very thick, muzzle short and rounded; eyes and nostrils small, and opening upwards; form usually cylindrical, sometimes slightly compressed; abdomen broad and convex; tail short, conical, robust.

This genus inhabits the great fresh waters of the inter-tropical countries both of Asia and America, although it seems less extended than the preceding, being seldom seen beyond the tropics. A Bengal species occurs also in Java, and a few are found identically the same in both the Americas. The majority attain a considerable size; but though as thick as a man's arm, they rarely exceed the length of four feet. Their heavy inelegant forms, small insidious eyes, and large gaping mouths, confer upon them a peculiar and repelling physiognomy; yet they are quite innocuous, in spite of the malignity of their aspect, a proof that we should never judge from appearance. These are the most truly aquatic of all the fresh-water serpents, passing almost their entire lives submerged, and feeding chiefly on fish. They are endowed with great muscular strength and strong powers of locomotion in their favourite element. Their colours are usually dark and lugubrious,—a schistose gray, brown, olive, or a blackish hue prevailing over the upper surface; while a yellower tint, with large square spots, is frequent on the abdominal region. We are acquainted with few details regarding their habits of life; and the species are rare in collections, probably in consequence of their fish-like activity in the water rendering their capture difficult. They are distributed over a variety of genera by different naturalists; and M. Schlegel describes fourteen species, among which are included *Hom. herpeton* (*Erpeton tentaculatus*, Lac.²), a serpent remarkable for two fleshy appendages covered with scales, which extend from the termination of the muzzle. (See Plate IV., fig. 4.) The abdominal plates are scarcely broader than the other scales, and each is surmounted by a couple of ridges. Its native country is unknown.

Family VI.—Boas.

This family, according to M. Schlegel's views, comprehends the greater number of those species which modern naturalists have comprised under the genera *Boa*, *Python*, and *Acrochordus*. It is one of the most natural of the entire order, and has been too often erroneously separated, merely on the consideration of a few unimportant characters. We here find species, some of them the largest of the Ophidian race, distinguished by a prehensile tail, and a body possessing the power of twisting itself around other bodies with great force and facility. The surface is encompassed by numerous small scales, which advance upon the head and encroach on the abdomen, so that the former part never exhibits the regularly-formed plates of the Colubers, while those of the latter are unusually narrow. The

vertical position of the nostrils and small-sized eyes announce a combination of aquatic with terrestrial habits of life. The first genus, that of *Boa* properly so called, is characterized by simple plates beneath the tail; the second, *Python*, peculiar to the ancient world, exhibits the sub-caudal plates divided, a supernumerary bone on the upper margin of the orbits, and intermaxillary teeth; the third, *Acrochordus*, is destitute of anal hooks, and has the surface entirely covered over by small granular unimbricated scales. All these generic groups have many characters in common, both in habits and organization, and we shall here point out a few of their generalities.

The term *Boa*, according to Pliny,³ is derived from *Bos*, because the young of these reptiles are wont to nourish themselves on cow's milk.⁴ We are farther informed by that credulous author, of the great Boa slain in the Vatican, within the abdomen of which was found an entire infant. Linnæus applied the name to all serpents provided with simple sub-caudal plates. It is obvious that his genus, founded on a character of such slight importance, while it excludes the Pythons, necessarily brings together several heterogeneous groups. The defect in the modern arrangement of these reptiles arises chiefly from the practice of viewing a single and often subordinate character, and ruling, as it were, the forms of nature in simple accordance with its absence or existence. We thus find the Pythons almost always separated from the Boas, and placed in the genus *Coluber*, while the *Acrochordi*, estranged from both, comprise two distinct genera, sometimes placed among venomous serpents, sometimes classed with the innocuous kinds. "Nos temps," says M. Schlegel, "fertiles en invasions de toute sorte, ont vu démembrer la famille des Boas en autant de divisions génériques que l'on en compte d'espèces, qui elles-mêmes sont multipliées sans le moindre fondement de vérité. Il n'est pas rare de voir la même espèce distribuée en deux ou trois genres différens, et ces genres placés au hasard parmi d'autres Couleuvres ou parmi les vipères." The opportunities enjoyed by the author just named, of studying the various species, has led him to the belief that these are much less numerous than generally supposed. He thinks that the majority of such as exist in nature are now in some measure known, and that they do not amount to more than fifteen, including *Acrochordus*. Various anomalies exist among the species when compared among each other. Some are spread over a vast tract of territory, while others are confined within narrow limits. They are all, however, inhabitants of countries either situate beneath the equator or near the tropics. They occur in both the Old and New World, but none is found in Europe, North America, or Japan. The South American species are frequent in collections; those of the (so-called) more ancient countries of the earth are rather rare. Some are oviparous, others produce their young alive. The Boas usually attain, in truth, to an enormous size, although their actual dimensions have been greatly exaggerated. Thus at the very name of *Boa constrictor* the imagination is filled "with folds voluminous and vast," although the species really so called scarcely ever exceeds ten or twelve feet in length. The largest Ophidian reptiles in the world are *Boa murina* and *Python Schneideri* and *bivittatus*; but it may be greatly doubted whether the first named, which is the most gigantic of all, ever exceeds twenty-five feet in these degenerate days, and we have no sufficient

Non-venomous
Serpents.

¹ *British Vertebrate Animals*, p. 296. Figured in Bell's *British Reptiles*.

² *Annales des Mus.*, ii. 280, pl. 50; Guérin, *Iconog. Reptiles*, pl. 20, fig. 3.

³ *Hist. Nat.* 8-14.
⁴ "Quant aux véritable serpents, il n'en est pas qui mâchent réellement, de même qu'il est évident qu'aucun ne peut sucer ou opérer le vide dans la bouche, et que, par conséquent, c'est un préjugé de croire que plusieurs de ces animaux, comme les Boas et les Couleuvres, puissent téter les vaches; outre l'absence des lèvres charnues, le défaut de voile du palais et de l'épiglotte, qui rendraient la succion impossible, il est évident que les crochets acérés et recourbés en arrière, qui garnissent leurs mâchoires et leur palais, s'accrocheraient comme des hameçons aux tétines des mammifères et qu'ils ne pourraient s'en détacher." (*Erp. Gén.* i. 135.)

Non-venomous
Serpents.

reason for supposing that it was ever any larger in former times.¹ The recitals of our travellers have been too often drawn, not from their own observation (by no means accurate at the best), but merely from the popular belief of ignorant and superstitious natives. The Pythons of the Old World seldom exceed from eighteen to twenty feet in length; and we can easily believe that one even of that extent being met by a benighted traveller in some lonesome forest glade, or murky meadow, might be afterwards described as something super-serpentine. Who in early life (how few at any period) ever caught a trout of two pounds or a pike of ten, without at least supposing that the one weighed four, the other fifteen? Yet who fears the innocuous finny race, and how greatly must doubt and dismay increase the seeming dimensions of a huge lugubrious reptile, weaving its way through some "wild wood, dingle or bushy dell," and dimly seen in sombre twilight hours, by snatches of only four or five yards at a time? The same exaggeration prevails regarding both the size of their natural prey, and its mode of capture. The lamented Boié, who made numerous observations on the Pythons of Asiatic countries, states that they particularly attack only the smaller kinds of quadrupeds, although individuals of unusual size sometimes swallow a young pig, or that species of deer called muntjac. But the larger mammiferous animals, and the human race more especially, need entertain no reasonable expectation of attack; and Prince Neuwied confirms this statement of the lamented naturalist of Kiel, so far as concerns the great species of the New World, which prey chiefly on birds and reptiles.

Boas are said to be by no means difficult to tame. M. Dieperink of Paramaribo informed M. Schlegel that he was in the practice of keeping by him several different kinds of live Boas, all of which lived in perfect harmony, both among themselves and with other domestic animals. Professor Reindwardt, however, was witness at Java to a spectacle which proved that these great serpents are not always as merciful as they are strong. A native of the island having brought to the Baron Van Der Capellen a huge Python, and being desirous to make it leave a pannier in which it was contained, the monster rose upon him suddenly, and inflicted a severe wound, at once laying open the fore-arm throughout its entire extent. It may be as well, then, upon the whole, not to allow the serpents of this family to sleep at large in the bed-chambers of any other family where there are small children.

The members of our present group seize their prey suddenly by ambuscade, usually lying in wait for it in the vicinity of water. They fix upon it with their teeth, and then, if of tolerable size or strength, entwine their folds around it, pressing out the breath of life, or even bruising the body, and breaking the bones in pieces. To aid this act of butchery, some of the species are said to keep their tails twisted around a tree, to which they drag their reluctant victim,—making use at the same time of the hard and gnarled trunk to give a still stronger stringency to their dreadful coils, while the faint-hearted prey

Clamores simul horrendos ad sidera tollit.

When the animal attacked is of smaller size, it is merely *mouthed*, always head foremost, covered with saliva to hasten putrefaction and aid deglutition, and afterwards swallowed at leisure. These gigantic reptiles are endowed with great muscular force, which, however, they rarely exercise in a state of captivity. They seem extremely lethargic when imported into Europe; many of them, if not gentle in their manners, at least cannot be induced to bite by any provocation; their movements are very slow, they rarely eat, and the majority indeed die after a few months' confinement, without having tasted food.

The following curious, and we doubt not accurate, account of the swallowing powers of one of the great Asiatic serpents, has been recorded by Mr Macleod. He calls the species *Boa constrictor*, which, as it was captured in Borneo, it could not be. It belonged, we presume, to the genus Python, and measured sixteen feet in length by about eighteen inches in circumference. We shall make no apology for the size of the ensuing extract, as it so clearly illustrates the peculiar manners and the mode of deglutition of these Boa-like serpents.

"The live stock for his use during the passage, consisting of six goats of the ordinary size, were sent with him on board, five being considered as a fair allowance for as many months. At an early period of the voyage we had an exhibition of his talent in the way of eating, which was publicly performed on the quarter-deck, upon which he was brought. The sliding door (of his cage) being opened, one of the goats was thrust in, and the door of the cage shut. The poor goat, as if instantly aware of all the horrors of its perilous situation, immediately began to utter the most piercing and distressing cries, butting instinctively at the same time with its head towards the serpent, in self-defence. The snake, which at first appeared scarcely to notice the poor animal, soon began to stir a little, and turning his head in the direction of the goat, he at length fixed a deadly and malignant eye on the trembling victim, whose agony and terror seemed to increase; for, previous to the snake seizing his prey, it shook in every limb, but still continuing its unavailing show of attack, by butting at the serpent, which now became sufficiently animated to prepare for the banquet. The first operation was that of darting out his forked tongue, and at the same time rearing a little his head; then suddenly seizing the goat by the fore leg with his mouth, and throwing it down, it was encircled in an instant in his horrid folds. So quick, indeed, and so instantaneous was the act, that it was impossible for the eye to follow the rapid convolution of his elongated body. It was not a regular *screw-like* turn that was formed, but resembling rather a knot, one part of the body overlaying the other, as if to add weight to the muscular pressure, the more effectually to crush his object. During this time he continued to grasp with his fangs, though it appeared an unnecessary precaution, that part of the animal which he had first seized. The poor goat, in the mean time, continued its feeble and *half-stifled* cries for some minutes, but they soon became more and more faint, and at last it expired. The snake, however, retained it for a considerable time in his grasp after it was apparently motionless. He

Non-venomous
Serpents.

¹ Unable as we are either to confirm or contradict, from personal experience, the reported observations of travellers regarding the supposed dimensions of these huge reptiles, we are under the necessity of stating the different opinions which prevail upon the subject, however irreconcilable these may sometimes seem with each other. The following quotation rather favours the idea of their great size and unexampled voracity. "In the Dutch colonies of the East Indies, André Cleyer purchased of the hunters of the country an enormous serpent, in the body of which he found a deer of middle age, altogether entire, with its skin and limbs. In another individual of the same species, also examined by the traveller, a wild he-goat was found, with its horns; and a third had evidently swallowed a porcupine with its quills. He adds, that a pregnant woman also became the prey of a reptile of the same genus in the island of Amboyna; and that this kind is sometimes kept for the purpose of attacking the buffaloes in the kingdom of Aracan, on the frontiers of Bengal. We need hardly be astonished at this, when Prince Maurice of Nassau-Siegen, one of the governors of Brazil, in the seventeenth century, assures us that he himself was an eye-witness of stags, and other equally voluminous mammifera, and even of a Dutch woman" (usually a considerable mammifer), "being devoured in this manner, in that region of South America where he commanded." Griffith's *Animal Kingdom*, ix. 295.

Non-venomous
Serpents.

then slowly and cautiously unfolded himself, till the goat fell dead from his monstrous embrace, when he began to prepare himself for swallowing it. Placing his mouth in front of the dead animal, he commenced by lubricating with his saliva that part of the goat; and then taking its muzzle into his mouth, which had, and indeed always has, the appearance of a raw, lacerated wound, he sucked it in as far as the horns would allow. These protuberances opposed some little difficulty, not so much from their extent, as from their points; however, they also in a very short time disappeared, that is to say, externally; but their progress was still to be traced very distinctly on the outside, threatening every moment to protrude through the skin. The victim had now descended as far as the shoulders; and it was an astonishing sight to observe the extraordinary action of the snake's muscles when stretched to such an unnatural extent,—an extent which must have utterly destroyed all muscular power in any animal that was not, like himself, endowed with very peculiar faculties of expansion and action at the same time. When his head and neck had no other appearance than that of a serpent's skin, stuffed almost to bursting, still the workings of the muscles were evident, and his power of suction, as it is erroneously called, unabated; it was, in fact, the effect of a contractile muscular power, assisted by two rows of strong, hooked teeth. With all this, he must be so formed as to be able to suspend, for a time, his respiration; for it is impossible to conceive that the process of breathing could be carried on while the mouth and throat were so completely stuffed and expanded by the body of the goat, and the lungs themselves (admitting the trachea to be ever so hard) compressed, as they must have been, by its passage downwards.

"The whole operation of completely gorging the goat occupied about two hours and twenty minutes; at the end of which time the tumefaction was confined to the middle part of the body, or stomach, the superior parts, which had been so much distended, having resumed their natural dimensions. He then coiled himself up again, and lay quietly in his usual torpid state for about three weeks or a month, when, his last meal appearing to be completely digested and dissolved, he was presented with another goat, which he killed and devoured with equal facility."¹

As the vessel, which was sailing from Batavia to England, approached the Cape of Good Hope, this gigantic reptile began to droop, as was at first supposed, from the increasing cold. It refused to kill some fowls which were presented, and died before reaching St Helena. On dissection, the coats of the stomach were found to be "excoriated and pierced by worms!" Nothing of either goat remained except a single horn. During a prior captivity of some months at Whidah, in the kingdom of Dahomey, Mr Macleod had enjoyed opportunities of observing snakes "double the size of the one just described." These killed their prey in the same manner; but from their superior bulk were capable of swallowing much larger animals than either goats or sheep. Governor Abson, who had resided for nearly forty years at Fort William, a settlement of the African Company, used to describe some desperate struggles which had taken place between these great serpents and various wild beasts, as well as smaller cattle. A negro herdsman was once seized by the thigh, but the monster, in attempting to entwine itself around him, got en-

tangled by a tree, and the man being armed with a knife, Non-venomous
Serpents. had presence of mind to inflict several severe gashes on the neck and throat, which enabled him to disengage himself from the dreadful coils which were closing fast around him. But he remained lame for life, in consequence of the wound and heavy pressure inflicted by the jaws.

The natural colours, which are various in this family, disappear speedily after death. Some are brown upon a yellowish ground, others exhibit a uniformly greenish hue, red prevails among certain species, while a few are nearly black. Almost all are more or less spotted; and it has been observed that, unlike the smaller tribes of serpents, these markings continue equally, or rather more distinct, as the individual increases in years. The body of the Boas is thickest at the middle, tapers towards either end, and is always considerably compressed. The abdomen is broad, and slightly convex or keeled. The tail is shaped like the body, but is more slender, not very conical, and usually terminates in a blunted point. It is always prehensile, that is, possesses the power of rolling inwards upon itself, or forming convolutions around other bodies. The scales in general are rather small, and as they encroach considerably on the under surface, it follows that the abdominal plates are narrower than usual. There are sometimes from sixty to seventy ranges of scales, and about two hundred and fifty abdominal plates. The number of these, however, is greater in the Boas of the ancient world than among the American species, which moreover differ in several other respects; while the genus *Acrochordus* is distinguished from all its congeners by the small granular scales which clothe the entire surface, and of which a double series prevails along the median line of the abdomen, forming a kind of projecting ridge or keel.

The head of the Boas is always distinguishable from the trunk, being thick, rather lengthened, conical, depressed, and terminated by a muzzle for the most part elongated, and truncated at the point. The eyes are placed at some distance from the nostrils, and are lateral in the terrestrial species, of which the head is flattened above, and more or less angular on the sides; but the more aquatic kinds have the eyes rather vertical. These organs are always small in our present family, and, excepting *Acrochordus*, have the pupil horizontally elongated. The nostrils are broad, closely approached to the end of the muzzle, and in some are placed upon its summit. They open upwards in the genus just named, and assume a tubular form. All the species are provided with palatine teeth, nearly as much developed as the maxillary ones; but there are no intermaxillary teeth except among the Pythons. The glands of the head are less developed in this family than among the majority of Ophidian reptiles.

Genus *Boa*. No intermaxillary teeth. Space between the orbits formed solely by the frontals properly so called. Subcaudal plates simple.² (See Plate IV., figs. 8–11.)

This restricted genus includes the largest of Ophidian reptiles, and although composed chiefly of South American snakes, it also contains three Asiatic species, which, though of much smaller size, cannot be regarded otherwise than as a geographical division.

Boa constrictor, Linn., is a middle-sized species, which rarely exceeds the length of ten or twelve feet.³ It is of a reddish tint, elegantly marked by irregular reticulations of

¹ Macleod's *Voyage of the Alceste*, p. 290.

² This is the prevailing character of these parts, although we find in this, as in many other cases, a difficulty in seizing upon single determinate features of constant application. Thus we sometimes meet with several divided plates in the sub-caudal region of these so-called Boas.

³ The true *B. constrictor* is often confounded with the more gigantic *B. murina*, and its dimensions have in consequence been greatly exaggerated. We doubt if any existing species ever attains to the alleged size of the so-called *B. constrictor*. Mr Swainson, however, who has travelled in South America, and is himself a zealous student of the facts of zoology, both as recorded in books and as existing in nature, states that the young individuals frequent in our menageries are mere pigmies in comparison to the

Non-venomous
Serpents.

brownish black, and other hues, and is subject to a great variety of aspect, so far as colour is concerned. It is, however, well characterized by the small smooth scales which cover both head and body, and of which there are sixty-seven rows. The head is heart-shaped, and the tail short. Abdominal plates 243, caudal fifty-eight. This species is native to the intertropical countries of South America, and not only have its size and voracity been greatly exaggerated, but many traits have been applied to it which truly belong only to the Pythons of the ancient continent. Thus the very name of *Devin*, bestowed upon it by Lacépède, is borrowed from what Bosman relates of the worship accorded by the negroes to certain African reptiles. It is met with in Surinam and Brazil, in woody districts, being sometimes seen suspended from the branch of a tree, sometimes concealed in the hollows of rocks, or beneath an ancient trunk. It is feared by no one, is often killed with a short walking-stick, and is commonly known by the name of *Jiboya*. It feeds on small and middle-sized mammalia, such as mice, rats, agoutis, pacas, and capybaras, as well as on various reptiles. A hunter, however, assured the Prince of Neuwied, that his dog on one occasion would have fallen a victim to a Boa of this species, had he not contrived to shoot it during the combat. The true constrictor does not enter the water. The Brazilians take it by means of gins, and employ its skin for making boots and saddle-cloths. They also use its fat. All engraved representations of this species, having been made from ill-prepared museum specimens, are worse than indifferent.¹

The rat-eating Boa, *B. murina*, Linn. (*B. Anaconda*, Daud.² *B. aquatica*, Neuw.³), is the largest Ophidian reptile of America, and probably the most gigantic of known species. It is distinguished in Brazil by the title of *Cucuriuba*, and passes a great portion of its time in the water, either swimming about in various directions, or floating lazily with the current. It dives with great dexterity, can remain for a length of time beneath the surface, and is said to prey on fish as well as quadrupeds. It is tenacious of life, and is killed by the natives either with bow or musket in the water, or with sticks when met with on shore, where its movements are somewhat sluggish. Both its skin and fat are used for various purposes, and its flesh is eaten by the Botocudes. M. Fermin measured one which had attained the length of twenty-three and a half feet; and the Prince of Neuwied was assured by the natives that it is often much longer, although he himself never saw one above twenty feet. This species exhibits less varied markings than the preceding. The general hue of the upper parts is sooty brown, with two rows of orbicular blackish spots along the back. The under surface and sides are of an ochry yellow, the latter marked with a double row of irregular eye-shaped spots, which confound themselves with numerous squarer spots upon the belly. The nostrils are vertical, the eyes also directed upwards. The head is of

an elongated form, with a rounded muzzle. Abdominal plates 250, caudal sixty-six.

The other species of this genus are *B. cenchria*, *canina* (Plate IV. figs. 8-11), *hortulana* from South America; *B. Dussumieri*, from a small island near the Mauritius; *B. carinata*, from the Moluccas and New Guinea; *B. conica*, from Bengal; and *B. melanura*, from the island of Cuba. Schlegel describes nine species.

Genus PYTHON. Several intermaxillary teeth. Upper portion of the orbit formed by a particular bone incased among the three frontals, and named super-orbital by Cuvier. Sub-caudal plates usually divided. Lips hollowed out in front. Plates of the head larger and more regular than in Boa. (See Plate IV., figs. 1 b, 1 c, and 3; and Plate V., fig. 5.)

This genus was established by M. Daudin for the reception of the great serpents of the ancient world. Brown, black, and yellow, are their prevailing colours. Certain of the species equal (some say exceed) the Boas of America in size, for example the *Ular-sawa* (*Python bivittatus*, Khul,—*Col. Javanicus*, Shaw). This species is of a yellowish tint, relieved by a pattern of broad alternate brown spots. The top of the head is margined by two rays of the ground colour. The flanks are variously adorned by black and white, and the under surface is marked by deep square spots. There are sixty-three ranges of smooth small scales, 270 abdominal and seventy caudal plates. This great reptile is spread, according to M. Schlegel, over a vast extent of territory, being known to occur from the western coast of Africa, over the whole of intertropical Asia, as far east as China and the island of Java. It is said to attain the length of twenty-five feet, and individuals of twenty feet in length have been seen and described by trustworthy naturalists. A fine specimen lived for some time in Holland, and was observed to be slow in its movements, mild in its temper, and never inclined to bite even when provoked. It was kept in a large box enveloped in woollen cloths, where it lay in continued tranquillity, and suffered itself to be drawn out for frequent exhibition without manifesting any signs of anger or impatience. We suspect that the senses of this, and of other large tropical snakes, are so far benumbed by the change of climate in Europe as to produce stupefaction rather than tameness. The specimen in question was presented with food every eight days, which, however, it often refused for several successive times. It was most easily excited to eat by the sight of a live rabbit, into the head of which it would fix its teeth, and then, placing it within a fold of its body, deprived it almost instantly of life. After the commission of this murder, it was in no hurry to swallow its victim, but sometimes licked it for a while, occasionally taking two or three hours to effect the final deglutition. This is supposed to be the *Pedda-poda* of Dr Russel, called rock-snake by the Anglo-Indians.⁴

We do not happen to know to what extent this or any

adults, "which have been often found to exceed forty feet in length" (*Cabinet Cyclopædia*, vol. cxvi. p. 143). Yet he does not state this as a result of observation, or as connected with his own knowledge as well as belief. A single specimen of such gigantic reptile would be the wonder of Europe, and would make a fortune for its owner. A Dutch friend of Mr Waterton's killed a Boa (he does not say of what species) twenty-two feet long, with a pair of stag's horns in its mouth. It had swallowed the stag, but could not swallow the horns (at which we are not much surprised), and so had to wait in patience with that uncomfortable mouthful till its stomach had digested the body, "and then the horns would drop out." It was in this expectant plight that the Dutchman found it, as he was going in his canoe up the river, and sent a ball through its head (*Wanderings in South America*, third edit. p. 209). The large serpent bagged by Mr Waterton, after "a sharp fray in the den, the rotten sticks flying on all sides, and each party struggling for superiority," measured rather more than fourteen feet in length. It was of the kind called *Conlacanara*, a rare species, and so much thicker in proportion to its length than any other snake of the forest, that an individual of the extent just stated "is as thick as a common Boa of twenty-four." Its jaws are so extensile, that Mr Waterton, after skinning his specimen, could easily get his head into its mouth.

¹ See Scheuchzer, *Biblia Sacra*, pl. 746, fig. 1:—Lacép. *Quad. Ovip.* ii. pl. 16, fig. 1:—Daudin, *Reptiles*, v. pl. 92, fig. 1. There are various figures of our *B. constrictor* in Seba's *Thesaurus*, and from these Laurenti seems to have composed such species as *Constrictor formosissimus*, *Rex serpentum*, *diviniloquus*, and several others.

² *Reptiles*, v. 161, pl. 63.

³ Numerous nominal species have arisen from the superficial observance of different varieties of this Python. See Russel's *Serpents*, pl. 20, 23, 24, and 29; and Daudin's *Reptiles*, v. pl. 64, fig. 1, and pl. 59, fig. 4.

⁴ *Abbild. livrais* ii. pl. 6, and *Beitr.* p. 226.

Non-venomous
Serpents.

Non-venomous
Serpents.

other species of Python may have attained in ancient times, but it is probably from some misconceived view of our present species that the marvellous traditions regarding almost immeasurable serpents have been derived. Who has not read of that enormous reptile which spread dismay even through a Roman army? It is thus related by Valerius Maximus, from one of the lost books of Livy, by whom it is said to have been recorded at greater length. "And since we are on the subject of uncommon phenomena, we may here mention the serpent so eloquently and accurately (!) recorded by Livy, who says, that near the river Bagrada in Africa, a snake was seen of so enormous a magnitude as to prevent the army of Attilius Regulus from the use of the river; and after snatching up several soldiers with its enormous mouth, and devouring them, and killing several more by striking and squeezing them by the spine of its tail, was at length destroyed by assailing it with all the force of military engines and showers of stones, after it had withstood the attack of their spears and darts; that it was regarded by the whole army as a more formidable enemy than even Carthage itself; and that the whole adjacent region, being tainted with the pestilential effluvia proceeding from its remains, and the waters with its blood, the Roman army was obliged to move its station: he also adds, that the skin of the monster, measuring 120 feet in length, was sent to Rome as a trophy." The learned Frienshemius, having had the advantage of living a thousand years or two after the historian of the Punic war, has given a still more circumstantial account of this bloody broil in his *Supplementa Liviana*. He there informs us, that "it caused so much trouble to Regulus, that he found it necessary to contest the possession of the river with it, by employing the whole force of his army; during which a considerable number of soldiers were lost, while the serpent could neither be vanquished nor wounded, the strong armour of its scales easily repelling the force of all the weapons that were directed against it; upon which recourse was had to battering engines, with which the animal was attacked in the manner of a fortified tower, and was thus at length overpowered. Several discharges were made against it without success, till its *back being broken by an immense stone*" (we admire detailed accounts of ancient actions), "the formidable monster began to lose its powers, and was yet with difficulty destroyed, after having diffused such a horror among the army, that they confessed they would rather attack Carthage itself than such another monster." Probably such another was not then at hand, and we believe has never been seen since; but the anecdote itself holds out great encouragement to modern travellers. It is, we doubt not, to *Python bivittatus* that Bosman and other writers refer, when they mention the religious veneration with which some great African serpents are regarded by the natives. But we must conclude our imperfect notice of this genus by stating, that of the remaining species, *P. Schneideri* (Plate IV., fig. 3, and Plate V., fig. 5) is found in Malacca, Java, Sumatra, and Amboyna; *P. amethystinus*, in Saparua, a small island opposite Amboyna (a nearly identical kind being found in Timor, Samao, and New Ireland); and *P. Peronii* in New Holland.

Genus *ACROCHORDUS*. Head rounded, eyes extremely small, rather vertical, pupil orbicular, nostrils tubular, nearly terminal, opening forwards or upwards. Tail strongly prehensile, and, in common with the trunk, compressed. Anal hooks wanting. Whole body covered by small scales, and the abdomen furnished with a kind of keel beset with scales. Teeth as in the Boas proper.

The anomalous reptiles of our present genus may be said to combine the characters of the Boas and sea-serpents. Their dentition resembles that of the former, while the

position of the eyes and nostrils, the compact closure of the mouth, compressed form of the body, the existence of the abdominal crest, and absence of anal hooks, assimilate them to the latter. They are, however, easily distinguished by being destitute of poison-fangs. Want of attention to the latter character, and some confused and contradictory data furnished by foreign naturalists, have caused several errors in the arrangement of the species, which are very few in number. They inhabit the intertropical countries of Asia, are extremely aquatic in their propensities, and are externally distinguished by a somewhat sombre colouring,—brown and a yellowish hue being the prevailing tints. The Javanese species, *Acrochordus Javanicus*, is of a deep earthen-brown colour, irregularly marbled. Its form is thick, the head short and obtuse, the tail slender in proportion to the other parts. It attains a total length of eight feet, with the thickness of a man's arm, and was first described by Hornstedt, from a specimen taken in a large pepper-ground near Sangasan in Java.¹ *Ac. fasciatus* is also of a brown colour, but with paler bands upon the sides, the general form much more slender, and the dimensions considerably less.² It is more extended in its distribution than the preceding, being found in Pondicherry, New Guinea, Sumatra, Java, and Timor. It forms (it is said erroneously) the genus *Chersydrus* of Baron Cuvier,—the great French naturalist having been informed by M. Leschenhault that the snake in question was extremely poisonous, and dwelt in the beds of the rivers of Java. The accuracy of the former assertion has been since disproved. No other species are distinctly known.

Venomous
Serpents.

SECOND PRIMARY DIVISION.—VENOMOUS SERPENTS.

Family I.—Colubriform Venomous Serpents.

The poisonous species here assembled, although provided with envenomed fangs, so nearly resemble the Colubers in their general external forms as to be easily mistaken for them by an inexperienced eye. They also partake in some points of the features of the sea-serpents, but are distinguished by wanting the flattened tail; while from the concluding family of venomous serpents *properly so called*, they are kept apart by the bulkier proportions, thick triangular heads, vertical pupils, and carinated scales, which characterize the species last alluded to. At the same time it must be admitted, that those rigorous and distinct demarcations which so many lovers of nature desire to establish, but which so few can find, occur as seldom here as in other departments of zoology,—several species in each family showing a strong tendency of transition towards another.

The reptiles of our present family have a more slenderly elongated form than those of other poisonous groups. Their trunk is in general a good deal drawn out, sometimes cylindrical, or slightly compressed. Their tail, like that of all poisonous species, is rather short, conical, and rounded at the extremity. Their head, almost always of nearly equal dimensions with the neck, is small, short, and obtuse at the extremity. The eyes are rather small, sometimes vertical, the pupil always orbicular. The nostrils, always lateral and rather open, are pierced in a large plate on each side of the muzzle. The scales are not numerous, of medium size, and always smooth,—except in *Naja hamachates*, in which they seem surmounted by a keel. The abdomen is constantly convex, and furnished with plates of greater or less extent, according to the species. But what particularly characterizes this family is, that all the genera of which it is composed have the crown of the head covered by nine plates,

¹ Act. Stockh. 1787; and Journ. de Physique, 1788.

² Shaw, Gen. Zool. iii. pl. 130.

Venomous
Serpents.

modelled after the type of those of *Coluber*. The poison apparatus is much less developed than among other venomous kinds; but the fangs, though short, are strong. The species inhabit the warmer countries of both the New and Old World, but do not occur in Europe. They form three generic groups, as after mentioned.

Genus *ELAPS*. Body slender and cylindrical, of nearly equal size throughout, and usually encompassed by fifteen rows of broad, smooth scales. Head elongated, and not strongly distinguishable from the trunk.

This genus was established by Schneider,¹ and now contains all those slender-bodied venomous kinds, which by their elongated forms remind us of *Tortrix* and *Calamaria*. They attain to no great size, seldom reaching three or four feet in length, and scarcely exceeding a finger's thickness in diameter. Their colours are often bright and beautiful, a combination of red and black being frequent among them. They prefer countries covered by an abundant vegetation, concealing themselves amid the herbs of the meadows, or the loftier luxuriance of the forest; and with this circumstance we may connect the fact, that only a single species is found in Africa, all the others occurring in tropical America, New Holland, the Indian Archipelago, and Bengal,—the latter country, however, producing likewise only a solitary instance in *Elaps trimaculatus*. Their agility is by no means great, and they prey chiefly on other reptiles,—birds being probably too active, quadrupeds too large, and fish too aquatic for creatures of slowish movement, small size, and terrestrial habits. We cannot here detail the species, of which eleven are described by M. Schlegel, but must rest satisfied by referring, as examples, to a few figures, such as *E. Corallinus* (*Nova Acta*, x. pl. 4), *E. Surinamensis* (*Seba*, ii. pl. 86, fig. 2), *E. collaris* (*Erpétol. de Java*, pl. 45), *E. trimaculatus* (*Russel, Ind. Serp.* i. pl. 8).

Genus *DENDRASPIS*. The only known species of this genus was first described by Professor Traill in Jameson's *Edinburgh Journal*. From his dislike to institute a new genus from a single species, he proposed for it the name of *Elaps Jamesoni*, as it most nearly approached that genus of poisonous reptiles. His specimen was sent to him from South America; but since that, M. Schlegel has received several specimens from Western Africa, of which it is certainly a native. From its narrow abdomen and habit of a tree snake, M. Schlegel suggested to Professor Traill the generic name of *Dendraspis*, which has been adopted, and the specific name remains.

Genus *BUNGARUS*. Form more robust than that of *Elaps*. Head broad, depressed, rounded terminally, and towards the sides; abdomen convex; tail robust; dorsal line furnished with a row of hexagonal scales larger than the rest; sub-caudal plates simple.

To this genus belong the *Bungarum pamma* of Russel (*Ind. Serp.* i. pl. 3), *B. annularis*, Daudin, and the *Geedi Paragoodoo* of the former author, *B. semifasciatus* of Kuhl and Schlegel. Both species inhabit India, as well as Java and Ceylon. The natives of India, who are said generally to exaggerate the noxious character of their serpents, assert that the bite of the latter produces immediate death, although Dr Russel's experiments go to prove that it is seldom fatal to chickens in less than half an hour, or to dogs in a shorter period than an hour and a half. A *Geedi Paragoodoo* was made to bite a large dog on the thigh, near the groin, where it held fast for more than twenty seconds, but the fangs scarcely penetrated farther than the skin. The dog howled much when first wounded, but on being set at liberty walked about for a time without manifesting any peculiar symptoms. In ten minutes, however, he drew up the wounded leg, continuing to stand on the other three; in a quarter of an hour he crouched, and

howled again, and the thigh became paralytic, though the poor creature was still able to raise himself: in twenty-five minutes both thighs were paralytic; and in the course of the second hour he became greatly disordered, grew apparently torpid, lay panting on one side, and died in about two hours, without convulsions. Another dog of smaller size expired in one hour and ten minutes, after being strongly convulsed for some minutes prior to its death.

Genus *NAJA*. General form robust; body not cylindrical, but thickening in the middle, and tapering towards either end; tail lengthened and conical; abdomen broad and convex; head well distinguished from the trunk; eyes large and lateral; neck capable of inflation.

This genus contains the famous hooded or spectacle-snakes called *cobras de capello* by the Portuguese, the majority having the power of raising the anterior ribs, so as to produce a peculiar disk-like inflation of the neck or upper portion of the body. The species are peculiar to the ancient world,—if New Holland, which produces two, and was unknown to the ancients, may be classed therein. M. Schlegel describes ten different kinds, many of which, however, are arranged in separate genera by other writers, but which that author regards as forming an uninterrupted series, closely connected with each other, and of which the foremost exhibit the announced generic characteristics in great strength and precision, while the others gradually depart from the type, and form a passage to the vipers.

The hooded snake, commonly so called (*Coluber naja* of the older writers, *Naja tripudians* of the recent systematists), is one of the most noted as well as noxious of the Indian reptiles. Its general length is from three to four feet, and the diameter of its body about an inch and a quarter. The inflated portion is marked above by a large conspicuous patch, closely resembling the figure of an old-fashioned pair of spectacles. The usual colour of the upper parts is pale ferruginous brown, the under being of a bluish-white occasionally tinged with yellow. The terminal portion tapers gradually, and ends in a rather slender sharp-pointed extremity. In India this dreaded species is more universally known than any other. It is frequently exhibited as a public show, and being carried about in a covered basket, is made to assume a kind of dancing motion (a modification, we presume, of some natural and instinctive movement) for the amusement of the public. Raising itself up on its lower extremity, and moving its head and body alternately from side to side, the insidious creature seems pleased by keeping time with the measured melody of "flutes and soft recorders." We presume that a love of music is natural to certain serpents; and that this fact was observed of old in Palestine, is probable from the expression of the inspired Psalmist, who compares the ungodly to the deaf adder, which "stoppeth her ears, and refuseth to hear the voice of the charmer." Chateaubriand relates that he was an eye-witness, on the banks of the Genesee, to the fact of a native appeasing the wrath of a rattle-snake (which he even caused to follow him) merely by the music of his flute. The dancing snakes of India are usually, though not universally, deprived of their poison-fangs. "When the music ceases," says Mr Forbes, "the snakes appear motionless; but if not immediately covered up in the basket, the spectators are liable to fatal accidents. Among my drawings is that of a *cobra de capello* which danced for an hour on the table while I painted it, during which I frequently handled it to observe the beauty of the spots, and especially the spectacles on the hood, not doubting but that its venomous fangs had been previously extracted. But the next morning my upper servant, who was a zealous Mussulman, came to me in great haste, and desired I would instantly retire and praise the Almighty for my good fortune. Not understanding his

Venomous
Serpents.

¹ *Hist. Amphib.* ii. p. 289.

Venomous Serpents. meaning, I told him that I had already performed my devotions, and had not so many stated prayers as the followers of his prophet. Mohammed then informed me, that while purchasing some fruit in the bazaar he observed the man who had been with me the preceding evening entertaining the country people with his dancing snakes; they, according to their usual custom, sat on the ground around him, when, either from the music stopping too suddenly, or from some other cause irritating the vicious reptile which I had often handled, it darted at the throat of a young woman, and inflicted a wound of which she died in half an hour.¹ A similar fate had nearly befallen an artist employed by Professor Reinwardt to paint the portrait of a living Naja. It had in some way disengaged its bands, and seemed to have prepared itself to attack the unsuspecting painter the moment he entered his apartment. He there found it supported on its tail, its body raised, its neck dilated, its head advanced, and then giving utterance to some hissing sounds, it threw a quantity of saliva upon the very man who was about to hand it down to posterity, but who fortunately effected an instantaneous retreat before it came to closer quarters. We doubt not the painter loved the picturesque, although that was not the time to gaze with admiration on the fierce intruder.

Dr Russel informs us that he never knew the bite of a hooded snake prove mortal to a dog in much less than half an hour, although it kills chickens in less than half a minute. Now the rattle-snake has been known to kill a dog in less than two minutes. Yet the use of the lunar caustic, which in the hands of the Abbé Fontana proved so efficacious when applied as remedial to the bite of the viper, was found of little or no avail in India as a counteraction to the venom of the *cobra de capello*.² We shall conclude our notices of this species by observing that the Ceylonese jugglers, according to Dr Davy, use it without extracting the fangs, the only means which they employ to avoid its vengeance being courage and agility. It is in fact held in veneration by the natives of that island, who carefully avoid it, offer it no injury, and put it out of doors unhurt when it happens to enter their dwellings.³ The root of *Ophiorhiza mungos* is believed in India to be a specific against the bite of the *cobra de capello*.

Another noted species is the *Naja haje* (*Coluber haje*, Linn.), which plays the same part in the history and superstitions of the African tribes as the preceding does in those of the Asiatic nations. The ancient Egyptians named it *Ouro*, a term which signifies king, and which the Greeks adopted into their language in the word *Ouraios*. It is frequently represented in various Egyptian antiquities, whether as drawn in colours, sculptured on the covers of sarcophagi, or cast in bronze. One of the great creative spirits of the world, called Cneph, Cnouphis, or Ammon, in the cosmogony of Egypt, was represented in their symbolical writings under the form of a serpent winding itself around a globe, or placed in the centre of a disk.

The jugglers of modern Egypt, especially of Cairo, use this Naja in their pretended sorceries. These people affect to be descendants of the ancient Psylli, and boast of inheriting from their ancestors the power of subduing and commanding the most poisonous reptiles. The principal feat which they execute consists in making the Naja counterfeits death, or they change it into a rod. This they seem to effect by pressing the neck of the creature between their fingers, so as to produce a kind of catalepsy, which renders it stiff and motionless. This is rather a singular fact when considered in connection with the scriptural narrative, where the rods of the magicians, when thrown down, are con-

verted into serpents.⁴ According to M. Geoffroy, the species is still sufficiently common in Egypt, occurring both in fields and ditches. "Les cultivateurs sont donc exposés à le rencontrer fréquemment; mais quoiqu'ils n'ignorent pas le danger de sa morsure, sa présence ne les empêche nullement de vaquer à leur travaux ordinaires; connaissant bien les habitudes du redoutable reptile, ils savent qu'ils n'auraient à craindre d'être attaqués par lui, que s'ils venaient à commettre l'imprudence de s'en approcher. En effet, tant qu'ils se tiennent à quelque distance, l'haje se contente de les suivre du regard, en élevant sa tête et en prenant l'attitude dans laquelle les fig. 4 et 5 le representent."⁵ The African Naja attains to about the same size as the Asiatic, and greatly resembles it in general aspect; but its neck is less capable of inflation, and its muzzle more conical. It is usually of a yellowish-brown colour above, varied with numerous black and white spots; the under surface whitish, although some individuals exhibit broad black spots or bands on the abdomen. The Cape Naja is regarded by M. Schlegel merely as a climatic variety of that now mentioned.

The Australian species (*Naja porphyrica*) was first described by Dr Shaw.⁶ It belongs to the genus *Ophiocephalus* of Baron Cuvier, and we place it here on the authority of M. Schlegel. According to M. Lesson it is greatly dreaded at Port Jackson, and several convicts are said to have died of its bite in a quarter of an hour. It is common in the sandy brushwood of the shores of Botany Bay. Its movements are full of force and vigour, its agility remarkable, and it defends itself when attacked with great hardihood.⁷ Another New Holland species is *Naja curta*, said to bear resemblance to a viper. It is probably the only colubiform venomous reptile which exhibits a somewhat vertically elongated pupil.

Family II.—Sea-Serpents.

Our present family is placed here on the supposition that all the species which it contains are poisonous. Several naturalists, proceeding on certain data given by Dr Russel, have maintained the contrary opinion; but long-continued researches on the part of M. Schlegel have led to the conclusion that there is really no exception to the rule. Great confusion prevails in the synonymy of the species, chiefly owing to the absence of good figures and accurate comparative descriptions,—even Dr Russel's plates, which are the most numerous, being insufficient to lead to a rigorous determination of the species. The specimens themselves are obtained with great difficulty, and are consequently rare in our collections.

We have not sufficiently precise information on which to settle the geographical boundaries of the marine family of serpents. That species occur in the Persian and Arabian gulfs is by no means improbable; but the fact is inferred rather from some passages in ancient writers than from modern observation; and we know that the authors of antiquity, at least in some instances, mistook certain eel-formed fishes for actual snakes. Schneider, indeed⁸ (whose competence as a scholar no naturalist would dare to doubt) has quoted several classical writers to demonstrate a remote knowledge of sea-serpents; but that knowledge seems too superficially and vaguely expressed to be altogether trusted or even understood. Ælian records that "the seas of India produce hydras with flattened tails."⁹

Modern naturalists are believed to be in error who assert their occurrence in the Atlantic Ocean, no proper proof having been yet adduced of any of these species inhabiting it.

¹ *Oriental Memoirs*, i. p. 44.

² *Edinburgh Cabinet Library*, vol. viii.

³ *Ceylon*, p. 83, *et seq.*

⁴ "Then Pharaoh also called the wise men and the sorcerers: now the magicians of Egypt, they also did in like manner with their enchantments; for they cast down every man his rod, and they became serpents; but Aaron's rod swallowed up their rods." (Exod. vii. 11, 12.)

⁵ *Descrip. de l'Égypte*, Atlas, Reptiles, pl. 7.

⁶ *Zoology of New Holland*, pl. 10.

⁷ *Voyage de la Coquille*, Zoologie, ii. p. 55.

⁸ *Hist. Amphib.* i. p. 255.

⁹ *Æl.* i. 16, chap. 8.

Venomous
Serpents.

M. Schlegel characterizes the statement as an "assertion que je puis contredire avec certitude." Believing that there are more things in heaven and earth than are "dreamt of in our philosophy," and desiring to bear in mind the sentiment of the inspired apostle, that "if any man think that he knoweth any thing, he knoweth nothing yet as he ought to know," we shall content ourselves by stating that sea-serpents have not yet been observed in the Atlantic Ocean. M. Schlegel's researches have led him to believe that they are confined "aux mers intertropicales, ou voisines des tropiques, comprises entre le 90me et les 230me degrés de longit. or. du méridien de Ferro."¹ We shall here state the chief of the actual localities. Several species were received by Dr Russel from among the numerous islands called Sunderabunds, which form the delta of the Ganges. The same author likewise obtained many from different points along the coast of Coromandel. Sir Stamford Raffles mentions three species which frequent the coasts of Sumatra.² The Dutch voyagers have observed only a single species on the coast of Java, but they have met with several among the Moluccas, near Timor, Banda, and the shores of New Guinea. Dr Strauss transmitted two species from the Celebes. M. Von Siebold observed them to abound in the China Sea, and met with many in the course of his passage from Java to Japan, from the region of the equator as far north as the 27th degree. Escholtz has incidentally observed,³ that the fishermen of the Philippine Islands capture *Acrochordus fasciatus* in the Bay of Manilla, and that this reptile cannot move upon the land. Now it so happens that the *Acrochordi* correctly so called never inhabit the sea; and it may therefore be inferred that the observer last named had in view, not an *Acrochordus*, but a sea-snake or *Hydrophis*. It is long since Dampier told us of those which he saw along the western shores of New Holland;⁴ as did afterwards Sir Joseph Banks along the eastern coast, from the 20th to the 16th degree of north latitude. Forster, as Schneider has recorded, found *Hyd. pelamys* abundant near Otaheite.

The habits of these reptiles are indicated here and there by different writers. Dr Russel describes their aquatic movements as active and elegant, but they have scarcely any locomotive power on land, and speedily die when either brought ashore or placed in fresh water. He found in the abdomen of a female *Hydrophis* nine perfectly formed young, each of which was enclosed in an egg or envelope, from which (the matured condition) it may be inferred that they are viviparous. It would also seem that their manners are milder than those of the generality of poisonous species. Dr Russel, at least, assures us in regard to *Hyd. gracilis*, that no provocation would induce it to bite any object presented to it. Neither could M. Lesson succeed in his disinterested attempts to make *Hyd. pelamys* wound any poultry, though he kindly put them together alive into a copper bathing tub.⁵ The observations received from M. Von Siebold by M. Schlegel confirm the belief of other naturalists, that these reptiles, though assuredly dangerous from their poisonous qualities, are not of a highly ferocious nature. The former traveller fell in with vast numbers while sailing from Batavia to Japan, all of the small species, elsewhere so frequent and widely spread, known to naturalists by the specific name of *pelamys*. Their movements were by no means rapid, although they glided through the water with grace and activity, raising their heads from time to time above the waves, for the purpose probably of respiration. Their motion is produced and directed by an action of the tail, accompanied by a lateral and undulating movement

of the other parts of the body. They were easily enough entrapped in wooden buckets, and glided through the sailors' hands without attempting to bite them,—the said sailors having probably been previously informed that they were eels. "Le Professeur Reinwardt," says Schlegel, "confirme ce que M. von Siebold rapporte relativement au caractère doux et tranquille de ces animaux."⁶ We cannot, however, help thinking that this alleged sweetness of temper and tranquillity are in some measure inconsistent with the cases of the native woman and Lascar already reported in our introductory observations. The comparatively slow movements also do not accord with what we are elsewhere informed by M. Lesson. "Le 27 Juillet," says that naturalist, "par une journée brûlante, nous fûmes pris de calme sur les côtes de la Nouvelle Guinée. De nombreux serpents marins passèrent le long de la corvette, et un embarcation que le capitaine fit mettre à la mer nous permit de les chasser. Nous atteignîmes après de longues poursuites une *Pelamide*, dont l'agilité était extrême, et les mouvements de natation des plus rapides."⁷

We owe some interesting observations on the manners of these marine serpents to M. Peron,⁸ although it may be doubted whether that voyager did not occasionally take his notes from too great a distance, especially in reference to size and colour. No other credible author has ever described any of these species as attaining to so great a length as twelve feet; the usual dimensions, we may here observe, varying from two and a half to five feet. However, M. Peron describes those he saw as gliding lightly in great numbers on the surface of the sea, and waging destructive war against a shoal of small herrings, which fled precipitately towards deeper water. The haunts of these snakes are by no means confined to the shallow shores, or even the vicinity of continents or islands, for they are often met with many hundred miles from land. On opening their stomach, our navigator found it filled with small fish, and various marine crustacea; but the reptiles themselves became the frequent prey of sharks, in the interior of which their half-digested remains were often found. It naturally became a subject of surprise, that creatures so light and active should so often fall victims to an enemy of such weight and sluggishness; but after more lengthened observation, a peculiarity in the habits of the former was thought sufficient to account for their capture. These serpents were often seen as if asleep, and floating on the waves, and so profound was their repose, that a large vessel, "with all its bravery on," might pass close by without their being disturbed by its surging prow, its huge furrow, or the loud voices of the garrulous sailors (Frenchmen, of course). M. Peron supposes that it is in this state of lethargy that the lazy sharks swallow them at their leisure. As to the cause of the torpor itself, he naturally enough suggests that it may arise, as among the terrestrial races, from repletion, and the indolence indulged in by all serpents during the digestive process. "Ces reptiles," he adds, "nagent et plongent avec une égale facilité: souvent à l'instant même où nous croyons pouvoir les saisir avec nos filets, ils disparaissent à nos yeux; et, s'enfonçant à de grandes profondeurs sous les flots, ils restaient une demi-heure et plus sans remonter à leur surface, ou ne paraissaient qu'à de très-grandes distances du point où nous les avions vus plonger."⁹

The general ground-colour of the majority of these reptiles is yellowish, varying towards green, blue, or white, and often relieved by blackish rings, or broad lozenge-shaped spots, disposed transversely along the dorsal re-

Venomous
Serpents.¹ *Physiog. des Serpents*, ii. p. 491.² *Phil. Trans.* xiii. part ii. p. 334.³ In Kotzebue's *Neue Reise*, *Anh.* p. 32.⁴ *Voyages*, iv. p. 107 and 113.⁵ *Coquille*, ii. p. 58.⁶ *Physiog.* ii. p. 493.⁷ *Loc. cit.*⁸ *Voyage*, p. 105 and 129.⁹ *Loc. cit.*

Venomous Serpents. gion. The colours seem less subject to variation than among the other Ophidians, and there is no external difference between the sexes. All the species are included by M. Schlegel in the following genus.

Genus *HYDROPHIS*. Head small, uniform with the trunk. Nostrils vertical, of an orbicular form, and capable of being closed by a valve. Eye small, pupil orbicular. Fangs but slightly developed, and always followed by several other teeth, solid though slender. Body tapering towards both extremities. Scales lozenge-shaped or hexagonal, not imbricated, covered by a thin epidermis, and surmounted by a tubercle, of which there are two on the median range of the abdomen. The abdominal scales scarcely larger than the others. Tail broad, flattened laterally, and performing the functions of an oar or rudder. Lungs often prolonged into a reservoir of air as far as the commencement of the caudal region.

Of this genus there are seven species, the particular characters of which we cannot here detail, although their general attributes may be made out from the preceding observations. (See Plate V., fig. 4.)

The most common kind is *Hyd. pelamys* of Oken¹ (*Anguis platyura*, Linn.), of a comparatively thickish form, the head much elongated, the median line of the abdomen indicated by a suture formed by two rows of scales. It is of a blackish brown above, beneath yellow; the tail, and sometimes the entire body, varied by these colours. It is the most extensively distributed of the genus, being found wherever any sea-snakes occur. It seems to be the black backed hydrus of Shaw (*Hydrus bicolor*, Schneid.); and in India rejoices in the euphonious name of *Nalla Wahlagillee* Pam.² Of general occurrence in the Asiatic seas, it is also common round the coasts of Otaheite, where it is relished as an article of food, and known under the title of *Etoonatoree*.

Family III.—Most Poisonous Serpents.

The species of this family are the most venomous of all, and may, for the most part, be recognised by something especially repulsive and forbidding in their aspect. Their form is rather thick and heavy, their tail short, their head extremely broad, depressed, and somewhat heart-shaped; rarely protected by plates, but usually covered by scales resembling those of the dorsal region; the eyes are small, deeply seated in the sides of the head, and shaded by projecting superciliary plates, the pupil vertical; the upper lip is inflated, and falls over the lengthened fangs; the body is usually beset by scales of a lanceolated form, surmounted by a ridge, except in one or two species of *Trigonocephalus*, in which they are smooth.

Their habits and modes of life likewise present some disparities when compared with those of the preceding groups. Being of a lethargic nature and slow of movement, they seldom wander about in search of prey, but keep themselves coiled up till it approaches closely, and then springing upon it by a sudden straightening of the body, they inflict a fatal wound, which needs no repetition. There seems reason to believe that this mode of attack is peculiar to the present family, the other poisonous kinds pursuing their prey, and *holding on* when they have seized it, while the poisonous serpents properly so called are satisfied by sinking their envenomed fangs into the flesh of their victim. Their gape is very wide, their fangs long and sharp, their poison abundant and in a state of high concentration, and the wound is inflicted suddenly,

Venomous Serpents. with great force. The result is left to nature, and is in consequence both sure and speedy.

We have said that the poison-fangs are more developed than among the other Ophidians. They alone occupy the maxillaries, being never followed by any small solid teeth, though these occur along the palate and at the extremity of the lower jaw. The nostrils are in some spacious, in others narrow, and vary also in their position. They are followed in certain species by a deep pit or hollow, scooped in the sides of the muzzle, and connected with a broad cavity in the upper maxillaries. This character (of which, however, we know not the function) seems analogous in some measure to the *larmiers* of ruminating quadrupeds, and has been employed for the distribution of these serpents into several groups. Such as are distinguished by this nasal pit inhabit the forests of tropical countries, and consist of two genera, *Trigonocephalus* and *Crotalus*, of which the former (native both to Asia and America) is chiefly found in moist and sombre woods, or places covered by an abundant vegetation; while the latter (peculiar to the western world) prefers a somewhat drier and more barren soil. Such as possess no nasal excavation are comprized in the genus *Viperus*. They affect a more open, sandy soil, and occur exclusively in the ancient continents and New Holland. We shall briefly survey these different groups, in the order now named.

Genus *TRIGONOCEPHALUS*. Head, as in other members of the family, heart-shaped or triangular, extremely broad behind, and consequently very distinguishable from the neck. Tail terminated by a conical corneous plate.

The poison apparatus of these reptiles is developed in the highest degree; and as the species sometimes attain a length of five or six feet, they may be regarded as among the most redoubtable of venomous serpents. They all frequent wooded or shady situations, or moist meadows in the immediate vicinity of forest-land. The abdomen is always broad, rather convex, and furnished with plates, which vary, according to the species, from 140 to about 270. The tail is always short, conical, and usually somewhat slender. The sub-caudal plates vary from forty to seventy; and of these some are simple, others divided into two. The body is often marked by large irregular or lozenge-shaped spots upon a brownish or yellowish ground. Some, however, are reddish, others of a greenish hue, and there is frequently a line of deeper hue behind the eye. The species are rare in collections. None occur in Europe or Africa. America and the intertropical countries of Asia produce a large majority. The genus is divisible into two sections, according as the head is covered with scales or with plates.

One of the most noted species of the first section is *Trig. lanceolatus*, a native of the West Indies.³ The general colour is greenish yellow, paler beneath, and variously marked with specks, spots, and bands of brown. A broad brown line, bordered with white, proceeds from the eye towards the mouth. We have a good account of the habits and history of this reptile from Colonel Moreau de Jonnés.⁴ He tells us of one killed by an officer which measured above seven feet and a half in length; and still greater (but perhaps less accurate) measurements are given by Dutertre⁵ and Labat.⁶ In the bodies of such females as were examined, he found some fifty or sixty young ones, which, when the period of their birth arrives, issue forth completely formed, and much inclined to bite. In the adult state they prey chiefly on rats, which, though not indigenous to these islands, are now in all probability as 10,000 to one compared with the native quadrupeds. The snakes in question

¹ *Naturgesch.*, vol. iii. part ii. p. 279.

² *Quadr. Ovip.* ii. p. 121, pl. 5, fig. 1. Also described by Dr Shaw, under the title of *Coluber megara*. *Gen. Zool.* iii. 406.

³ *Monographie du Trigonocephale des Antilles.*

⁴ *Nouveau Voyage aux Antilles, contenant l'Hist. Nat.*

⁵ *Indian Serpents*, i. 47, pl. 41.

⁶ *Hist. Gén. des Antilles habitées par les François.*

Venomous
Serpents.

have also multiplied prodigiously in St Lucia and Martinique, where from sixty to eighty may be killed during the cutting of a single field of sugar-cane. According to M. Moreau de Jonnés, they people the marshes, the cultivated grounds, the forests, the banks of rivers, and even the summits of the mountains. The observer just named encountered one on the very edge of the crater of that naked mountain which overhangs the town of St Pierre, in Martinique, at an elevation of more than 5000 feet; and he feared it the more from the excessive lassitude under which he himself at that time laboured. His alarm was not without cause, for only a few days before, a fisherman at the foot of the mountain had been attacked by a similar reptile, which issued from its concealment among the basalts of the shore, and no efforts could save his life. These dreaded serpents are sometimes found in holes made by rats or land-crabs. They also enter hen-roosts and poultry-yards, and sometimes creep into dwelling-houses, chiefly, however, the huts of the negroes. But the sugar-plantations are their favourite places of resort. "Je n'ai jamais trouvé," says our author, "de serpent stationnaire, qu'il ne fût dans une position offensive. L'action par laquelle le reptile prend cette position, s'exprimer aux Antilles par le verbe *lover*. Elle consiste à contourner en spirale toute la longueur de son corps, qui forme quatre cercles égaux en diamètre, superposés les uns au dessus des autres, et sous le dernier duquels la queue est placée comme point central d'appui, de resort et de pivot. La tête, qui termine le cercle supérieur, est retirée en arrière. Quand l'animal s'élance sur une proie, il fait effort sur la queue, et déroule subitement les quatre cercles qui semblent se débander." This species preys on birds as well as quadrupeds, and the former manifest their hatred by vain and clamorous cries whenever they behold their "arch destroyer." It avoids the brilliant equatorial light, and usually dwells in shaded places, seeking what it may devour chiefly towards sunset, or during cloudy weather.¹ The distribution of this species is rather remarkable. It does not extend throughout the whole of the Antilles, nor is it found even in the majority of those islands. "By a chance equally singular, fortunate, and inexplicable, it is confined to the islands of Martinique, St Lucia, and Beconia alone; and there is no proof, as has been pretended, that it is common in the American continent. Nevertheless, a tradition exists among the Indigenes, that it was introduced into Martinique by the Arronages, a horde which inhabited near the mouth of the Orinoco, and which, impelled by sentiments of hatred and vengeance against the Carribs of that island, made them this fatal present, and let loose in their forests this serpent, which was brought over in calabashes. But according to another popular opinion in the same country, the Trionocephalus is aboriginal of Martinique, and cannot live elsewhere, not even in Guadeloupe.

Some, however, think differently, and explain the phenomenon by the existence of the dog-headed serpent, which is believed to be a Boa, and which, common in Dominica and St Vincent, has delivered these islands from the Trionocephalus."²

Of the second section of this genus, comprising such as have the head covered by plates instead of scales, we may here name *Trig. rhodostoma*, which is of a thicker and more vigorous form than the other species. The body tapers towards either end, the tail is short and acuminate, the abdomen broad, and the back prolonged into a well-marked keel. The colour is reddish brown, paler on the back, the sides adorned by broad, deep, triangular spots, the abdomen white. The summit of the head is black, surrounded by a broad streak of pale red, which descends the sides of the neck to combine with the beautiful rose-colour which tinges the lateral parts of the head, and from which it is separated by a black band proceeding from behind the eye. The iris is of a golden yellow. "L'expression sauvage de sa physiognomie," says M. Schlegel, "est, pour ainsi dire, adoucie par la nature et la conformation des plaques écailleuses qui semblent à celles de la plupart des couleuvres, ont la surface unie et luisante."³ This species inhabits the western parts of Java, where it conceals itself in tangled vegetation, and makes its way at times into fields and gardens. It preys chiefly on frogs, and is itself attacked by a species of civet cat which occurs in Java. It is greatly dreaded by the natives on account of its deadly poison; and during M. Khul's residence at Buitenzorg, two labourers bitten by it died in five minutes. Although a viviparous reptile, the fœtus is enclosed in a coriaceous envelope, as large as a pigeon's egg. The species is figured by Russel.⁴

The only other example of the genus we need here notice is *Trig. cenchrus*, which inhabits the southern provinces of the United States. Its occipital plates are of small dimensions, and are sometimes even wanting. The ground colour is grayish brown, marked by broad transverse bands of a more coppery hue. The abdomen is yellowish, marked by dark irregular spots. The point of the tail is usually black, and all the parts are minutely speckled by that colour. It is a sluggish, slow-moving reptile, very poisonous, but not given to bite, except in self-defence, when it maintains its position courageously. It has been described by different authors under a great variety of names, and by some under more than one at a time.⁵ It is the *Mokassin* snake of the Anglo-Americans, thus called on account of the resemblance of its colour to the piece of dress so named by the native tribes. It is figured by M. Daudin.⁶

Genus CROTALUS. This dreaded genus contains the rattle-snakes, and is distinguished from the preceding by a more robust form, a thicker head, and a tail either armed

Venomous
Serpents.

¹ Monographie, p. 37.

² Griffith's Animal Kingdom, ix. 350.

³ It is both the *brown* and the *black viper* of Catesby's *Carolina*, pl. 44 and 45; it is once figured, and at least twice described, by Dr Shaw, as *Col. Cacadæmon* and *Tisiphone*, Gen. Zool. iii. pp. 377 and 406; it is the *Pelias Niger* of Merrem, *Tentamen*, p. 149; and had been previously described by Linnæus as a Boa (*B. Contortrix*, xii. ed. p. 373). M. Schlegel, indeed, supposes that it is also the *Coluber Constrictor* of the great Swedish naturalist. The Boa just named is believed to be identical with the *hog-nosed snake* of Catesby (*Car.* ii. pl. 56), and may be identical with the preceding nominal species, none of which seem to exceed the size of our common viper; but *Col. Constrictor* of America is usually described as of different habits and much larger dimensions. It is the *black snake* of Catesby (*Car.* ii. pl. 48). "This," observes that author, "is a large and very long snake, some being six feet in length. They are all over of a shining black, never changing their colour, and are very nimble and beneficial in killing rats, which they pursue with wonderful agility to the roofs and all parts of houses and barns, where rats are able to run, for which service they are preserved by most of the inhabitants. They are bold and furious, leaping at and biting those that attack them, though no harm ensues, *their bite not being venomous*. It is said in Carolina that they will attack and swallow rattle-snakes. It is certain most or all snakes will devour one another, not only of their own, but of other kinds, which I have often seen; one, after a long struggle, swallowing another but little less than itself. They are the most numerous of all snakes." "Many ridiculous frights," says Mr Pennant, "have happened from this innocent reptile. As every one in America is full of the dread of the rattle-snake, they are apt to fly at the sight of any of the serpent kind. This pursues, soon overtakes, and twisting round the legs of the fugitive, soon brings him to the ground; but he happily receives no hurt, but what may result from the fright. All the mischief this species does is to the housewives, for it will skim their milk-pans of the cream, and rob their hen-roosts of all the eggs." (*Arctic Zoology*, Appendix, p. 92.)

⁶ Reptiles, v. 358, pl. 70, figs. 3 and 4, and 60, fig. 25.

³ Phys. des Serpens, ii. 547.

⁴ Indian Serpents, ii. pl. 21.

Venomous Serpents. by a peculiar organ called the rattle, or prolonged into a sharpened point. There are four species, all peculiar to America. These are often confounded, even by systematic writers; and it is by no means easy to apply the general attributes assigned by travellers to the proper species, which no doubt differ from each other.

It seems ascertained, however, that the bite of all these reptiles is extremely dangerous, the slightest prick of their envenomed fangs, in any part of the body well supplied with blood-vessels, being sufficient to kill almost any animal. Laurenti says, that a person bitten by a *Crotalus* experiences a swelling of the entire body, the tongue becomes prodigiously inflamed, an unextinguishable thirst takes place, the edges of the wound become gangrened, and the unfortunate victim dies in frightful agony in five or six minutes. Different experiments made in Carolina by Captain Hall, are related in the Philosophical Transactions. A rattle-snake, four feet long, was fastened to a stake, and being made to bite three dogs, the first died in less than a quarter of a minute; the second, in convulsions, in about two hours; the third in about three hours. Four days after this, another dog was bitten by the same snake, and died in half a minute; and then a second received the murderous fangs, and died in four minutes. A common black snake, about three feet long, and very vigorous, was next procured. The reptiles bit each other,—the black snake dying in eight minutes, the rattle-snake not seeming in any way affected by its wound. Proceeding upon the supposition that “none but itself could be its parallel,” it was then made to inflict a bite on its own body, and this suicidal deceit was followed by the hoped-for consequence,—it died in less than twelve minutes. The story is probably well known to all, though not credited by so many, of a disagreeable kind of an heirloom which once existed in an American family. A man had been bitten through his boots by a rattle-snake, and died. The boots afterwards descended into the successive possession of two other persons, and killed them both,—an envenomed fang having remained sticking in the leather. As usual, we have contradictory accounts of the effects of corresponding causes. We know that an Englishman who was unfortunately bitten by a rattle-snake at Rouen, in 1827, expired in eight hours; yet in the April of that same year, at a meeting of the Academy of Sciences in Paris, Professor Bosc declared that he had seen more than thirty persons who had been bitten by rattle-snakes, not one of whom had died. According to Kalm, even the largest animals, such as horses and oxen, die almost instantly. Dogs longer resist this fatal action. Most animals exhibit an instinctive horror on nearing one of these death-dealing creatures. “I have often,” says M. Bosc, “amused myself by trying to force my horse and dog to approach one of these animals. But they would sooner have allowed themselves to be knocked down upon the spot than have come near them.” Yet Mr Audubon informs us that the mocking-bird of America, so strong and overpowering is the instinct of parental love, does not hesitate to attack the rattle-snake when it approaches too near its nest,—that it will strike it on the head, pick out its eyes, and eventually put it to death.

The so-called *rattle* of these reptiles consists of a series of hollow, vertically flattened, scaly pieces, of which the posterior portion of one fits into the anterior portion of that which follows. They are thus mechanically and somewhat loosely connected together, without being actually joined, so that when shaken they make a rattling or rustling noise, resembling that produced by rumbled parchment. When young there is at first but a single horny portion at the end of the tail, and attached to the last caudal verte-

bra. Another is formed on the renewal of the skin, pushing its predecessor onwards, so that the first joint, which is closed at the end, continues to be the terminal one. M. Bosc is of opinion that an additional joint is formed every year, and that if the parts in question were not so often broken off accidentally, we might thus determine the age of each individual. They are, however, extremely fragile; and M. Palisot de Beauvois informs us, that he frequently found these rattles lying detached, in the course of his travels in the United States.¹ Their amount sometimes exceeds thirty, but usually ranges from one to thirteen. Some say that the noise may be heard at the distance of a hundred feet, while Bosc and others allege that it is scarcely audible beyond some twelve or fifteen paces. We shall now briefly notice the different species, the names of which, as already hinted, have been frequently transposed by naturalists.

Crotalus horridus inhabits South America, and is known to the Portuguese by the name of *Carcavela*. Its muzzle is covered by three or four pairs of plates. The scales, which are lozenge-shaped, and surmounted by a cutting keel, are disposed in twenty-nine ranges. Abdominal plates 145, sub-caudal twenty-five. The colour of the upper parts is yellowish brown, relieved upon the back by a range of broad, lozenge-shaped spots. This species measures from four to six feet in length, and, dwelling in a sultry clime, continues in a state of activity throughout the year. Some singular peculiarities in its manners are narrated by naturalists. For example, M. Palisot de Beauvois states, that during one of his journeys he observed a rattle-snake lying on the path, and approached it as quietly as possible. When he was about to strike it, it sprung its rattle, opened its mouth very widely, and received into its throat five young ones, each as thick as a goose's quill. After ten minutes' time, believing itself to be out of danger, it opened its mouth, and allowed the exit of the young, which, however, re-entered on a fresh alarm. This curious fact has been testified (if not confirmed) by another French gentleman, M. Guillemart.

Crotalus durissus (Plate IV., figs. 6 and 10) is a more northern species than the preceding, and to it we may refer the numerous observations which have been made by travellers and tourists on the rattle-snakes of North America. It seems to inhabit from the southern side of the Great Lakes as far as Mexico and California, extending westwards to the foot of the Rocky Mountains, but not occurring to the north of the river St Lawrence. It has only one or two pair of plates upon the muzzle, and the keel upon the scales is less developed; the eyes are smaller, the tints deeper, the spots frequently assume the form of bands, and the tail is black. Abdominal plates 170, sub-caudal twenty-two. As this species dwells in districts subjected during winter to the influence of rigorous cold, it creeps in autumn into covered places, or, hiding itself beneath masses of sphagnum, falls into a state of lethargic repose. An individual killed by M. Bosc, and which did not measure more than four feet in length, was found to have a hare in its interior. Its usual food consists of rats, squirrels, and other small Rodentia. This serpent, commonly called the striped rattle-snake, is said to traverse rivers, and even lakes, by inflating its body like a bladder. “The largest rattle-snake,” says Catesby, alluding to one or other of these species, “which I ever saw, was about eight feet in length, and weighing between eight and nine pounds. This monster was sliding into the house of Colonel Blake of Carolina, and had certainly taken up his abode there undisturbed, had not the domestic animals alarmed the family with their repeated outcries; the hogs, dogs, and poultry united in their hatred to him, showing the greatest consternation, by erecting their

Venomous Serpents.

¹ Latreille, *Reptiles*, vi. 73.

Venomous
Serpents.

bristles and feathers, and expressing their wrath and indignation, surrounded him, but carefully kept their distance, while he, regardless of their threats, glided slowly along." "It is not uncommon," he adds, "to have them come into houses; a very extraordinary instance of which occurred to myself in the same gentleman's house, in the month of February 1723. The servant, in making the bed in a ground room (but few minutes after I left it), on turning down the sheets, discovered a rattle-snake coiled between the sheets in the middle of the bed." According to M. Audubon, the skin of this species is used in making shoes.¹ Mr Say informs us that it inhabits bare and sterile regions, and is often found in the subterranean dwelling of a marmot, *Arctomys Ludoviciana*.² M. Becker of Darmstadt placed two rabbits in a cage with this species, one of them being white, the other reddish brown. The fierce reptile, which was lying in a spiral form in the centre, sounded its rattle, and raised and extended its head from time to time, but made no attempt to seize its prey, although repeatedly provoked by its keeper so to do. A black rabbit was then introduced, which it bit instantaneously, and the victim was dead in eight minutes.³

Crotalus miliaris is a small species of North America, recognisable by its head clothed with nine well-developed plates. The eyes are large, the general colour a reddish brown, with three ranges of deeper spots. There are twenty-three rows of scales, and the lower plates are, abdominal 131, sub-caudal twenty-six. This snake was observed by Catesby in Carolina, and is described by Mr Say (under the title of *Crot. tergeminus*) as an inhabitant of those lonely sterile plains which stretch between the Mississippi and the Rocky Mountains. It is regarded as more dangerous than the preceding; its small size and peculiar colour prevent its attracting notice, and its rattle is too feeble to be heard at any distance. People are thus apt to tread or even to sit down upon it unawares, and the consequences are as easily imagined as described. It lives on frogs and insects, is by no means timid, but is easily killed by the slightest blow. It was figured long ago both by Seba⁴ and Catesby.⁵

Lastly, *Crotalus mutus* differs from the other species in having the tail terminated by a hardened point instead of rattle. Its head is clothed with scales. The back is keeled, and the scales are surmounted by a tubercular ridge. Abdominal plates 227, sub-caudal forty-nine. This great serpent inhabits Cayenne, Essequibo, Surinam, and other parts of South America. It sometimes measures above ten feet in length, and may be regarded as the most gigantic of all poisonous reptiles. In its mode of life it somewhat resembles *Trigonocephalus* (and is in fact described as a species of that genus by Baron Cuvier⁶). But it is essentially a rattle-snake, though destitute of the particular part from which these species derive their general name. It seems the same as that described under the title of *Curucucu* by Marcgrav.⁷ Its poison has been experimented on by Dr Hering.⁸

Genus VIPERA. Nasal pit wanting. Head usually covered by ridged lanceolated scales. General form thickish, tapering towards each extremity. Tail short and conical.

The species of this genus, greatly restricted since the time of Linnæus, still exhibit a considerable diversity of character when compared among each other. They inhabit either open sandy plains, or desert heaths, where the vegetation is not umbrageous. Hence their abundance in

Africa, and their comparative scarcity in other countries. None occurs in America, a few are found in the drier districts of Asia, three inhabit Europe, and one (of a somewhat anomalous nature) is native to New Holland.

Venomous
Serpents.

The common viper of Great Britain, and of most parts of the Continent (*Vipera berus*, Daudin—*Coluber berus*, Linn.),⁹ is the most poisonous of European reptiles. It rarely exceeds two feet in length. The upper portion of the head is protected by a few plate-like scales, somewhat larger than the others. The usual colour is pale ashy brown above, with a space between the eyes, and a patch on each side of the occiput, deep brown or black. A zigzag band of black (composed in some of confluent spots) extends along the back from the nape to the tail; and there is also a parallel row of small black spots on each side. The abdomen and sub-caudal region are steel-blue, sometimes marbled by a yellowish tint, sometimes uniform, or nearly black. The abdominal plates are about a hundred and forty-five,—the sub-caudal about thirty-five. This species is widely spread over the central and northern parts of Europe, but some uncertainty prevails regarding the so-called common viper of Italy and other southern regions. M. Gisl describes the viper of the environs of Munich as having an upturned snout,¹⁰ which is a character of the aspic; and although Metaxa enumerates *Vipera berus* and its varieties as occurring in the Roman territories,¹¹ others are of opinion that all its alleged localities are doubtful beyond the Alps.¹² It seems, however, to be found in the temperate parts of Siberia, in Russia, Hungary, all Germany, parts of France, Holland, Denmark, Sweden, and, we believe, Norway. Though common in Great Britain, and many of the western isles of Scotland, it is not indigenous in Ireland. Its vertical as well as horizontal range is considerable, for although it affects the low wide heaths of Groningen, Overijssel, and Friesland, it also occurs on the summit of the Inselberg in Thuringia, at an elevation of nearly three thousand feet above the level of the sea. The viper preys chiefly on mice and insects. A specimen, on the tail of which we inadvertently tramped while crossing a moor in Glenmuick, and which our friend Dr Greville struck down with his umbrella, was found on dissection to have a large field-mouse in its abdomen. Schlegel describes ten species.

The bite of this reptile is seldom fatal to animals of moderate size. We have several times seen sporting dogs bitten by vipers on the Scotch moors; and although the cheek might swell, and a heaviness of spirits, and disinclination to distant ranging, usually ensued for a few hours, no perceptible effect could be traced on the following day. A sparrow, however, or even a pigeon, dies in a few minutes after being bitten. Sheep usually escape without any serious consequences. Fontana ascertained, that the hundredth part of a grain of poison was sufficient to kill a sparrow, and that a pigeon required six times that amount. From these data he made a calculation, that it would take nearly three grains to kill a man, and as a viper does not carry above two grains of poison in its vesicles, and does not entirely exhaust that quantity, even after many bites, it was concluded that a human being might receive the bite of five or six vipers without dying in consequence. Now this may be all accurately reasoned in its way, but as physiology is by no means a science of calculation, we would not advise any one to try the experiment. Several facts have been recently adduced to prove, that the bite of this reptile is frequently dangerous, and occasionally fatal. Dr Paulet, in his obser-

¹ *Edinburgh New Phil. Journ.* iii. 21.² *Expedition to the Rocky Mountains*, p. 234 and 236.³ *Isis*, 1828, p. 1132.⁴ *Vip. berus* of Cuvier, and of some other French naturalists, seems to be identical with the aspic, *vipera aspis*,—a species common in France and Switzerland.⁵ *Isis* for 1829, p. 1071.⁶ *Thesaurus*, ii. pl. 95.⁷ *Carolina*, pl. 42.⁸ *Trig. rhombifer*, *Règne Animal*, ii. 90.⁹ *Monograph of the Serpents of the Environs of Rome*, p. 42.¹⁰ *Hist. Rerum Nat. Brasilia*, lib. vi.¹¹ *Neuw. Beitrag*, p. 465.¹² *Physiolog. des Serpens*, ii. 597.

Schlegel's
Arrangement.

Schlegel's
Arrangement.

variations on the viper of Fontainebleau, states, that an infant of seven years and a half, which was bitten beneath the internal malleolus of the right foot, died at the end of seventeen hours,—while another infant of only two years, which was bitten in the cheek, took two days to die. Dr Hervez de Chegoni mentions the case of a woman, aged sixty-five years, in good health, and of a sound constitution, who having been bitten in the thigh only once by a single viper, expired under the most deplorable symptoms in thirty-seven hours.

The aspic, *Vipera aspis*, is a species nearly allied to the preceding, of which it is by some regarded as a variety, and of which it seems to assume the place in the south-western countries of Europe, extending as far as the island of Sicily.¹ Its form is more slender, its head larger, its top covered by irregularly-formed scales, and the muzzle is slightly turned up. The aspic is the species which served the experiments of Redi, Charas, and Fontana. It inhabits the dry and rocky countries of Italy, has been observed in Switzerland, and is common in France from the 49th degree of north latitude, spreading into Savoy, the Pyrenees, Spain, and the Mediterranean shores. It is the viper of Fontainebleau, and is also found in the forest of Montmorency; but in Burgundy, and the more northern parts of France, it is replaced by our common viper.

New Holland produces a rare and remarkable species, which some class as generically distinct, under the title of *Acanthophis*. It is of a thickened form, with a slender hard-pointed tail, the upper part of the head protected

by nine plates. The eye is surrounded by plates, of which the superciliary are elevated, and inclined towards the top of the head. It is the *Vipera acanthophis* of M. Schlegel,—*Acanthophis cerastinus*, Lacépède.² (See Plate V., fig. 8.)

A still more remarkable and anomalous species is the famous *Vipera cerastes* of Africa, figured and described by Bruce the traveller,³ and also in the great French work on Egypt.⁴ Its head is very broad, and heart-shaped; its muzzle broad, obtuse, and rounded; its nostrils rather narrow, vertical and terminal; and its scales surmounted by a tubercular ridge. One of the superciliary scales on each side is converted into a projecting horn-like process, curved forwards; and the ancient name *cerastes* is no doubt derived from this peculiar character,—the Greek word *κέρας* signifying horn.

Cornua prætendens immania fronte cerastes,
Dum torquet spinam sibilat ecce vagus.

It seldom much exceeds a foot in length, and inhabits the sandy deserts of the north of Africa. Its description by Bruce has been so often quoted that we shall rest satisfied by the reference already given to the writings of that impugned author.

Very similar to the *Vipera cerastes* of Egypt is the *Vipera nasicornus* of the western coast of Africa, which has two of the scales on its snout elevated above the general surface. It was discovered during Captain Tuckey's voyage.

SCHLEGEL'S ARRANGEMENT OF SERPENTS.

DIVISION I.—INNOCUOUS SPECIES.

FAMILY I.—BURROWING SERPENTS.

Genus 1.—TORTRIX.

Sp. 1.	<i>Tortrix scytale</i>	South America.
.. 2.	 <i>rufa</i>	Java, &c.
.. 3.	 <i>maculata</i>	Ceylon.
.. 4.	 <i>Eryx</i>	Asia.
.. 5.	 <i>pseud-eryx</i>	Australia.
.. 6.	 <i>xenopeltis</i>	Java, &c.
.. 7.	 <i>Boa</i>	New Ireland.

FAM. II.—VERMIFORM SERPENTS.

Gen. CALAMARIA.

Sp. 1.	<i>Calamaria lumbricoidea</i>	Java, &c.
.. 2.	 <i>Linnæi</i>	Java.
.. 3.	 <i>Orbigny</i>	Chile.
.. 4.	 <i>amœna</i>	North America.
.. 5.	 <i>diadema</i>	Australia.
.. 6.	 <i>brachyrrhos</i>	Java, &c.
.. 7.	 <i>badia</i>	Cayenne.
.. 8.	 <i>arctiventris</i>	Cape of Good Hope.
.. 9.	 <i>melanocephala</i>	America.
.. 10.	 <i>punctata</i>	North America.
.. 11.	 <i>oligodon</i>	Java, &c.
.. 12.	 <i>scytale</i>	Philippines, Ceylon.
.. 13.	 <i>striatula</i>	Martinique.
.. 14.	 <i>elapoides</i>	Java.
.. 15.	 <i>Blumii</i>	South America.
.. 16.	 <i>coronata</i>	Coast of Guinea.
.. 17.	 <i>atrocineta</i>	Chile.
.. 18.	 <i>Coronella</i>	?

FAM. III.—TERRESTRIAL SERPENTS.

Gen. 1.—CORONELLA.

Sp. 1.	<i>Coronella venustissima</i>	South America.
.. 2.	 <i>coccinea</i>	North America.
.. 3.	 <i>Merremii</i>	Brazil.
.. 4.	 <i>Regina</i>	Guyana, &c.
.. 5.	 <i>Cobella</i>	America.
.. 6.	 <i>baliodeira</i>	Malayan Asia.
.. 7.	 <i>lævis</i>	Europe.
.. 8.	 <i>Chilensis</i>	Chile.
.. 9.	 <i>rhombeata</i>	Cape of Good Hope.
.. 10.	 <i>rufescens</i>	Cape of Good Hope.
.. 11.	 <i>rufula</i>	Cape of Good Hope.
.. 12.	 <i>Aurora</i>	Cape of Good Hope.
.. 13.	 <i>octolineata</i>	Java, &c.
.. 14.	 <i>Russeli</i>	Bengal.

Gen. 2.—ZENODON.

Sp. 1.	<i>Zenodon severus</i>	South America.
.. 2.	 <i>rhabdocephalus</i>	Brazil.
.. 3.	 <i>inornatus</i>	Java.
.. 4.	 <i>purpurascens</i>	Java.
.. 5.	 <i>Schotti</i>	Brazil.
.. 6.	 <i>Michahellis</i>	Southern Europe.
.. 7.	 <i>typhlos</i>	Guyana.
.. 8.	 <i>bicinctus</i>	Brazil.

Gen. 3.—HETERODON.

Sp. 1.	<i>Heterodon platyrhinus</i>	North America.
.. 2.	 <i>rhinostoma</i>	Brazil.
.. 3.	 <i>coccineus</i>	Mexico.

Gen. 4.—LYCODON.

Sp. 1.	<i>Lycodon Hebe</i>	India, &c.
.. 2.	 <i>carinatus</i>	Ceylon.

¹ Although the title of *Aspic* has been applied to this species, it is not the reptile so named in ancient days, which was not a European species, but more probably the *Naja haje* of Africa.

² *Ann. du Mus.* iv 100.

³ *Travels*, v. pl. 41.

⁴ *Atlas*, pl. 6, fig. 3, vol. xxv. 83.

Schlegel's Arrange- ment.	Sp. 3. <i>Lycodon Jara</i>	India.
	.. 4. <i>geometricus</i>	?
	.. 5. <i>Horstokii</i>	Gold Coast, Cape of G.H.
	.. 6. <i>unicolor</i>	Guinea.
	.. 7. <i>formosus</i>	Brazil.
	.. 8. <i>Clelia</i>	South America.
	.. 9. <i>subcinctus</i>	Bengal, Java.
	.. 10. <i>modestus</i>	Amboina, &c.
	.. 11. <i>Nympha</i>	Bengal.
	.. 12. <i>audax</i>	Paraguay.
	.. 13. <i>petolarius</i>	Guyana.

Gen. 5.—COLUBER.

Sp. 1. <i>Coluber Æsculapii</i>	Southern Europe.
.. 2. <i>constrictor</i>	North America.
.. 3. <i>radiatus</i>	Cochin China, &c.
.. 4. <i>subradiatus</i>	Timor.
.. 5. <i>Blumenbachii</i>	India.
.. 6. <i>korros</i>	Java, &c.
.. 7. <i>corais</i>	Surinam.
.. 8. <i>melanurus</i>	Java.
.. 9. <i>panthorinus</i>	Brazil.
.. 10. <i>virgatus</i>	Japan.
.. 11. <i>quadri virgatus</i>	Japan.
.. 12. <i>diadema</i>	India.
.. 13. <i>miniatus</i>	Isle of France.
.. 14. <i>variabilis</i>	South America.
.. 15. <i>plumbeus</i>	South America.
.. 16. <i>pœcilostoma</i>	Surinam.
.. 17. <i>canus</i>	Southern Africa.
.. 18. <i>Sayi</i>	Missouri.
.. 19. <i>quadri radiatus</i>	Southern Europe.
.. 20. <i>viridiflavus</i>	Southern Europe.
.. 21. <i>Cliffordii</i>	Northern Africa.
.. 22. <i>hippocrepis</i>	Shores of Mediterranean
.. 23. <i>florulentus</i>	Egypt.
.. 24. <i>trabalis</i>	Tartary.
.. 25. <i>guttatus</i>	North America.
.. 26. <i>leopardinus</i>	Southern Europe, &c.
.. 27. <i>conspillatus</i>	Japan.

Gen. 6.—HERPETODRYAS.

Sp. 1. <i>Herpetodryas carinatus</i>	South America.
.. 2. <i>serra</i>	Brazil.
.. 3. <i>viridissimus</i>	Surinam.
.. 4. <i>Olfersii</i>	Surinam and Brazil.
.. 5. <i>margaritifera</i>	New Orleans.
.. 6. <i>Boddaertii</i>	Surinam.
.. 7. <i>æstivus</i>	America.
.. 8. <i>tricolor</i>	Java.
.. 9. <i>Goudotti</i>	Madagascar.
.. 10. <i>oxycephalus</i>	Java, &c.
.. 11. <i>lineatus</i>	South America.
.. 12. <i>Helena</i>	Bengal.
.. 13. <i>rhodogaster</i>	Madagascar.
.. 14. <i>geminatus</i>	Java.
.. 15. <i>Psammophis</i>	New Orleans.
.. 16. <i>Dendrophis</i>	Cayenne.
.. 17. <i>Dipsas</i>	Celebes.
.. 18. <i>getulus</i>	North America.
.. 19. <i>cursor</i>	America.

Gen. 7.—PSAMMOPHIS.

Sp. 1. <i>Psammophis lacertina</i>	Shores of Mediterranean
.. 2. <i>moniliger</i>	Africa.
.. 3. <i>pulverulenta</i>	India, &c.
.. 4. <i>Seychellensis</i>	Seychelles, &c.
.. 5. <i>Antillensis</i>	West Indies.
.. 6. <i>Dahlia</i>	Dalmatia.
.. 7. <i>elegans</i>	Western Africa.
.. 8. <i>Temminckii</i>	Chile.

FAM. IV.—TREE-SNAKES.

Genus 1.—DENDROPHIS.

Sp. 1. <i>Dendrophis liocerus</i>	South America.
.. 2. <i>Catesbyi</i>	Hayti.
.. 3. <i>aurata</i>	Surinam.
.. 4. <i>picta</i>	Africa, Asia.

Sp. 5. <i>Dendrophis formosa</i>	Sumatra, &c.
.. 6. <i>rhodopleuron</i>	Amboina.
.. 7. <i>ornata</i>	India, &c.
.. 8. <i>præornata</i>	Senegal.
.. 9. <i>smaragdina</i>	Gold Coast.
.. 10. <i>colubrina</i>	Cape of Good Hope.

Gen. 2.—DRIYOPHIS.

A. of the Ancient World.

Sp. 1. <i>Dryiophis nasuta</i>	India, &c.
.. 2. <i>Langaha</i>	Madagascar.
.. 3. <i>prasina</i>	India, &c.

B. of the New World.

Sp. 4. <i>Dryiophis Catesbyi</i>	Cayenne, &c.
.. 5. <i>argentea</i>	Cayenne, &c.
.. 6. <i>aurata</i>	America.

Gen. 3.—DIPSAS.

Sp. 1. <i>Dipsas dendrophila</i>	Java, &c.
.. 2. <i>multimaculata</i>	Bengal, &c.
.. 3. <i>trigonata</i>	Bengal.
.. 4. <i>cynodon</i>	Sumatra, &c.
.. 5. <i>Drapiezi</i>	Sumatra, &c.
.. 6. <i>irregularis</i>	Celebes, &c.
.. 7. <i>colubrina</i>	Madagascar.
.. 8. <i>Egyptiaca</i>	Africa.
.. 9. <i>nebulata</i>	Surinam.
.. 10. <i>Mikanii</i>	Brazil.
.. 11. <i>Weigeli</i>	Brazil.
.. 12. <i>Catesbyi</i>	Guyana.
.. 13. <i>pavonia</i>	Guyana.
.. 14. <i>bucephala</i>	Sumatra.
.. 15. <i>Dieperinki</i>	Surinam.
.. 16. <i>Boa</i>	Java.
.. 17. <i>carinata</i>	Java.
.. 18. <i>lævis</i>	Java.
.. 19. <i>leucocephala</i>	Brazil.
.. 20. <i>macrorrhina</i>	Guyana.
.. 21. <i>Nattereri</i>	Brazil.
.. 22. <i>punctatissima</i>	South America.
.. 23. <i>Daimardi</i>	Madagascar.
.. 24. <i>annulata</i>	South America, &c.
.. 25. <i>fallax</i>	Dalmatia, &c.

FAM. V.—FRESH-WATER SERPENTS.

Genus 1.—TROPIDONOTUS.

Sp. 1. <i>Tropidonotus natrix</i>	Europe.
.. 2. <i>quincunciatus</i>	India.
.. 3. <i>umbratus</i>	India.
.. 4. <i>rhodomelas</i>	Java.
.. 5. <i>trianguligerus</i>	Java.
.. 6. <i>chrysargos</i>	Celebes.
.. 7. <i>subminiatus</i>	Java.
.. 8. <i>picturatus</i>	New Guinea.
.. 9. <i>tigrinus</i>	Japan.
.. 10. <i>Vibakari</i>	Japan.
.. 11. <i>stolatus</i>	India, &c.
.. 12. <i>vittatus</i>	Java.
.. 13. <i>schistosus</i>	India, &c.
.. 14. <i>bipunctatus</i>	Central America.
.. 15. <i>saurita</i>	North America.
.. 16. <i>faciatus</i>	North America.
.. 17. <i>viperinus</i>	Southern Europe, &c.
.. 18. <i>scaber</i>	Cape of Good Hope.
.. 19. <i>mortuarius</i>	Bengal.

Gen. 2.—HOMALOPSIS.

Sp. 1. <i>Homalopsis buccata</i>	Java.
.. 2. <i>Schneideri</i>	India, &c.
.. 3. <i>decussata</i>	Java.
.. 4. <i>leucobalia</i>	Timor.
.. 5. <i>plumbea</i>	Java.
.. 6. <i>Aer</i>	India.
.. 7. <i>Sieboldii</i>	India.
.. 8. <i>carinicauda</i>	America.
.. 9. <i>angulata</i>	South America.
.. 10. <i>plicatilis</i>	Brazil, New Orleans.
.. 11. <i>Martii</i>	South America.

Schlegel's	Sp. 12. Homalopsis Reinwardtii.....	Louisiana.
Arrangement.	... 13. leopardina.....	?
	... 14. Herpeton.....	?

FAM. VI.—BOAFORM SERPENTS.

Gen. 1.—BOA.

Sp. 1. Boa constrictor	South America.
... 2. murina.....	South America.
... 3. cenchria.....	South America.
... 4. canina.....	South America.
... 5. hortulana.....	South America.
... 6. Dussumieri.....	Mauritius.
... 7. carinata	Moluccas.
... 8. conica.....	Bengal.
... 9. melanura.....	Cuba.

Gen. 2.—PYTHON.

Sp. 1. Python bivittatus	Africa, Asia.
... 2. Schneideri	Malacca, &c.
... 3. amethystinus	Amboina, &c.
... 4. Peronii.....	Australia.

Gen. 3.—ACROCHORDUS.

Sp. 1. Acrochordus Javanicus.....	Java.
... 2. faciatus.....	India, &c.

DIVISION II.—VENOMOUS SERPENTS.

FAMILY I.—COLUBRIFORM VENOMOUS SERPENTS.

Genus 1.—ELAPS.

A. American Species.

Sp. 1. Elaps corallinus	Central America.
... 2. lemniscatus	Guyana.
... 3. Surinamensis	Guyana.

B. African Species.

... 5. Hygeia.....	Cape of Good Hope.
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C. Asiatic Species.

... 6. collaris.....	Indian Islands.
... 7. trimaculatus	India.
... 8. furcatus	Java, &c.
... 9. bivirgatus	Java, &c.

D. Australian Species.

... 10. Mülleri	New Guinea.
... 11. coronatus.....	Australia.
... 12. Psammophis.....	Australia.

Gen. 2.—DENDRASPI.

Sp. 1. Dendraspis Jamesoni.....	West Africa.
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Gen. 3.—BUNGARUS.

Sp. 1. Bungarus annularis	India.
... 2. semifasciatus	India.

Gen. 4.—NAJA.

Sp. 1. Naja tripudians.....	India.
... 2. Haje.....	Egypt and Africa.
... 3. Bungarus.....	Java, &c.
... 4. bungaroides.....	Java, &c.
... 5. porphyrica.....	Australia.
... 6. hamachates.....	Cape of Good Hope.
... 7. rhombeata.....	Cape, and Gold Coast.
... 8. lubrica	Cape of Good Hope.
... 9. Elaps.....	?
... 10. curta.....	Australia.

FAM. II.—SEA-SERPENTS.

Gen. 1.—HYDROPHIS.

Sp. 1. Hydrophis schistosa	Gulf of Bengal.
... 2. striata.....	Indian Seas.

Sp. 3. Hydrophis nigrocincta.....	Gulf of Bengal.
... 4. gracilis	Indian Seas.
... 5. Pelamys.....	Indian Seas.
... 6. pelamoides	Indian Seas.
... 7. colubrina	Indian Seas.

FAM. III.—VENOMOUS SERPENTS, PROPERLY SO CALLED.

Gen. 1.—TRIGONOCEPHALUS.

A. Head covered by Scales.

Sp. 1. Trigonoccephalus Jacaraca	Brazil.
... 2. atrox.....	Guyana.
... 3. lanceolatus.....	Antilles.
... 4. bilineatus.....	South America.
... 5. nigromaculatus	Ceylon.
... 6. Wagleri	Sumatra.
... 7. viridis	Sumatra, Celebes.
... 8. puniceus	Java.

B. With Plates on the Head.

... 9. rhodostoma	Java.
... 10. hypnale.....	Ceylon, &c.
... 11. Halys.....	Tartary.
... 12. Blomhoffii.....	Japan.
... 13. cenchris.....	North America.

Gen. 2.—CROTALUS.

Sp. 1. Crotalus horridus.....	South America.
... 2. durissus.....	North America.
... 3. miliarius.....	North America.
... 4. mutus.....	South America.

Gen. 3.—VIPERA.

Sp. 1. Vipera arietans.....	Africa.
... 2. atropos.....	Cape of Good Hope.
... 3. cornuta.....	Cape of Good Hope.
... 4. Echis.....	India.
... 5. cerastes.....	Northern Africa.
... 6. elegans.....	India.
... 7. berus.....	North & Central Europe.
... 8. aspis.....	Southern Europe.
... 9. ammodytes.....	Greece, &c.
... 10. acanthophis.....	Australia.
... 11. Nasicornis.....	West Africa.

ORDER IV.—BATRACHIA. BATRACHIAN REPTILES.

We now proceed to the fourth order of the class Reptilia, the BATRACHIA, a name derived from *Batraxos*, a frog, and expressive of a general resemblance which very distinctly marks the majority, although in truth many resemble lizards, and a few have more the appearance of eels or serpents. This tribe is one of the most singular in nature; for, besides the naked body and remarkable sanguineous circulation, they possess another peculiarity, which is regarded by many naturalists as sufficient to constitute them a distinct class rather than an order, viz., the change of form which they undergo in their progress from the young to the adult state.

In this concluding order are ranked all those reptiles which have neither the carapace of the Chelonia nor the scales of the other orders.¹ Their bodies therefore are naked; their head is without any distinct neck or division; their toes are always distinct, and without claws; they have no external organs of reproduction, and usually undergo metamorphoses. This change of form constitutes the Batrachia the principal step in the transition between terrestrial and aquatic vertebrata or fishes, and is one of the most singular phenomena presented by animal life. Bred

¹ A curious link, we perceive, has recently been discovered in South America, between the Batrachia and the Chelonia, which is nothing less than a frog furnished with a carapace and plastron.

Batrachia. after the manner of fishes, from spawn-like ova, they possess for a time the essential characters of the finny race; and yet, on the lapse of a few brief weeks, their pisciform appearance vanishes, and leaving the water, they crawl or leap about upon the earth, or climbing the stems of forest trees, they dwell among the umbrageous branches. In some the transition state, if we may say so, continues permanent, the gills existing simultaneously with feeble lungs, and a tail being combined with short external members. Of the structure of these curious animals more will be said hereafter.

The *ovum* or *egg* of these reptiles is a round mass of transparent nutritive jelly, in the centre of which appears a small black globule. By degrees this shapeless globule exhibits the appearance of a head and tail, and in this state it emerges from its prison, and moves about briskly in the water. It is provided with a long fleshy tail, and a small horny beak, and has no other visible member, except two feathery tufts on the sides of the neck, which float loosely, and without protection, in the surrounding fluid. These, however, are mere temporary organs; for they serve the purpose of respiration only until the proper gills are formed, and then shrink or disappear.¹ The true gills or branchiæ are contained within the body, three or four in number on each side, constructed on a plan similar to those of fishes; the water entering by the mouth, and escaping in some species by two openings, and in others by one only. Retaining their aquatic constitution, the *tadpoles* (as in this intermediate state they are often called) rapidly increase in size and activity for some weeks. In the mean time the legs, of which no trace was at first apparent, have commenced their growth. The hind ones are the first to make their appearance externally, although the anterior pair are as soon developed, and may be seen at an early period folded beneath their transparent covering. The animal at this period wears a very ambiguous appearance, partaking both of the form of the frog and lizard, and swimming as well by the inflection of the tail as by the irregular impulse of the feet.² At this time the beak falls off, and the true jaws, which originally were hid under the skin, appear. The eye, too, which had been seen only through a transparent spot in the tadpole's skin, appears complete and prominent. This interval is also employed in acquiring the faculty of respiring atmospheric air. The animal every now and then rises to the surface and takes a mouthful of air, which is received into the newly formed lungs, and then discharged. When the necessary internal changes are at length completed, the tail, which has now become a useless member, diminishes and disappears. The gills, too, have by this time shrunk, their function being superseded by the lungs, and the animal emerging from the water, begins a new mode of existence as a perfect reptile.

During its aquatic state the tadpole lives principally on vegetable food, but in its perfect form much more upon various insects; and there is a remarkable and corresponding change in its digestive organs, which assume the character of those of a carnivorous creature. Most of the *Batrachia*, we may also remark, are oviparous, whilst not a few of them are ovo-viviparous. It should, moreover,

be observed, that most of the species of this group, during their aquatic condition, possess the extraordinary power of suffering the privation of a part, or the whole, of one or more of their members without vital injury, and of afterwards renewing them as if no loss had been endured; a property of which we have already made mention in our summary account of lizards, and to which we may again briefly return in our notice of the aquatic salamander.

We shall now take a nearer view of the vascular and respiratory systems of these animals. The *circulation*, in the tadpole state, is in every respect analogous to that of fishes: the blood is transmitted from a simple bilocular or two-lobed heart to the branchial arches, and, after *aeration* by the water, returns, and is circulated through the system. The transition from this condition to that which the vascular organs present in the perfect reptile state is very striking. Originally three or four branchial trunks pass off from each side of the heart, and terminate in the minute network of the gills; from this network the returning vessels take their origin, one from each of the gills, the first of which goes to the head, and the other two conjoining, convey the blood to the rest of the system, as in fishes. But in addition to these vessels, there are some small undeveloped ones, which effect a communication between the vessels which go to the gills and those which return from them; as also another which, given off from the heart, unites with the aorta, to be distributed to the as yet rudimentary lungs. After the metamorphosis is begun, the branches which connect the arteries of the gills with the returning veins are greatly enlarged, so that a part of the blood flows continuously through them without proceeding to the gills at all, and the proper branchial vessels relatively diminish; and the last-named trunk, which was the smallest of all, becomes the largest, and an increased proportion of blood is sent to the lungs. By a continuance of these changes, the branchial vessels are finally obliterated, and the communicating branches, at first only secondary and irregular, now constitute part of the continuous and permanent system of circulation.

The *respiration* of the *Batrachia*, after they have arrived at their permanent mode of existence, is not less singular than their circulation; and this chiefly in two particulars,—as it regards the lungs, and the function of the skin. If we take a frog, for example,³ and watch its respiration, we cannot readily discover that it breathes at all; for it never opens its mouth to receive air, and there is no motion of the sides to indicate that it respire; and yet, on any sudden alarm, we see the animal blowing itself up, as if by some internal power, though its mouth all the while continues closed. We may perceive, however, that its throat is in frequent motion, as if the frog were economizing its mouthful of air, and transferring it backwards and forwards between its mouth and lungs; and if we direct our attention to the nostrils, we may observe in them a twisting motion at each movement of the jaws; for it is through the nostrils that the frog receives all the air which it breathes. The jaws are never open but for the purpose of eating; and the sides of the mouth form a sort of bellows, of which the nostrils

¹ This change or conversion from external to internal gills is not very satisfactorily described by physiological observers. “Dès le moment où les Batraciens sortent de l'œuf, ces branchies sont apparentes au dehors, elles représentent des espèces de franges ou de panaches colorés situés sur les parties latérales du cou, et attachés sur les bords des fentes qui correspondent à la gorge; elles persistent sous cette forme, dans tous les Batraciens qui conservent leur queue, tant que leurs poumons ne sont pas assez développés pour servir uniquement à la respiration. Dans les Grenouilles et autres genres voisins sans queue, le premier état ne dure que pendant un temps très court. Bientôt l'animal prend une autre forme, celle d'un têtard à ventre énorme confondu avec la tête et avec une longue queue. Les branchies sont alors cachées, et contenues dans une cavité; l'eau arrive dans la bouche par les orifices des narines,” &c. (*Eptologie Générale*, i. 182.)

² It appears that the great Lord Bacon had not practised his inductive philosophy so far as young frogs are concerned, for in his *Sylva Sylvarum* he makes mention of their being sometimes observed with tails, in such years as have been more than usually pestilential or unhealthy; and he then draws the conclusion that the appearance of such tailed reptiles, “argueth a great disposition to putrefaction in the soile and aire.”

³ See Roget's *Bridge-water Treatise*, ii. 330.

Batrachia. are the inlets; and by their alternate contraction and relaxation, the air is swallowed and forced into the windpipe, so as to inflate the lungs. The tongue also contributes its share in carrying on this function. This organ is remarkable in its connection, being fixed very differently in these from what it is in most other animals. Its root is not situated deep down the throat, but is attached superficially at the fore-part of the lower jaw; it is remarkably long, and instead of inclining forward, is turned backwards, extending down the throat, and so acts as a valve, affecting the entrance and exit of air from the lungs. If the mouth of the frog be forcibly kept open, it is suffocated, because it is deprived of the power of swallowing the required air; and if the nostrils be closed, it in like manner can no longer breathe. Hence the frog and allied genera may be said rather to swallow air than to inhale it. Respiration, again, is not carried on, as in most animals, by the chest, but by the compression of the muscles of the abdomen; and if these are in any way injured or destroyed, the breathing ceases, and the individual speedily dies. Nor is the function of respiration in the *Batrachia* confined to the lungs; for the blood which circulates through the capillaries of the skin is likewise aerated by communication with the atmosphere. This kind of respiration, closely connected with the extraordinary perspiration for which these animals are celebrated, is of such importance to them, that if impeded by covering the skin with oil or other unctuous substance, death will take place almost as soon as if the lungs were removed; and, on the other hand, the animal may be supported by it alone, for a considerable time, if the temperature be not too high,—a physiological fact which, we apprehend, goes a great way to account for the extraordinary power possessed by many of these creatures (to which we shall afterwards allude), of enduring, without detriment, a long protracted burial, enclosed in wood or stone.

The reproductive act in these reptiles, somewhat intermediate between what occurs in terrestrial animals and fishes, is so remarkable that it must not be passed by. We shall borrow our illustration from what occurs in the frog, the genus by much the best known in the order. The embraces of the male occur only once a year, and in spring. As soon as the sun's influence is felt in their wintry resorts, the black spongy knob at the base of the thumb of the male augments in size, and his abdomen swells. On finding his mate, he mounts on her back, extends his arms round her chest, and so locks the fingers of his hands into each other, that, from the peculiar structure, they cannot be separated. The two animals are thus inseparably joined, and so live and swim together for fifteen or twenty days, or even for a month. If, under these circumstances, the thumbs be cut off, the junction is at an end; but if the animal be decapitated, the grasping apparatus still performs its mechanical office. During the period of this long embrace, the spawn, as in fish, escapes in long floating cords or chaplets, of a gelatinous fluid, crowded with the ova, which is bedewed with the milt of the male. When the spawning is completed, the male frog is able to dismount, the fingers speedily regaining their flexibility, and the thumbs their ordinary form. The reproductive power is very great, the ova amounting to from 600 to upwards of 1000. Swammerdam once reckoned 1100 from a single individual, and Montbeillard 1300.

It is remarked that these animals live to a great age, if fortunate enough to escape the attacks of their enemies; an instance will be given in the sequel, of an individual whose history was traced for forty years. Their foes, however, are very numerous. A number of quadrupeds,

birds, reptiles, and fishes, live habitually at their expense. *Batrachia*. Serpents, pikes, vultures, and storks, destroy an immense number of them. Without the intervention of the last-named birds, Egypt, in particular, would swarm with frogs. In several countries, certain species are sought after by man; and they are considered by competent judges as an agreeable and wholesome food. The *Batrachia* have no weapons either of offence or defence. Taken as an order, they are certainly as harmless to man as any tribe of animals; and, as has been well remarked, though the forms of many of the species offend our notions of beauty, and their love-songs have gained them the character of "horrible musicians," there is certainly nothing to justify the aversion and disgust with which they are so usually regarded.

The *Batrachia* generally feed upon the larvæ of aquatic insects, on worms, small mollusca, flies, &c., and always choose a prey which is living and in motion. Dead and motionless animals are rejected by them. To obtain their prey, they often remain fixed in one situation, with wonderful patience, watching till they believe it is within their reach, and then darting at it with great rapidity, they at the same time protrude their lengthened tongue, bedewed all over with a viscid fluid. If we watch a frog when an insect has approached sufficiently near it, we are surprised to observe the insect suddenly disappear without our being able to perceive what has become of it. This arises from the frog having darted its tongue upon its victim with such extreme quickness, and again withdrawn it with the adhering insect, that it is scarcely possible for the eye to follow it in motion. Thus from the nature of their food, so far from being prejudicial, they are very useful in gardens, by extensively destroying those small slugs, &c. which are so detrimental to plants of every kind.

FAMILY RANIDÆ.¹ FROGS IN GENERAL.

All the members of the frog family (corresponding to the great genus *RANA* of Linnæus), have in their perfect state four extremities and no tail. Their head is flat, their muzzle rounded, their mouth very large. In the greater number the tongue is not attached to the deeper part of the throat, but to the edge of the lower jaw, and thence proceeds backwards, and down the throat. Their front feet have only four toes, and their hind five, sometimes exhibiting the rudiments of a sixth.

We cannot better bespeak a favourable consideration for this despised group than in the words of an enthusiastic naturalist. "We shall have considerable difficulty," says the eloquent Lacépède, "in assigning to frogs the place which they should occupy in the minds of our readers, such as it really is in nature; but it is not less true, that if toads had never existed, if we had not before our eye this horrid object of comparison, which caricatures by its resemblance, as it defiles by its approach, the frog would appear to us as agreeable from its conformation, as distinguished by its qualities, and interesting from the phenomena it exhibits at the different periods of its existence. We would behold it as a useful animal, from which we have nothing to fear, whose instinct is harmless, which unites an elegant form with supple and slender limbs, and is adorned with pleasing colours, rendered more vivid from the kind of natural varnish with which the animal is constitutionally provided. And who can regard with pain a being whose form is light, whose movements are nimble, whose attitudes are graceful? Let us not deprive ourselves of an additional source of pleasure;

¹ Although the patronymic termination in *idæ* is not classically correct in cases where the primitive has a feminine termination, we nevertheless follow in this matter the suggestion of Mr Kirby, and the example of Mr Macleay, who regards it as preferable to any other yet devised, as well on account of uniformity, as *euphonia gratæ*. See *Horæ Entomologica*, p. 23.

Batrachia.
Ranidæ.

and, in our peregrinations through the smiling fields, let us not regret to see the banks of rivulets adorned by the colours of these harmless creatures, and animated by their light and lively gambols. Let us contemplate their little manœuvres; observe them in the midst of stilly lakes, the solitude of which they diminish without troubling the repose; see them exhibit, under sheets of water, the most agreeable tints, cleave the bosom of the tranquil stream, and vary its silvery surface with many a circling furrow."

In summer these Ranidæ are usually found in humid places, in grassy meadows, and on the banks of streamlets, into which, when approached, they usually leap and dive. They swim admirably, by means of their webbed hind feet. Frequently at the close of warm rains they spread themselves through the country, and are so numerous as to be crowded and pressed against each other in places where they had never been observed before. To this appearance is owing the popular belief of *rains of frogs*, which undoubtedly is usually a mistake; but raised by a hurricane, and thereby transported to a great distance, such an occurrence is yet, we believe, quite within the range of possibility. As soon as the summer is over, and the weather begins to get cold, these reptiles lose their natural activity, and give over feeding. When the cold becomes more considerable, they protect themselves from its rigour by sinking into the mud in deep water, in the holes of fountains, and even in the earth. The quantities which sometimes thus collect in one place are so considerable, that they have been known to cover the soil to a foot in depth, and thousands may be taken in a few minutes. Hearne informs us, in his voyage to the Icy Sea of North America, that he many times found under the moss frozen frogs, whose legs might be broken without their exhibiting any sign of life, but which resumed their energy with returning warmth.

GENUS RANA, Laurenti, Cuv. *Frogs proper*. This first genus of the Ranidæ has the body slender, the hind feet very long, and more or less webbed; their skin is smooth; their upper jaw is furnished all round with a row of minute sharp teeth, and there is an interrupted transverse range in the middle of the palate. The males have on each side, beneath the ears, a fine membranaceous bag, which they expand with air when they croak. They leap and swim admirably. (See Plate VI., fig. 1.)

The skeleton of the frogs does not present any trace of ribs; and the breast-bone, very large, with collar-bones attached, is merely cartilaginous. The cranium is almost prism shaped, flattened above, and very broad behind, and is less round than in the toads. The vertebræ are ten in number. The muscles have a considerable resemblance in arrangement to those of man, and are very strong, very irritable, and very sensible to the action of galvanism. The muzzle in frogs is somewhat more acute than that of toads; and the nostrils are visible at the summit. Their orbits are large, and are directed upwards; the eye is large and brilliant, and surrounded by a bright golden circle. The lids are three in number, and all horizontal; the upper one is a mere projection of the skin; the lower is more mobile; and the third, which is quite transparent, moves from below upwards, and is most of all in action. We have already dwelt so fully on the habits of the whole group, that little requires to be added in this place. It is, however, a curious circumstance, that these animals, like many other inhabitants of the water, can become habituated to the very high temperatures of thermal springs. Thus Reaumur mentions that he had known one found alive in water about 111° Fahrenheit; and Spallanzani mentions an example of this kind where, in the baths of Pisa, they were exposed to a temperature of 138°.

The power of voice in frogs, commonly called croaking, is exercised by the different species in very different degrees; a remark which is also applicable to the genus *Bufo* in their more limited range of expression. It is more par-

ticularly during the time of rain, and in hot days, in the evening and morning, that they indulge in their harmonious concert. The noise which they make becomes sometimes insupportable. It is principally the males which croak; their voice being stronger in consequence of the two sacs which they possess on the sides of the neck, and which swell out under the effort. As for the female, she has only a slight swelling in her throat, and produces but a feeble note. During the feudal regime in France, when all the castles were surrounded by water, it is said that it was the business of the serfs to attack the frogs, and prevent them from disturbing the morning repose of the lordly inmates.

It is rather remarkable that these creatures should be so much esteemed as delicious food in some countries, and so much despised and even abhorred in others. The ancients appear not to have discovered the nutritive virtues of frogs, nor their value in the science of gastronomy. In the sixteenth century, however, they were served up at the best tables on the continent. In Britain this kind of aliment is held in detestation, whilst in France and other European countries a very great consumption takes place. They are captured in various ways; either with lines, or small nets, or by means of a rake. Sometimes they are pursued at night, and with torches, the light of which attracts them. In Vienna, where they are rather favourites, they are fattened in *froggeries* constructed for the express purpose. Though one species of frog is called par excellence the *edible*, yet several others partake of this distinction. In Germany all parts of these animals are eaten, the skin and offals excepted. In France it is the hinder quarters alone which are used. They are dressed like fish, with white sauce, and in wine, or they are fried or even spitted. A foreign species of great size, to be afterwards mentioned (*R. grunniens*), which abounds in the West Indies, is often domesticated there for the use of the table. The flesh is white and delicate; it is fricasseed like fowl; and two frogs make a good dish. Nor is it *frogs proper* alone which are used in this way. The abhorred toads are habitually eaten by the negroes, both in Africa and America; and there seems to be little doubt that even in Paris the thighs of these animals are constantly sold for those of frogs.

We now proceed to a rapid sketch of the most remarkable species.

R. esculenta, Linn. The *edible frog*, *green frog*, or *common frog of France*. The colours of the green frog vary so much, that different individuals might almost be taken for a diversity of species. It is often of a beautiful green colour, spotted with black, with three yellow stripes on the back, and the belly yellowish. This description generally holds good in the environs of Paris. Those in the rivers and ditches of Lombardy have the back of a uniform green colour. Another variety, which has been observed in Holland, has the lips black, round black spots on its sides, and the belly entirely white; in Provence it has a reddish belly; and in the neighbourhood of Beauvois, sombre green, with transverse brownish spots upon the limbs, is found to be the prevailing hue. It varies in size from two to three inches, measured from the snout to the end of the body. It abounds in all dead and still waters, and is pre-eminent for its croaking powers. It is very common in France, Italy, and Germany; but is rare in Britain. It supplies, in the former countries, a very wholesome and agreeable food. It deposits its ova in small bundles, in the pools. This species seldom removes far from the margin of some quiet streamlet, into which it plunges on the least noise. It swims in the same manner as man, with its head above the surface. It may be often seen amusing itself among aquatic plants, darting after insects on the wing, mounting upon the umbrageous leaves, or squatted on the bank, with its snout projecting as if to court the rays of the sun, in which it delights, even during the most scorching days. It is indeed

Batrachia.
Ranidæ.

Batrachia.
Ranidæ. most agile in this kind of weather, and leaps with the greatest liveliness. It feeds solely upon living objects, and will swallow no animal whose motions do not prove it to be in life. Its voracity is so extreme, that it may be captured with almost anything which is made to move, and will dart at a hook when baited with a rose or poppy leaf. With the warmth of autumn the gaiety of the green frog ceases; and as winter becomes severe, it entirely disappears, plunging deep into the mud to secure an asylum from the cold. Here they often crowd together, as if for the purpose of keeping each other warm.

R. temporaria, Linn.; *R. fusca terrestris*, Roes. The common frog of Britain. The red frog of the French. This species, the most common in Britain, and also abundant throughout Europe, has the same elegant and slender form as the preceding, and differs from it merely in its colour, which is often of a russet hue, like that of decayed leaves, varied in front with black spots between its brilliant eyes and upper lip. These spots sometimes assume the form of whiskers passing down the neck. It is of the same size as the preceding, and is met with from early spring-time till towards the close of autumn, leaping in woods and meadows, sheltering itself beneath hedges, and penetrating into cottage-gardens, where it ought to be protected, as waging deadly war with destructive snails and insects. It proves quite as good eating as the green frog, and in France is often placed upon the table. It is by no means so great a croaker as the preceding species; and those accustomed to the latter think it does not croak at all. It is most generally found upon land in the summer season; and while the green frog rarely abandons the immediate neighbourhood of still or gently flowing waters, this species is often found in brushwood, remote from the banks of streams. At the approach of winter it retires into fountains and ponds of pure water, usually, it is alleged, avoiding miry places. Nor does it bury itself in mud like its congener; for numbers of these frogs may be taken during the winter by making holes in the ice. It lays its ova at a later season than the green frog, and the development of its tadpole is slower. Like the preceding, it presents many varieties of colour, which it would be tedious here to name.

Under the appellation of *R. cultripes*, Cuv., may be noted a frog which occurs in the south of France, bespeckled with black spots, its feet extensively webbed, and especially remarkable for having a vestige of a sixth toe, armed with a horny and cutting nail. The spotted frog (*R. punctata*, Daudin) occurs in the neighbourhood of Paris, though not very common. It rarely exceeds an inch in length. Its gray colour is relieved by a number of green spots over the body, and a black spot behind the eye, and it is said to change its colour when alarmed. Its toes are only partially webbed. The folded frog (*R. plicata*, Daudin) is found in the most southern parts of France. It is of the same diminutive size as the last, of a brown colour above, and gray beneath; the fingers quite free, the toes semi-palmated. It is particularly distinguished by having two folds of the skin on each flank; and there are four large brown spots on the chest and arms. Our knowledge of the brawling frog (*R. clamitans*, Bosc) is due to the indefatigable Bosc, who discovered it in the marshes near Charlestown, United States. It is about two inches long, of a dull ash colour, spotted with black, the upper lip green. Its vivacity is extreme, and it is by far the most lively of all known frogs, so that it is extremely difficult to catch it if it once makes its escape. It does not remove far from water, and when hunted, shoots into the stream with a sharp cry. Its continual croak is almost insupportable.

The bull-frog of the Americans, *R. pipiens*, Linn., is one of the largest species of the genus, being three or four inches broad, and six or eight long; and when measured with extended legs, its entire length is about eighteen inch-

es. The hind limbs are long, stout, and deeply palmated. It is of a dull green colour, varied with black, and relieved by a coppery yellow circle which surrounds the tympanum, and marks the situation of the ear. It abounds in Carolina and Virginia, remaining at the entrance of its hole, near some fountain, into which it precipitates itself on the least alarm. Catesby affirms that it utters sounds very much resembling the bellowing of a bull, and with greater force when at the bottom of the water. During the summer evenings, and in dry weather, it makes indeed a most astounding noise. It is exceedingly partial to young ducks and goslings, which it swallows whole, and will proceed to a considerable distance from its home in search of prey. As the voracity of this species is proportioned to its bulk, it is rare to find more than a single pair in each marsh. This frog is very difficult to catch; it is only during the night, and when it removes a little from its haunt, that it is possible to procure an individual. When on level ground it makes leaps of from six to eight feet in length. Baron Cuvier justly remarks, that several species go under the general name of bull-frog in America.

The grunting frog, *R. grunniens*, Daudin, is of the same large dimensions as the preceding, and inhabits the Florida and the West Indies, where it has been accurately observed by M. Moreau de Jonnés. It is vulgarly designated a toad, because it frequents shady and humid places, and not the vicinity of waters, as the other frogs. In its habits it is nocturnal, and its strength is so great that at a single spring it can clear a wall five feet high. It is very torpid during the dry season, but resumes its vivacity when the rains set in. It is this frog which is often domesticated in the West Indies for the use of the table, and becomes tolerably familiar; the flesh is white and delicate, and two frogs form a very good dish. The argus frog of Shaw, *R. ocellata*, Linn., is often mistaken for the preceding. It inhabits Pennsylvania and Carolina, and was first figured by Seba. It is one of the largest of the genus, equalling if not exceeding the bull-frog in size, and being stronger; it is of a pale reddish-brown colour, striped with chestnut; the feet are unwebbed, and each joint is furnished with a kind of tubercle. The laughing frog, *R. ridibunda*, Gmel., according to Pallas, is common about the Ural and the Caspian Sea. It is of great size, weighing half a pound. It always keeps in the water, and in the evening utters its croakings in a way that resembles a horselaugh. The paradoxical frog, *R. paradoxica*, Linn., the jackie of the French, is remarkable for the great size of its tadpole state in proportion to the adult animal. The loss of its enormous tail, and of the envelopes of its body, induces a great diminution in bulk; its length in the tadpole state being seven or eight inches, while that of the body when transformed is only three. Thus many of the first observers were led to the conclusion that it was the frog which was metamorphosed into the tadpole, or, as they declared, into a fish. This species is green, spotted with brown, and is especially recognised by irregular stripes of a brown colour running along the limbs. The male has a gular sac, and the hind foot is provided with a supplemental toe. It inhabits Guiana. Our readers will bear in mind that in the preceding list we have not attempted more than to give a specimen of the distinctive characters and habits of some of the best-established species. Many more have been described and catalogued in systematic works.

GENUS CERATOPHRIS, Boié, Cuvier. This genus is distinguished by the great size of the head, by the skin being rough, and engrained in whole or in part, and by a membranous or horn-like prominence on each eye-lid. (See Plate VI., fig. 2.) In certain species the tympanum is hid beneath the skin. The species are found in South America and Asia. The horned frog (*C. varius*, Boié, *Rana cornuta*, Seba) is certainly one of the most singular of

Batrachia.
Ranidæ.

Batrachia. the Batrachia, having an aspect exceedingly deformed. This **Ranidæ.** arises not so much from the general shape of the animal, as from the extraordinary structure of the upper eyelids, which are so formed as to resemble a pair of strange sharp-pointed horns, while the width of the mouth exceeds that of its congeners, and equals half the length of its body. Seba, in fact, describes it as having two sharp horns on its head, within which its eyes are situated; and Schneider more accurately, as a pair of accumulated callous processes, of a conical shape, placed upon the eyelids. The colour is grayish yellow, striped with brown. The body is rough, with pointed spines. The head is very large and thick, and the tongue proportionably so. Baron Cuvier assigns five species to this genus, from the works of Seba, Daudin, Spix, and Prince Maximilian. In Mr Gray's catalogue an additional one is furnished by Mr Wagler, the habitat of which is Asia.

GENUS DACTYLETHRA, Cuv. The south of Africa, according to Cuvier, produces a group of Batrachians which resemble the frogs in their teeth, their smooth skin, their pointed toes, those of the hind feet being deeply webbed, and the inner three having their extremity enveloped in a conical nail, which is black; their head is small, and their mouth not very large. The tongue, attached deep in the throat, is fleshy and large; their tympanum not apparent. These numerous distinctive characters have induced the baron to constitute a new genus under the above name, from *δακτυλίζω*, a *thimble*. The smooth toad, *crapaud lisse* of Daudin (*Pipa bufonia* of Merrem), belongs to it.

GENUS HYLÆ, Laurenti; *Calamita*, Schn. The *tree-frogs* of the English,—*Rainettes* of French authors. The Hylæ were first separated from the frogs and toads by Laurenti, and his arrangement is now universally followed. They differ from the other genera in having all the extremities of their toes enlarged, and rounded into a kind of disk or cushion, usually covered with a viscid humour, which enables them to attach themselves firmly to foreign bodies, and to climb trees. (See Plate VI., fig. 3.) Trees, in fact, constitute their abode during the whole of summer, and there they hunt for food. They, however, produce their ova in water, and shelter themselves in the mud during winter. They have a gular pouch, and are good croakers.

The disks with which the toes of the tree-frogs are provided are simply fleshy, and in the form of lentils. Examined with the microscope, they appear like porous sieves, from which a glutinous fluid slowly exudes; they are usually somewhat concave, and are sometimes furnished with a distinct fold. By means of this apparatus the species can attach themselves to smooth surfaces; they can leap from branch to branch, and can traverse twigs when agitated by the wind. They may be regarded as among the most nimble of their kind. They are, however, more tranquil than many, and watch most patiently for prey. In the day time, and especially when the sun's heat is great, they are said to shelter themselves among the thick foliage, putting themselves in motion on the approach of evening, and then sporting with delight. The croaking of these animals is similar to that of the proper frogs, but stronger, though not quite so sharp. It is most frequently heard in wet weather; but on a beautiful summer evening the traveller is sometimes surprised by a vast group of these hoarse musicians, assembled on the tops of the highest trees. They feed on the insect tribes. Late in the season they retire to the water, where they pass the winter in a kind of lethargy, and remain there till the spawning season has elapsed. Some Indian species deposit their eggs on the under side of leaves hanging over water; and General Hardwicke has observed them place their ova on a leaf which stood over a pail of water, so that the young dropt into the fluid beneath. There is not a single species of the tree-frog in the British isles; they occur, however, frequently in the more favoured climes of Europe,

and superabound in warmer regions. The number of ascertained species is not inferior to that of the frogs proper. They are among the most interesting of the race, and many of them are very beautiful.

H. Arborea, Cuv.; **R. Arborea**, Lin. *Common tree-frog*. In beauty of colouring, as well as in elegance of form, and general agility of movement, the tree-frog exceeds every other European species. It is found in France, Germany, and Italy; but more towards the south than north. It avoids dry situations and mountainous forests, and delights in humid woods, in hedges bordering on marshes, and in parks and gardens ornamented with water. Its principal sojourn during the summer months is the upper parts of trees, searching for insects, which it catches with extreme alacrity, stealing softly upon them, as a cat towards a mouse, and seizing them with a sudden spring of frequently more than a yard in height. It often suspends itself by its feet, or by a single foot, or even by its abdomen and drawn-up toes from a twig, or the under portion of a leaf, thus continuing beneath the shade. It is among the smallest of European frogs. Its colour is green above, more or less bright; its belly whitish, and covered with numerous small tubercles; a dark violet-coloured streak runs along the flanks; and the limbs are reddish. The body is smooth above, and rather short and plump; the hind legs are very long and slender. The fore feet have four toes, the hind five, and all of them terminate in dilated flattish tips. The surface of the abdomen is very remarkable, being so granular, adhesive, and elastic, that it enables the animal to adhere almost to anything, even, it is said, to polished glass, at whatever inclination, or in whatever position it is placed. The spawn is deposited towards the end of April, and the perfect animal appears in August, when it ascends the neighbouring trees, and assort with its parents. Being very noisy on the approach of rain, this species is considered as an excellent barometer; and in the German *Ephemerides* there is an account of one which was kept in a state of domestication for seven years, and gave the greatest satisfaction from being peculiarly weather-wise.

The *Zebra hyla*, **H. calamita**, Gray, *Calamita maxima*, Schn., appears to be one of the largest of these slender-bodied frogs, a specimen described by Seba having attained the length of five inches. It is a native of Carolina and Virginia. It is of a rufous-brown colour, striped with chestnut bands; all its feet are webbed, and the toes orbicular. The *Merian hyla*, **H. Meriana**, Gray, *Rana Meriana*, Shaw, first depicted and described by Maria Merian, in her *Surinam*, merits a distinct notice. It is about three times the size of the common hyla; and on each side of the neck has a remarkable protuberance, resembling an obtusely conical inflated pouch; its hind feet are distinctly webbed. It is of a brownish-green colour above, and is variegated with patches of yellow. It is found sometimes on trees, and sometimes in water. Mad. Merian states that they have external ears, and that the balls on their toes facilitate their progress over the soft marshes which they frequent. The *H. tibiatrix*, Laurenti, is an American species, and is said by Seba to croak in a melodious manner during very hot weather after the setting of the sun, while in the cold and rainy season it is silent, concealing itself at the bottom of the waters.

H. lateralis, Catesby, has been observed in Carolina, and also, it is said, in Surinam. It is usually found attached underneath the leaves of trees, concealing itself, and lying secure from birds and serpents, its most dangerous foes. They are sometimes found in vast heaps, the bushes and woods being completely covered with them; and their croaking may be heard at the distance of whole leagues. They make prodigious leaps, and hence in the United States are called the crickets of the savannahs, their cry

Batrachia.
Ranidæ.

Batrachia. also resembling the noise made by that insect. *H. tinctoria*, Cuv. *R. tinctoria*, Lin. or *Dying Hyla*, has a singular property assigned it, apparently on good authority. It is said that by its means the American Indians partially change the plumage of their parrots from green to red. With this object in view, they pluck out the green feathers when the bird is young, and rub the wounded skin with the blood of the hyla, after which the feathers spring up of a fine red or yellow colour. It inhabits Surinam and Guiana, frequenting the woods nearly the whole year, concealing itself in clefts of trees, and under the bark in cold nights, and resorting to water only for the purpose of reproduction. Cuvier has enumerated, as among the largest and most beautiful, the *H. bicolor* of Daudin and Spix; it is of a celestial blue colour above, and of a rosy tint below. He has catalogued several additional species; and Mr Gray's list is very extensive, including some species from New Holland.

GENUS BUFO. The generic characters of this group, which includes the toads, are, a body thick, short, clumsy, and generally covered with warts and pimples, with a glandular pad behind the ears, from all of which distils a milky fetid humour; there are usually no teeth; the hind feet are frequently short, and hence the species rather crawl than leap; and they are generally found at a considerable distance from water. By Linnæus they were incorporated in the same genus with the frogs, and so close is their resemblance, that that arrangement is still sometimes followed. Toads have in all times and places been regarded as disgusting animals, and sometimes even as objects of horror. They are usually believed to be venomous, and are consequently subjected to proscription and extermination. It will be found, however, on examination, as has been observed by a noted naturalist, that these animals are comparatively harmless, that the study of their organization involves much interest, and that their history presents a crowd of facts equally curious and important. A slight sketch of the structure and habits of these despised animals having already appeared in our general remarks on the order, we shall here allude only to a few distinguishing traits.

The European toads are stated to have only eight vertebrae, and some as few as seven. Though generally described as wanting teeth, yet some species have them on the gums, large and curved. The tongue is not forked, as in most of the frogs; nor do they possess the gular pouches, which give to the frogs their peculiarly resounding voices. The glandular cushion-like body behind the ears, sometimes stated as the most distinct mark of the genus, is considered by Schneider as nothing else than the parotid gland, well known in man as the seat of that disease called the mumps,—with what degree of accuracy we are not prepared to say. The toads, in general, are heavy sluggish animals in comparison with frogs, and sometimes even crawl with difficulty.

The cuticular excretion usually regarded as so offensive is possessed by frogs as well as toads; but is much more abundant in the latter. It is alleged that the toad can at will increase the secretion of this viscous humour, and cause it to distil like dew from all its pores. The most important use, as previously suggested, is probably connected with respiration; the one usually assigned is, that it defends the animal from the heat of the sun and the dryness of the air. This abundant perspiration must, of course, maintain the species at a low temperature; and Adanson states the fact to be so well known, that the negroes in traversing the burning sands of Senegal are in the habit of applying a live creature of this kind to the forehead for the purpose of cooling it. These reptiles have the power of emitting another secretion, which is regarded as a weapon of defence and offence. It is discharged from the lower gut, is shot forth in a small stream, and often occasions apprehensions from its supposed venomous nature. When toads are surprised and

alarmed, instead of seeking safety in flight, they make a dead halt, swell out their body, making it hard and elastic, and distil this humour from its surface in augmented quantities. They also make efforts to bite, without, however, inflicting any injury. The direct application of the fluids proceeding from the common toad to the human skin is innocuous, and the idea that it confers a poisonous quality upon vegetables, fruits, and mushrooms, is entirely groundless.

The process of spawning in the toad is carried on much in the same way as in the frog. In the latter the ova appear imbedded in a glairy continuous mass, which has been compared to a cord or chaplet: in the toad two of these cords appear together, the united length of which would extend to about twenty feet. Ten or twelve days after deposition, the eggs acquire double their volume; the tadpoles issue forth about the twentieth day, and acquire their gills two or three days after.

Though the taste is not likely to become prevalent, there is no doubt that toads have been made familiar pets. Mr Pennant gives a curious account of one having lived in a kind of domestic state for the space of more than forty years, and of having been, in a great degree, reclaimed from its natural shyness and desire of concealment. On the approach of its master, and on the lighting of the candles at night, it left its retreat, and came to demand its regular evening meal. It grew to a very large size, and attracted many curious visitors. It was often brought to table, and fed upon various insects, which it seized with avidity, without being embarrassed by the presence of company. Its favourite retreat was beneath the steps of the house-door; and it had all the appearance of surviving many additional years, when it was attacked and destroyed by a raven.

But the most curious trait in the history of the toad, is its alleged power of being encased and buried for a long period of time without food or respiration, and of reviving again when reintroduced to light and air. Not that the toad is singular among the Batrachia for this faculty, for its congeners are likewise celebrated on account of it. Nor would it appear to be confined to this order, for similar stories are told of serpents, and even of fish, insects, &c. The attention of the French academy was directed to this subject about the year 1771, from its having been stated, that upon pulling down a wall of a mansion belonging to the Duke of Orleans, and which was forty years old, a toad which proved to be alive, was found in it, its hind feet being actually entrapt and imbedded in the mortar. Stimulated by the interest which this story excited, M. Herriault, in presence of the academy, enclosed three toads in as many boxes, surrounding them with a thick coating of plaster, and deposited them in an apartment of the academy. Here they were left untouched for eighteen months, when, on being examined, two of them were found alive, and the third dead. The former were re-enclosed, and on a second examination some months after, were found dead. The animals were completely impacted and imbedded, without leaving any space for surrounding air. Notwithstanding the apparently conclusive nature of these experiments, the possibility of such long endurance was still denied by many,—the more so, as the fact was as inexplicable as extraordinary. Dr Edwards, however, performed somewhat similar experiments in Paris in the year 1817, by shutting up toads effectively in plaster, when he found that they lived for a long period; and additional light was thrown upon the subject by that observer discovering, that when the plaster was made impervious to air, as by sinking the whole mass in water, the toads speedily perished. From this it follows, that owing to the porosity of the plaster, a portion of air still penetrates to the imprisoned toad, sufficient to maintain its vital functions in that low state in which we often see these reptiles during hybernation, or when completely frozen. The importance, under these circumstances, of the cuticular re-

Batrachia
Ranidæ.

Batrachia.
Ranidæ.

spiration already mentioned, is obvious. Analogous phenomena are observable in other classes of the animal kingdom. Thus, the reviving powers of the *Rotifer redivivus*, though so astonishing, are now undisputed; and no one doubts Franklin's anecdote of the apparently dead flies, which he took from a fresh-drawn bottle of Madeira, and revived in the sun. Many drowned insects, to all appearance dead, are made to renew their vital powers when sprinkled over with dry warm sand, or pounded plaster; and it appears that in like manner, a certain feeble life, capable under altered circumstances of quick and strong increase, lingers long in many reptiles.

The great majority of the instances of imprisoned toads and frogs is said to have occurred in growing trees, hard wood, coal, and in sandstones and other rocks not of a very dense or impenetrable consistence. The fact has been long and frequently alleged, and the difficulty of accounting for it forms the chief ground of the prevailing scepticism. The wonder produced is forcibly though quaintly expressed in a Latin inscription written in letters of gold, framed with a coat of arms, and hung over a mantle-piece of sandstone, formerly in Chillingham Castle. In this sandstone there was a deep excavation, believed for ages to have been the living tomb of one of these creatures. We give a translation of a part of this document.

Hither, Stagyrite!
If you would see a phenomenon more wonderful than Euripus,
Come hither;
Let seas ebb and flow as they may, and let him be a Lunatic
Who despoils the moon of her honours.
Behold here a novelty, such as neither Africa presents to thee,
Nor the Nile with her fabulous sands;
A fire and pure flame
Existing, though shut out from vital air,
From the dark recesses of the cut rock which you see,
The hands of the obstetrical stone-cutter gave light
To a living toad!!

In illustration of this alleged phenomenon, we shall adduce but a single recent instance out of many. On the 25th of July 1832, four men made affidavit, "that they were astonished, on splitting a large block of millstone grit on Stainmore, more than a ton weight, by a living yellow frog springing out of a cavity in the centre of the said solid rock, where it had been as closely imbedded as a watch in its outer case, without any communication with the surface nearer than eight inches. This frog was conveyed to Brough, Westmoreland, and given to Mr Rumney, surgeon, in whose possession it now (Jan. 21, 1833) continues in a healthy living state."

We have already mentioned, that however disgusting may be their qualities in the apprehension of many, toads are eaten greedily by savage tribes, and not seldom, though unwittingly, by the more fastidious inhabitants of the gay and splendid capitals of Europe. We now proceed to allude more particularly to a few of the species.

The *common toad* (*B. vulgaris*,—*Rana bufo*, Linn.) is of a russet or brownish-gray colour, sometimes olive, and even blackish. It is covered with numerous round tubercles on the back, and with smaller ones beneath. The hind feet are semi-palmated. It is found throughout Europe (most abundantly in its western parts), and is common in this country. It usually sojourns in obscure and sheltered places, and passes the winter in holes which it finds or makes for itself. It spawns in water in March and April; the ova are very small and numerous, suspended in two cords of transparent jelly. The tadpole is blackish, and remarkably small when it loses its tail and acquires its feet. The branchial aperture is on the left side. This toad is long lived, fifteen years being assigned as not unfrequent. Its cry has a distant resem-

blance to the barking of a dog, and during summer it croaks feebly.

Many toads possess a strong disgusting smell. Of this kind are the *rush toad* (*Rana bufo calamita*, Gmel.), of which the colour and size much resemble those of the common toad, the cushions behind its ears being somewhat less. Its hind feet are not at all webbed, and it has a pouch or sac under its throat. Its pace differs from that of most of the toad tribe, as it runs nearly after the manner of a mouse, with the body and limbs somewhat raised. It is chiefly a nocturnal animal. The ova are contained in two cords; and the evolution of the ova is so speedy, that the tadpoles liberate themselves in the space of five or six days. During spring it frequents places overgrown with reeds, and croaks loudly. When handled or irritated it pours forth its cutaneous exudation, and squirts its other fluid to a distance of three or four feet, and thus diffuses an intolerable odour, resembling the smoke of gunpowder, but stronger, and so permanent, that if it fall upon furniture it cannot be got rid of for months. Analogous to, if not identical with the preceding, is *B. calamita* of Laurenti, the *natter-jack* of British Erpetologists,—*mephetic toad* of Dr Shaw. In general appearance it resembles our common toad, but the eyes are more projecting, with the eyelids greatly elevated above the crown, and there is a line of bright yellow along the middle of the back. This reptile was first remarked as British by the late Sir Joseph Banks, in Lincolnshire, and has since been met with on many heaths near London, as well as in Cambridgeshire and Norfolk. Except during the spawning season, it appears to affect dry and sandy districts. It is of much more active habits than the common toad, its pace "being a kind of shuffling run."¹ It never leaps. The *brown toad*, *B. fuscus*, Laurenti, is also distinguished by an offensive discharge; but in addition to the gunpowder-smoke smell, and overpowering it, there is an extremely strong odour of garlick or onions, which produces the same effects upon the eyes as do these vegetables. The whole of the skin of this animal is nearly smooth, and the hind limbs are long and deeply webbed. It leaps well, and prefers the neighbourhood of water. Its ova are deposited in a single cord, which, however, is thicker than the double one of the common toad. The tadpole of this species arrives at a great size before it attains its complete form, so that, according to Roësel, it is considered by the country people as a kind of fish, and is eaten accordingly. The *variable or green toad*, *B. variabilis*, Cuv., *Rana variabilis*, Gmel. and Pallas, *B. viridis* of Schneider and Shaw, is a third species, likewise characterized by a most disagreeable smell, resembling that of the rank and deadly nightshade, but more powerful, and soon contaminating any close apartment. This kind is a native of Germany, the south of France, and other parts of Europe. It derives its specific name from the tints of its colour undergoing striking changes as it sleeps or wakes, or is exposed to sun or shade. It is called the green toad from its spots being of that colour. Pallas's account of it is as follows: The general colour is pale or whitish, becoming in hot sunshine entirely gray; when asleep the spots only appear gray, and when torpid the general hue is flesh-coloured.

The *obstetric toad*, *B. obstetricus* of Laurenti, is a small grayish reptile which inhabits France, and affords an example of a very curious instinct. The process of spawning is not conducted by this species in the water, but on land, and there the male assists the female to get rid of her eggs, which amount to about sixty. These he attaches in small bundles to his thighs by means of an adhesive fluid, and for weeks carries them about with great care. When the young are ready to escape, he seeks some stagnant wa-

Batrachia.
Ranidæ.

¹ Jenyns's *British Vertebrate Animals*, 303.

Batrachia. ter, and there deposits them in safety, the tadpole soon issuing forth, and swimming immediately. The *prickly toad*, *B. spinosus* of Daudin, which derives its name from strong projections on its tubercles, seems also to possess a singular peculiarity. It is never met with on the surface of the soil, and is only procured by means of the plough. The country people are persuaded it never leaves its retreat voluntarily; and Daudin suspects that it deposits its ova in the earth, in humid places, near the subterranean sources of water.

Most of the toads of tropical climates are remarkable for their great size. Of this we give an instance in the *marine toad*, *Rana marina*, Gmel., a native of South America, the length of whose body extends to nearly a foot. It is also remarkable for its *post-aural* projections, which are an inch long, and oval shaped. The feet are not webbed; the toes are terminated with round knobs, and furnished with short claws resembling the human nails in miniature. There are many other recorded species of toads proper, on which, however, we cannot dwell; and we now proceed to several genera which have recently been separated from the group.

GENUS BOMBINATOR. This genus differs from the other toads only in having the tympanum, or soft covering of the ear, hid under the skin. **RHINELLA** of Fitzinger (**OXYRHYNCHUS** of Spix) is distinguished by a prolonged muzzle. (See Plate VI., fig. 4.) M. Gay has lately informed us (*Ann. des Sc. Nat. Avril* 1836, p. 224) that in Chili there is a genus allied to *Rhinella*, consisting of several agreeably-coloured species, which are always viviparous. In the same locality he made a similar remark regarding several species of snakes. To these two genera succeed the **OTILOPHA** of Cuvier, which has also an acute snout, and on each side of the head a projecting crest extending to the gland called parotid. In the genus **BREVICEPS** of Merrem (part of Fitzinger's genus **ENGYSTOMA**), neither the tympanum nor parotids are apparent; the body is oval, the head and mouth are remarkably small, and the feet scarcely at all webbed. (See Plate VI., fig. 5.) We shall here introduce a very few species belonging to these genera.

To the genus *Bombinator* belongs *B. bombinus* (*Rana bombina*, Gmel.), which is the smallest and most aquatic of the European toads. It is gray or brown above, blackish blue with orange spots beneath. The hind feet are completely webbed, and nearly as long as those of frogs, so that it leaps nearly as well as they do. It affects morasses. Of the genus *Rhinella*, Spix has depicted and described five species, most of which, according to Cuvier, it is difficult to distinguish from the proper toads. The *mitred toad* of English writers, the *margaritifera* of Gmelin, is usually adduced as a type of the genus *Otilopha*. It is a native of Brazil, and about the size of the common toad; it is rufous brown above and whitish beneath, beset with numerous small tubercles of a bluish or pearly cast, whence the French name *crapaud perlé*; but its principal characteristic is the subtriangular form of its head, the sides of which, beyond each eye, project into an angular protuberance. From the nose likewise an elevated white line runs along each side of the head, over the shoulder, to the sides; the fore feet are unwebbed, the hind are partly so. Genuine specimens of the genus *Breviceps* present animals not a little singular in their forms. Such are the *short-headed* and the *indistinct toad* of British authors, the *Rana breviceps* and *R. systoma* of Schneider. They are oval-shaped like eggs, with scarcely any projecting head; and one of them has actually been called the *headless toad* (*Rana acephala*, Schn.). The *short-headed toad* is a very small animal, about half the size of the common toad; the head is completely blended and incorporated with the thorax, and the surface is rather wrinkled than tuberculous. It is a native of Africa. *R. systoma* comes from the East Indies, and has a thick rounded

Batrachia. body, with a head so lost in the general outline that the mouth is scarcely apparent; the legs, too, are peculiarly short, and appear almost as if imbedded in the wrinkled skin of the sides.

We now advance to the genus **PIPA**, which is universally distinguished from the toads. Its generic characters are the following: The body is flattened horizontally; the head is broad and triangular; the tongue is so adherent that it appears to be wanting (it is often said to be so); the tympanum is hid beneath the skin; the small eyes are placed toward the margin of the lower jaw; the extremities of all the fingers are divided into four small points; and finally, the male has an enormously sized larynx, like a triangular osseous box, which encloses two moveable ossiculi which occasionally close the branchiæ. Of this genus, that well-known and most singular animal commonly called the Surinam toad (*Pipa Surinamensis*, Laurenti,—*Rana pipa* of Linnæus), may be taken as a type. It seems to have been introduced to the notice of naturalists at the close of the seventeenth century, and was first described by the celebrated Ruysch. It is one of the most uncouth and hideous of nature's creatures, and is especially signalized for some of the most extraordinary phenomena regarding the growth of its young which are to be found throughout the range of the animal kingdom. The size of the Surinam toad considerably exceeds that of our common species. The mouth is very wide; the hands are tetradactylous; the fingers long and slender, and each divided at the tip into four distinct processes, all of which, when narrowly inspected with a glass, are found to be again subdivided in nearly a similar manner. The web of the hind feet reaches to the tips of the toes. The male is rather larger than the female, sometimes attaining the length of seven inches. The back is studded with granules, which are somewhat more numerous and larger on the female; the skin round the neck, in both sexes, forms a kind of loose wrinkled collar. The general colour of both is a dark blackish brown. This reptile has been long celebrated for the manner in which its young are perpetuated; and on this account it has become the object of much attention. It was for a time supposed that the ova issued from the deeper seated parts of the back, and were then enclosed in small cells on its surface till they were regularly hatched. Later observations in correcting this mistake have demonstrated a not less peculiar history. The precise truth was first made known by Dr Fermin, who had an opportunity, during his residence at Surinam, to investigate the creature's structure in a more satisfactory manner than had previously been practicable. His account is, that the female *Pipa* spawns at the brink of some stagnant water, and that the male immediately collects and amasses the heap of ova, and after impregnation deposits them with great care on the back of the female, where they are received into cellules which at this period are open for their reception, but speedily close upon them. They are there retained to the time of their second birth, which happens in somewhat less than three months. During this period the cells gradually enlarge, till the young emerge from the back of the parent in a completely formed state. During the time of their concealment, however, they undergo the usual change which is effected upon their congeners, being first hatched from the ova in the form of a tadpole; and then, after gradually acquiring their perfect shape, losing their tail, and so forth, they are extruded from the cellules. This strange process has since been examined and verified by Camper, Spallanzani, Blumenbach, and other naturalists, and is now established as a phenomenon equally true as extraordinary. Fermin found the brood he observed amount to seventy-five, and the period of their extrusion as young *Pipas* occupied five days. When they had made their escape, the female, having rubbed the epidermis from her back on some hard substance, returned to land. This

Batrachia. species lives in the fresh waters of South America, and sometimes in obscure houses in Cayenne and Surinam, where it is called *tedo* and *curucu*. According to Seba and Madame Mérian, the negroes of the colonies use its flesh as food.

Salamandridæ.

Spix has figured another species, *P. curururu* nearly resembling the above, which affects the bottoms of lakes in Brazil. That author assures us that the female does not receive and hatch its young in the alveola on her back. Another kind is preserved in the Paris museum,—a true *Pipa* according to Cuvier, from the Rio Negro. It is quite smooth, and has a narrower head than the common species. The baron names it *Pipa lavis*.

FAMILY SALAMANDRIDÆ. NEWTS OR SALAMANDERS.

We have now reached a group of which the name has been celebrated from remote antiquity, and the history encompassed by fables in every age. "It was on the fortunate soil of ancient Greece, in the bosom of a wise and warlike nation, where imagination, favoured by a happy clime, exaggerated even the wonders of creative power, that the reputation of the salamander originated."¹ It was among that fanciful people that an obscure and changeful reptile was as it were consecrated to posterity by a fantastic but immortal name.

But the times of superstitious fiction regarding the once famous salamander are now for ever passed and gone, and it is only to be regretted that they have not carried along with them the ignorant prejudice which still remains respecting a few harmless reptiles. "The daughter of fire," with her "frame of icy crystal," is now nearly forgotten; and for unchanging love and unflinching courage, other and more fitting emblems have been long invented. The ancient story of the salamander enduring fire and extinguishing flame is now recognised only as an idle tale; and scarcely less so its faculty of poisoning vegetables, and its other pernicious powers. These gross errors being swept away, more room is left to investigate whatever is instructive in the history of those once widely abused, but really interesting creatures.

As the salamanders resemble in many respects the foregoing genera of the order, many of the details which have previously been stated equally apply to them. This remark relates also to the extraordinary metamorphoses they undergo, but with some striking variations. We here find examples of a species of reproduction not uncommon among fish, and met with, as already mentioned, among certain lizards. We allude to that mode of birth known under the name of *ovo-viviparous*. The mode we have been hitherto contemplating resembles that of birds in being strictly *oviparous*. The ova or eggs are extruded from the parent, and under the influence of heat the young are in due time hatched. In the salamanders, however, another stage intervenes. When the ova have arrived at the state in which, in the other *Batrachia*, they are wont to be expelled, in these they are retained for some time after their development has begun. The eggs are, in fact, never laid, but are hatched in the interior of the parents; so that they bring forth living offspring, although originally contained in eggs. These eggs, by a natural process, are deposited in certain bags, which are called *oviducts*. In the salamander there are five of these, each of which contains six, or eight, or more young, and there they are nourished by a peculiar fluid, and do not issue forth till they have undergone their metamorphoses, that is, have acquired their feet and other organs. They are deposited in or near marshes.

In our general remarks on the *Batrachia*, we traced, in a few words, the changes which take place in the respiratory system of this group. We saw that being first exercised in water, it was for a time precisely analogous to that of fishes; and that terminating on land, it perfectly corresponded with that of land animals. In the salamanders there is this peculiarity,—that while one section of them ere long become terrestrial in their structure and habits, another division continues aquatic for life. But so far as respiration is concerned, the same complete metamorphosis takes place in these latter as in the former; their gills vanish, regular lungs are completed, and yet the aquatic salamander, water-newt, or triton as it is sometimes called, continues a constant inhabitant of the water. The species are in fact habitual inmates of that element, and yet inhale the vital breath of heaven; and in this respect completely correspond to the cetaceous or whale tribes, with whose peculiarities, on a scale so greatly more gigantic, naturalists have been long acquainted. Like them they must regularly come to the surface, inflate their lungs, descend to their weedy homes, and after a time return again for air,—repeating this process as often as their exigencies may require. Peculiar characters distinguish the circulating system of the Cete, as compared with that of other *Mammalia*; and we have little doubt that parallel features occur among the tritons, although we are not aware that this point has been as yet investigated.

When speaking of toads, we took occasion to make a few remarks on the cuticular secretion, for which they, in common with other *Batrachia*, are remarkable. The salamanders have on this account been still more celebrated; and there seems no reason to doubt that the fable of their withstanding the effects of fire has originated from this peculiarity. The humour is in them found to possess more concentric virtue, having withal a more offensive odour, and a more acrid taste. Count Lacépède says, that if a drop of it come in contact with the tongue, it produces the sensation of burning; so that it really proves a defence against many animals which would otherwise devour them. It is more especially when they are irritated and alarmed, and particularly if exposed to fire, that they distil the secretion in quantities, and envelope themselves in a damp covering, which, for a brief period, might possibly prevent their being consumed. Hence, then, may have originated the ancient opinion that these animals could live not only on land and in water, but also in fire; and from the slender germ of that same peculiarity has no doubt spread the monstrous statement of Pliny, that these creatures infested the herbage of a country to such a vast extent as even to cause the extinction of entire nations!

Another remarkable peculiarity of the salamanders, more especially of the aquatic kind, which has been successfully elucidated by Spallanzani, is common to them, and in some measure to the tadpole state of the other *Batrachia*. We allude to that surprising power whereby, when repeatedly deprived of even an important portion of their body, that portion is as frequently renewed. This property is not unknown among some of the lower orders of creation, but in none is it more striking than in these reptiles. Thus, in the triton, the whole limb may be removed, and by and by we find it completely restored, and furnished with perfect bones, muscles, nerves, &c. In other instances an eye has been extracted, and speedily a new and perfect one is found to have supplied its place. These renewals are more complete than such as take place among the true lizards, formerly alluded to.

The salamander group are distinguished by the following peculiarities. They have an elongated body, four feet, and

Batrachia.
Salamandridæ.

¹ Griffith's *Animal Kingdom*, ix. 464.

Batrachia. a lengthened tail, which gives them a general resemblance to the lizards. Their head is flat, and the ear entirely hid in the flesh, without any apparent tympanum, there being only a small cartilage over the external aperture. Both jaws are furnished with numerous small teeth, and two similar rows occur upon the palate. The tongue resembles that of frogs, but there is no third eyelid. They have a skeleton with fourteen dorsal vertebræ, and remarkably small rudiments of ribs, but without any osseous sternum; the pelvis is simply suspended from the spine by ligaments. They have four fingers and five toes. As we have already stated, they respire like the preceding genera. The arms of the tadpole are developed before the legs, contrary to what happens in the animals already reviewed.

Salamanders are divided into the terrestrial and aquatic. We commence with the former.

GENUS SALAMANDRA, Laur. Terrestrial salamanders. (See Plate VI., fig. 6.) In their perfect state these reptiles have a round tail; they remain in water only during their tadpole state (which is brief), or while in the act of reproduction. Their ova are inclosed in oviducts.

These salamanders, though not unfrequent in Europe, and in warmer regions, seem never to have been observed in Britain. They take up their abode in damp ground, and amidst brushwood, in ditches and shady places, in subterranean caverns and among old ruins. They are feeble, timid, stupid creatures, which live on worms, snails, flies, and other insects, and apparently on rich mould. They appear almost entirely deaf and dumb, and show no dread either of man, or of other animals stronger than themselves. If thrown into water, they immediately attempt to escape from it. They are capable of enduring most serious mutilation without apparently suffering from it; if, however, they are plunged into vinegar or alcohol, or are sprinkled with salt or tobacco, they are killed in a moment. We may now enumerate a few of the species. The *spotted salamander, S. maculosa*, Laur., of the usual length of six or eight inches, sometimes more, is one of the largest, and most widely spread through Europe. It is of a shining black colour, with two bright yellow stripes on its flanks, and of a livid blue colour beneath. It has conspicuous glands (parotids) behind its occiput, and along its sides are rows of tubercles, from whence, when alarmed, a milky humour flows, bitter to the taste, of a strong smell, and injurious to the life of very small animals. Its tail is of a roundish or cylindrical form, tapering to the extremity. It affects humid places, and retires into subterranean holes, under large stones and roots of trees. The brain of this reptile is said to be so small as not to equal the diameter of the spinal marrow, and its perceptive powers are proportionally dull. The *black salamander, S. atra*, Laur., is not above half the size of the foregoing; it is black, and devoid of spots above, and of a yellowish hue beneath. It is rare in France, but is found in the Alps, and is abundant in the mountainous regions of Southern Germany. (See Plate VI., fig. 6.) The *funereal salamander (S. funebris)* is six or eight feet long, of a deep-brown colour. It was observed by Bory St Vincent in the hottest and dampest parts of Andalusia. This species issued in dozens from their retreats at night, and speedily advanced towards destruction near the bivouac fires, by which they were attracted. Into these they would apparently have themselves advanced, had not the soldiers cast them amid the flames, where they remained for a few moments as if unhurt, thus far supporting their incombustible reputation. We need scarcely add, however, that they very speedily died roasted, as any other small animal would have done under a similar predicament.

Among the foreign salamanders a great number inhabit North America; and these are said to be destitute of the occipital glands. Palisot and Bosc have each described a new species. Thunberg has also discovered one in Japan,

to which the natives ascribe medicinal virtues of the most valuable kind. The *spectacled salamander, S. perspicillata* of Savi, has only four toes on the hind feet. It is black above, and yellow spotted with black beneath, with a yellow line between the eyes. It is found in the Apennines.

GENUS TRITON, Laur. Aquatic salamanders. We now turn to the aquatic group, commonly called newts, which have a tail always compressed vertically, and pass a great portion of their lives in water. (See Plate VI., fig. 7.) These are the animals experimented on by Spallanzani, and so celebrated for their reproductive powers. Another faculty, scarcely less singular, is that which M. Dufay has recognised them as possessing,—we mean their power of remaining frozen for a length of time in ice without mortal injury. Their ova are fecundated by the milt being mixed with the ambient water, and penetrating with it into the oviducts. After a certain sojourn there, the young issue in long gelatinous cords, from which they do not effect their escape till several days after their extrusion. The branchiæ continue for a longer or shorter period in different species. Few have been accurately observed in Europe, and doubts remain about their specific determination, because they change their colours with their age, and differ according both to sex and season. The crests and other ornaments of the males, also, are only fully developed during spring. If winter surprises them still wearing gills, these parts are then maintained throughout the colder season, and even continue to increase.

The following are species which have been accurately characterized. The *marbled salamander, S. marmorata*, Lat. (*Triton Gesnerii* of Laurenti), has the skin chagrined, pale green above, spotted with large irregular brown blotches, and brown spotted with white beneath. A red line runs along the back, which in the male forms a kind of crest, marked with black spots. The *crested triton, S. cristata*, Lat., has the skin chagrined, brown above spotted with black, and orange beneath similarly spotted; the flanks are spotted with white. The crest of the male is high, acutely serrated, and embroidered with violet during the love season. This is our great water-newt (*T. palustris*, Flem. and Jen.), by no means uncommon in Britain during summer in ponds and ditches, and sometimes found in autumn out of water, in damp and shady situations. M. Bibron, who lately read a paper on these tritons to the London Zoological Society, stated that he had found this and the preceding species indigenous to Britain; and that the distinguishing characteristic consists in this, that in the crested species the upper lip is so largely developed that it overlaps the under one posteriorly when the jaws are closed, a condition never present in the *marmorata*. The *spotted triton, S. alpestris*, Bechst., has a chagrined skin, and is slaty and brown coloured above, and orange or red beneath; whilst *S. punctata*, Lat. (*T. punctatus*, Bonap.), has a smooth skin, light brown above, pale reddish beneath, and spotted everywhere with black. The crest is festooned, and its toes somewhat enlarged, but not webbed. This is the common (or smaller) water-newt of Britain. It is subject to considerable variation, and is often found on land. A third British species is the striped eft, *T. vittatus* of Gray. Finally, *T. palmata*, Lat., is brown on the back, black and brown on the head, lighter on the flanks, and spotted with black. The male has three small crests on its back; the toes are dilated and webbed, and the tail terminates in a slender membranaceous fin. North America is rich in aquatic salamanders; but our knowledge of these, as of many European species, is too obscure to admit of their precise classification. Baron Cuvier has well remarked, that a good monograph of this interesting group, with accurate plates, is a great desideratum.

We have now to conclude the present article with a few brief notices of certain very remarkable genera, some of

Batrachia Salamandridæ.

Batrachia.
Genus
Menopoma.

which differ considerably from all the members of the two preceding families, while others are by no means remotely allied to the salamanders. They are all aquatic; and while some lose their gills at so early a period as to have misled observers into the belief that they never at any time possessed these organs, others retain them throughout their lives, even after the development of internal lungs,—thus exhibiting, as we observed at the commencement of our treatise, the only truly amphibious animals of the vertebrated kingdom.

a. No apparent branchiæ.

GENUS MENOPOMA, Harlan; *Abranchus*, ejusd. We have here a form resembling that of the salamanders. The eyes are obvious, the feet well developed, and there is an orifice on each side of the neck. Besides the range of delicate teeth around the jaws, there is a parallel range upon the anterior portion of the palate. The only species known is the great salamander of North America (*S. gigantea*, Barton), called Hellbender in the United States. It measures from fifteen to eighteen inches in length, the colour of a blackish blue, and dwells in the rivers of the interior, and the great lakes.¹ (See Plate VI., fig. 8.)

GENUS AMPHIUMA, Garden. The species of this genus have also an orifice on each side of the neck; but the body is much lengthened, and the legs and feet but slightly developed. Their palatine teeth form two longitudinal rows. *Amph. tridactylum*, Cuv. is distinguished by three toes to all the feet.² Another species, *Amph. didactylum*, (*Amph. means*, Garden and Harlan), has only two toes. The body is long and cylindrical, the head depressed and obtuse; the tail compressed, with a sharpened ridge above, but blunt below. The fore feet are formed like tentacula. The colour is blackish gray above, and pale beneath, without spot or stripe. The observed size varies from six inches to two feet. This species inhabits ponds in the vicinity of New Orleans, and is met with in other parts of the southern states. It is sometimes found deeply sunk in mud, lying concealed like an earthworm, even at the depth of several feet. It is greatly dreaded, though without any reason, by the negroes, who name it the serpent of Congo.

b. Branchiæ apparent and persistent.

GENUS AXOLOTUS. The only known species of this genus, which we may name *Ax. pisciformis* (the specific title bestowed by Shaw), so entirely resembles the larva state of an aquatic salamander, that it is even yet regarded by some as an incompleated reptile. It was so regarded by Baron Cuvier in his contribution to Humboldt's *Voyage*; and even in his latest work he yielded rather to the opinion of others than his own conviction. "Ce n'est encore qu'avec doute que je place l'axolote parmi les genres à branchies permanentes, mais tant des témoins assurent qu'il ne les perd pas, qui je n'y vois obligé."³ The species in question measures from eight to ten inches in length, and is of a gray colour, spotted with black. It has four toes to the anterior feet, and five to the hinder, and there are three long tufted branchiæ on each side. (See Plate VII., fig. 1.) It inhabits the lake on which the town of Mexico stands, and is naturally subjected at times to a low temperature. The specimens brought home by Mr Bullock were from an elevation of 8000 feet. That collector informed us that at certain seasons they stock the markets, and are eaten in great quantities by the peasants. Sir Everard Home has published an account of their anatomical structure. He is

decidedly of opinion that they are not larvæ, but completed reptiles.⁵

GENUS MENOBRANCHUS, Harlan; *Necturus*, Rafinesque. Here there are only four toes to each foot. (See Plate VII., fig. 2.) There is a single range of teeth on the intermaxillaries, and another, parallel, but more extended, on the maxillaries. The best-known species is *M. lateralis* (*Triton lateralis*, Say), a large reptile which sometimes attains the length of two or three feet, and inhabits the great lakes of North America.⁵

GENUS PROTEUS, Laurenti. Distinguished by having three toes to the anterior feet, and only two to the hinder. The only known species is *P. anguinus* (*Siren anguina*, Schneid.), an animal resembling an eel with legs, of a pale rose or flesh colour, and measuring from ten to twelve inches in length, with a diameter seldom exceeding half an inch. The muzzle is depressed and elongated: both jaws are furnished with teeth, and the tongue is free in front, but not very movable. The eye is excessively small, and covered over by a kind of tegument. The ears are also covered over more substantially, as among the salamanders. Besides the internal lungs, there are three feathered gills or branchiæ on each side of the posterior portion of the head. The skeleton resembles that of the salamanders, except that there are many more vertebræ, and fewer rudiments of ribs. The osteology of the head, however, is entirely different, and approximates that of the siren. The heart, composed of a single ventricle and auricle, is placed between the fore legs, and the lungs have the form of simple slender tubes, terminated by a vesicular dilatation. This truly remarkable reptile is found occasionally in a noted and romantic lake called Zirknitz (the Lugea Palus of the ancients), about six German miles from Labac, in the duchy of Carniola. From this lake, as extraordinary as its slimy inhabitant, the waters retire during the summer season by numerous subterranean outlets, leaving the ground fit for pasture and the cultivation of millet. In the month of October they return again with great force, springing out of the subterranean passages from a vast depth, till the lake is amply filled. It is situated in a hollow or valley, surrounded by rocky and wooded hills, in which are great caverns, and is supplied by rivulets running into it from the adjoining mountain regions. According to M. Schreibers, to whom we owe the first correct account of the proteus,⁷ its proper locality is Lake Sittich, one of several which communicate with that already named. Its more characteristic abode is probably among the subterranean canals which are known to connect together those peculiar lakes of Carniola. All its characters, in fact, present the aspect of a subterranean animal. It has a pale, bleached, ghost-like aspect, and its small, opaque, skin-covered eyes bear but small resemblance to the brilliant visual organs of other reptiles.

We come, finally, to the genus SIREN, Linn., in which the posterior legs are entirely wanting, and the anterior pair furnished with four toes. We have it in our power to state several particulars in the history and structure of a species of this genus from personal observation,—a mode of acquiring knowledge which, however desirable, has by no means been granted us in regard to the majority of the groups discussed in this exposition of the reptile race. We never, like Colonel Bory St Vincent, tossed a salamander into the fire,—we never, like Mr Waterton, rode on the back of an alligator,—we never waded waist deep, with Mr Audubon, among hundreds of these huge reptiles,—we never sailed, like Wordsworth's Highland boy, in a turtle's

Batrachia.
Genus
Siren.

¹ *Annals of the Lyceum of New York*, i. pl. 17.

² *Mém. du Mus.* xiv. pl. 1; and *Journal of the Academy of Sciences of Philadelphia*, vol. iii.

³ *Recherches sur les Reptiles douteux*, p. 123.

⁵ *Phil. Trans.* for 1824, part ii.

⁶ *Annals of the Lyceum of New York*, i. pl. 16.

⁴ *Règne Animal*, ii. 119.

⁷ *Phil. Trans.* for 1801.

Batrachia.
Genus
Siren.

shell,—and our practical experience, even of green fat, is far from extensive;—but we have watched a siren from the far west; and as the history of the species in question cannot fail to throw light on the nature and attributes of others to which it is related, and as it is in itself a very extraordinary and interesting reptile, we shall make no apology for the length of the following observations.

The Gardenian siren (*Siren lacertina*, Linn.), so named in remembrance of Dr Garden, by whom it seems to have been first observed, in its general form and aspect bears a great resemblance to an eel, but is at once to be distinguished from a fish by its anterior arms. The fine specimen long preserved alive by Dr Patrick Neill of Edinburgh was originally transmitted by Dr Farmer of Charlestown, South Carolina, to Dr Munro. It measured one foot five inches in length, and about four inches in circumference. (See Plate VII., fig. 3.) Its colour was deep blackish-brown, rather paler beneath, where it was partially tinged with a bluish hue, and marked all over with numerous small, irregular, pale, ashy-brown spots, not very perceptible except on a rather close inspection. The muzzle was blunt, depressed, sub-rounded or slightly square, and considerably narrower than the hinder portion of the head. The nostrils, which are inconspicuous, are placed near the anterior angle of the upper jaw. The head is broad and flat. The eyes are dim, of an obscure blue, and there is no very obvious distinction of colour between the iris and pupil, both appearing as if seen through a semi-transparent membrane. The gills consist of three fleshy peduncles, which increase in size from the first to the last. They are beautifully branched from beneath and along their lateral and terminal edges, and these little branches are divided and subdivided into still more minute ramifications. This elegant fringe-work forms the true gills, the central and fleshy stalks serving merely as their support. Beneath, and rather in advance of these bodies, are three vertical clefts, through which the water is ejected backwards from the interior of the mouth upon the gills, though with a much more languid and less perceptible action than in fishes. These clefts or branchial perforations are sustained and kept in separation by four arches, which Garden, Ellis, and Camper appear to have mistaken for gills, although both Linnæus and John Hunter took a more accurate view of the matter.¹

The general surface of this siren is very smooth and shining; and if there are any scales, as some have said, they are not apparent to the naked eye. Towards the tail its form becomes thin and compressed, and that part is margined for several inches both above and below, as well as around its terminal point, by a narrow membrane or fin, which no doubt greatly aids its movements through the water.

The earliest notice of this singular reptile appears to have been communicated by Dr Garden to Linnæus through the medium of Mr Ellis in the year 1765. He described the simultaneous existence of lungs and gills, and concluded that it was a perfect animal, chiefly because there did not exist in Carolina any species of salamander, or other aquatic creature, of equal size, of which it could be regarded as the larva. It was in consequence of the information received regarding this species that Linnæus, though with hesitation, founded his order of *Amphibia meantes*, of which the most peculiar character consisted in there being “branchiæ et pulmones simul.” The great Swedish naturalist appears to have been particularly interested by the peculiarities of the siren; for in his reply to Mr Ellis, acknowledging receipt of Dr Garden’s “very rare two-footed animal with gills and lungs,” he observes that nothing had ever

exercised his thoughts so much, nor was there anything he so greatly desired to know, as the real nature of so extraordinary a creature.

Although Ellis and Hunter wisely regarded the siren as a perfect animal, the propriety of this opinion was by no means universally admitted. Pallas, not perceiving that such metamorphoses as he supposed were rendered impossible by the absence of any germ of the hinder extremities, even in the skeleton, still insisted that the siren was nothing more than the larva of a four-footed salamander.² A similar opinion was maintained by Hermann,³ Lacépède,⁴ and Schneider.⁵ About twenty years after the original discovery of the animal, Camper (in 1785) examined a specimen in the British Museum, the condition of which was so bad that he was unable to detect the lungs; whereupon he took up and promulgated an entirely new view, according to which, without reference to the existence of feet, he declared that the siren was a fish. Gmelin, of course, immediately classed it with the eels, and it thus became the *Muraena siren* of his edition of the *Systema Naturæ*! Whatever may be thought of Dr Garden’s skill as an anatomist, Camper’s conclusion was certainly somewhat precipitate, in the face of so great an authority as that of John Hunter.

In the year 1800, Baron Cuvier received a young siren from M. de Beauvois. The great French anatomist, whose splendid labours have thrown such a flood of light on so many obscure subjects of zoological science, was not likely to lose the opportunity of settling this still disputed point. In his first observations,⁶ and in an after and more ample memoir,⁷ he has, we think, successfully shown that both the proteus and siren are perfect, that is, completed animals, belonging to different genera of Batrachian reptiles, but quite distinct from either lizards or salamanders in any of their progressive stages. Yet the opposite opinion (so tenacious is error) does not continue without adherents. In an elaborate essay by two Italian authors, Sig. Configliachi and Rusconi, in which the siren is incidentally mentioned, these naturalists infer from analogy, that as the canal of the nostrils is not so perforated as to open into the interior of the mouth, so it must be incapable of respiring atmospheric air, and would speedily die if removed from its liquid element.⁸

Now, the value of the living siren observed by Dr Neill for six or seven successive seasons, consisted in this,—that it demonstrated *de facto*, what had been previously a matter of mere logical inference on the part of the anatomist. During the long period of its confinement no change whatever took place, either in its general aspect, or in the form or structure of the feet and gills. Had it been a larva, it would assuredly have lost these last-named organs during the time of observation. But the most curious result regarding this specimen was obtained accidentally, and happily illustrates the very point on which it was most desirable to obtain information. It is thus related by Dr Neill: “Although I certainly would not have made the experiment of the fragility of the siren, by throwing it on the ground, and although I would have hesitated to keep the animal out of the water for several hours, while I knew that respectable naturalists doubted if it would live more than a few minutes out of that element, yet it so happened that the creature on one occasion made of its own accord an experiment (if it may be so called) illustrative of both points. The water-box itself (in which the siren dwelt) was ten inches deep: it was placed on a plant trellis or shelf, close by the lower end of the sloping roof-sash of the green-house, and thus stood nearly three feet from the ground. At that pe-

Batrachia.
Genus
Siren.

¹ See *Phil. Trans.* lvi. 191 and 307.

² *Hist. Nat. des Quadrupèdes Ovipares*, 611.

³ *Nov. Comm. Petrop.* xix. 438.

⁴ *Historia Amphibiorum*, fascic. 1, 48.

⁵ *Recherches Anatomiques, &c.*, in Humboldt’s *Recueil d’Observations de Zoologie*, 98–117.

⁶ *Del Proteo Anguino di Laurenti Monographia*, Pavia, 1819.

⁷ *Tabula Affinitatum Animalium*, 256.

⁸ *Bulletin des Sciences*, an 8, p. 106.

Resina
||
Resistance
of Fluids.

Rosin is completely soluble in alkaline leys, and is consequently available in the manufacture of the commoner kinds of soap, and is for this purpose very extensively employed. It is also used for a variety of purposes in the arts and manufactures, and in the composition of various pharmaceutical preparations, such as plasters and ointments, but is employed internally only in horse medicines.

Many plants of the nat. ord. *Coniferae* yield turpentine and rosin abundantly; but so plentiful is the supply yielded by two species (*Pinus Tæda*, Lambert, and *P. palustris*, Lambert), which are amongst the commonest forest trees of the United States, that nearly all the turpentine used in this country is imported from America. The quantity received in the various ports of this kingdom in 1858 was 12,043 tons. It is imported in barrels, each containing about $2\frac{1}{2}$ cwt., and is in colour and consistency much like honey.

There are other resins besides that procured from turpentine: they are usually termed gums or gum-resins. The following are the best known and most useful:—

Copal—Which is supposed to be yielded by some species of the genus *Hymenæa*, large tropical trees of the nat. ord. *Leguminosæ*. There are two kinds in commerce,—the Indian, which is received from Bombay in irregular-shaped fragments of a straw colour, and transparent when in thin pieces; the other is from Sierra Leone and other parts of Western Africa. This kind is in much larger lumps, varying in size from a hen's egg to that of a man's fist, and is imported in very large quantities. It is less valuable than the Indian variety, being coarser and less translucent: both are used exclusively in the manufacture of varnishes. There is a Brazilian species, but it is not well known. *Mastic* is the produce of *Pistacia lentiscus* (Linn.) It is brought chiefly from Mogadore and other North African ports. Two kinds occur in commerce; the better sort is in small roundish tears of a yellowish colour, slightly translucent. It is picked from the mastic bushes. The other sort is in irregular masses which have fallen from the branches to the earth, and are consequently mixed with many impurities. Both are used in the manufacture of the fine varnish used for varnishing prints, maps, and drawings.

Several other resins are used in small quantities in medicines, but are not of much importance. The imports of gum-resins in 1858 were:—*Copal* (also called *gum animi*) 8900 cwt.; mastic, 1100 cwt.; olibanum, 120 cwt.; assafoetida, 1316 cwt.; guaiacum, 73 cwt.; benzoin, 104 cwt.; ammoniacum, 126 cwt.; euphorbium, 27 cwt. The less known ones were entered as gums unenumerated consequently their separate quantities are unknown. (T. C. A.)

RESINA, a town of the kingdom of Naples, in the province, on the shore of the bay, and 6 miles S.E. of Naples. It is built on the streams of lava and volcanic alluvium beneath which *Herculeum* lies buried 70 feet deep. Numerous villas and country seats of the aristocracy of Naples stand in the vicinity; the chief of them is La Favorita, belonging to the Duke of Salerno. Resina is the most convenient place from which to begin the ascent of Vesuvius. Pop. 11,000.

RESISTANCE OF FLUIDS. *Resistance*, or *Resisting Force*, denotes in general any power which acts in an opposite direction to another, so as to destroy or diminish its effect. (See MECHANICS, HYDRODYNAMICS, and PNEUMATICS.) Of all the resistances of bodies to each other, there is undoubtedly none of greater importance than the resistance or re-action of fluids. It is here that we must look for a theory of naval architecture; for the impulse of the air, which is our moving power, must be modified so as to produce every motion we want by the form and disposition of our sails; and the resistance of the water, which is the force to be overcome, must also be modified to our purpose, in order that the ship may not drive like a log to leeward, but, on the contrary, may ply to wind-

Resistance
of Fluids.

ward; that she may answer her helm briskly, and be easy in all her motions on the surface of the ocean. The impulse of wind and water makes these elements ready and indefatigable servants in a thousand shapes for driving our machines, and we should lose much of their service did we remain ignorant of the laws of their action; they would sometimes become terrible masters if we did not fall upon methods of eluding or softening their attacks. We cannot read the accounts of the naval exertions of Phœnicia, Carthage, and of Rome,—exertions which have hardly been surpassed by anything of modern date,—without believing that the ancients possessed much practical and experimental knowledge of this subject. It was not perhaps possessed by them in a strict and systematic form, as it is now taught by our mathematicians; but the master-builders, in their dockyards, did undoubtedly exercise their genius in marking those circumstances of form and dimension which were, *in fact*, accompanied with the desirable properties of a ship, and thus frame to themselves maxims of naval architecture in the same manner as we do now. The ancients had not made any great progress in the physico-mathematical sciences, which consist chiefly in the application of analysis to the phenomena of nature; and in this branch, in particular, they could make none, because they had not the means of investigation. A knowledge of the motions and actions of fluids is accessible only to those who are familiarly acquainted with the fluxionary mathematics; and without this key there is no admittance. Even when possessed of this guide, our progress has been very slow, hesitating, and devious; and we have not yet been able to establish any set of doctrines which are susceptible of an easy and confident application to the arts of life. If we have advanced farther than the ancients, it is because we have come after them, and have profited by their labours, and even by their mistakes.

Sir Isaac Newton was the first who attempted to make the motions and actions of fluids the subject of mathematical discussion. He had invented the method of fluxions long before he engaged in his physical researches, and he proceeded in these *sua mathesi facem præferente*. Yet even with this guide he was often obliged to grope his way, and to try various bye-paths, in the hope of obtaining a legitimate theory. Having exerted all his powers in establishing a theory of the lunar motions, he was obliged to rest contented with an approximation instead of a perfect solution of the problem which ascertains the motions of three bodies mutually acting on each other. This convinced him that it was in vain to expect an accurate investigation of the motions and actions of fluids, where millions of unseen particles combine their influence. He therefore endeavoured to find some particular case of the problem which would admit of an accurate determination, and at the same time furnish circumstances of analogy or resemblance sufficiently numerous for giving the limits of those other cases that did not admit of this accurate investigation. Newton figured to himself a hypothetical collection of matter possessing the characteristic property of fluidity, viz., the *quaquaversum* propagation of pressure, and the most perfect intermobility of parts, and forming a physical whole or aggregate, whose parts were connected by mechanical forces determined both in degree and in direction, so that the determination of certain important circumstances of the motion of the parts might be rendered susceptible of precise investigation. And he concluded that the laws which he should discover in these motions must have a great analogy with the laws of the motions of real fluids; and from this hypothesis he deduced a series of propositions which form the basis of almost all the theories of the impulse and resistance of fluids which have been offered to the public since his time. It must be acknowledged that the results of this theory agree but ill with experiment, and

Retford. that, in the way in which it has been prosecuted by subsequent mathematicians, it proceeds on principles or assumptions which are not only gratuitous, but even false. But with all its imperfections, it still furnishes (as was expected by its illustrious author) many propositions of immense practical use, they being the limits to which the real phenomena of the impulse and resistance of fluids really approximate; so that when the law by which the phenomena deviate from the theory is once determined by a well-chosen series of experiments, this hypothetical theory becomes almost as valuable as a true one. It continues to be the groundwork of all our practical knowledge of the subject.

We know by experience that force must be applied to a body in order that it may move through a fluid, such as air or water; and that a body projected with any velocity is gradually retarded in its motion, and generally brought to rest. Analogy leads us to imagine that there is a force acting in the opposite direction, or opposing the motion, and that this force resides in or is exerted by the fluid; and the phenomena resemble those which accompany the known resistance of active beings, such as animals; therefore we give to this supposed force the metaphorical name of *resistance*. We also know that a fluid in motion will hurry a solid body along with the stream, and that force is required to maintain it in its place. A similar analogy makes us suppose that the fluid exerts force, in the same manner as when an active being impels the body before him; therefore we call this the *Impulsion of a Fluid*. And as our knowledge of nature teaches us that the mutual actions of bodies are in every case equal and opposite, and that the observed change of motion is only the indication and measure of the changing force, the forces are the same, whether we call them impulsions or resistances, when the relative motions are the same, and therefore depend entirely on these relative motions. The force, therefore, which is necessary for keeping a body immovable in a stream of water flowing with a certain velocity, is the same with what is required for moving this body with this velocity through stagnant water. A body in motion appears to be resisted by a stagnant fluid, because it is a law of nature that force must be employed in order to put any body in motion. Now the body cannot move forward without putting the contiguous fluid in motion, and force must be employed for producing this motion. In like manner, a quiescent body is impelled by a stream of fluid, because the motion of the contiguous fluid is diminished by this solid obstacle; the resistance, therefore, or impulse, no way differs from the ordinary communications of motion among solid bodies. Experiments on this subject have been made by Sir Isaac Newton, D. Bernoulli, Du Buat, Sir Charles Knowles, Euler, D'Alembert, S'Gravesende, Coulomb, Hutton, and Vince. A detailed account of the theories of those authors will be found in the article *HYDRODYNAMICS*, ii., c. 3.

RETTFORD, EAST, a market-town, municipal and parliamentary borough of England, in Nottinghamshire, on the right bank of the Idle, here crossed by a bridge leading to West Retford, 33 miles N.N.E. of Nottingham, and 138 N.N.W. of London. It is well built and paved; and has a large, irregular market-place, with a pillar in the centre, occupying the site of a more ancient cross. West Retford is a smaller and more modern town; and South Retford is a name given to an enlargement of the town towards the south that has recently been made. The parish church of East Retford is a large edifice, of various dates and in various styles, surmounted by a lofty square tower; that of West Retford is smaller, but very elegant. In a suburb of the town called Moorgate stands a Gothic chapel of ease; and the other places of worship belong to Independents, Baptists, Wesleyans, and other dissenters. The town-hall is a handsome structure. A free grammar school, national and infant schools, a literary and scientific

institution, with a library, are founded for the instruction of the town; while an hospital, alms-houses, and various other establishments form the charitable institutions. Few manufactories of any kind exist here: the town is supported chiefly by retail trade with the surrounding country, the principal articles of commerce being coal, corn, hops, and dairy produce. Weekly markets and annual fairs are held here. The borough is governed by a mayor, three other aldermen, and twelve councillors; and returns two members to Parliament. Pop. (1851) of the municipal borough, 2943; of the parliamentary borough, 46,054.

RÉTHEL, a town of France, capital of an arrondissement in the department of Ardennes, on a steep slope on the right bank of the Aisne, 22 miles S.W. of Mézières. Its broad, straight streets are lined with houses generally ill built, and frequently only of wood. A large market-house, several churches, a theatre, and prisons, are the chief buildings of the town. The principal church is a remarkable building, formed by the union of two placed side by side; and it is decorated with bas-reliefs and other sculptures. Three ancient gates of the town still remain. Réthel has a college, agricultural society, chamber of manufactures, and court of law. It is a busy place, manufacturing leather, woollen cloth, and other articles, in which there is also an active trade. Pop. (1856), 7214.

RETICLE. See MICROMETER.

RETICULATION. Among the devices which man has invented for securing to himself the "dominion over the fish of the sea and over the fowl of the air," the net is conspicuous. Netting therefore becomes an art of some importance; and among the varieties of it, fishing-net making is the most important. Fishing-nets are simple but ingenious contrivances, admirably adapted to their use; for when wet they are easily dried, when torn easily mended. They offer little resistance when drawn out of the water, whereby the labour of hauling them is greatly diminished; the risk of their being overthrown or carried away by tides, currents, or storms is lessened; and the more shy fish are not so easily scared away as they otherwise would be by toils more densely wrought. The sand, the mud, the young fry and spawn, the small insects and other animals inhabiting the waters, find a free passage through the meshes, and thus much wanton destruction of animal life is prevented, whilst a larger abundance and a more regular supply of fish is obtained than by any other mode. Netting differs from weaving in this, that where the threads or cords cross each other they are tied into hard knots, so that each mesh is incapable of enlargement or diminution. The forms of nets vary according to the manner in which they are intended to act, and this is either by entangling the fish in their complicated folds, as in the *trammel*; receiving them into pockets, as in the *trawl*; suspending them by the body in the meshes, as in the *mackerel-net*; imprisoning them within their labyrinth-like *chambers*, as in the *stake-net*; or drawing them to shore, as in the *seine*. The parts of a net are the *head* or upper margin, along which the corks are strung upon a rope called the *head-rope*; the *foot* is the opposite or lower margin, which carries the *foot-rope*, on which in many cases leaden plummets are made fast. The *meshes* are the squares composing the net. The width of a net is expressed by the term *over*, as a *day-net* is three fathoms long and one *over* or wide. The *lever* is the first row of a net. There are also *accrués*, *false meshes*, or *quarterings*, which are loops inserted in any given row, by which the number of meshes is increased. To *bread* or *breathe* a net is to make a net. *Dead* netting is a piece without either *accrués* or *stole* (stolen) meshes, which last means that a mesh is taken away by netting into two meshes of the preceding row at once, thereby diminishing the net at any part. With respect to the tools used in netting, the *needle* is the instrument used for holding and netting the

Reticulation.

material to be netted; it is made with an *eye* E, a *tongue* T, and a *fork* F (fig. 1). The twine is wound on it by being passed alternately between the *fork* and round the *tongue*, so that the turns of the string lie parallel to the length of the *needle*, and are kept on by the *tongue* and *fork*. A short *needle*, about 4 inches long, should be set apart for *mending*. A *spool* or *mesh-pin* is a piece of wood on which the *loops* are formed, as in fig. 2; or it may be formed flat, as in fig. 3; the circumference of the *spool* determining the size of the *loops*. Each *loop* contains two sides of the square mesh; therefore, supposing that it be required to make a mesh 1 inch square,—that is, measuring 1 inch from knot to knot,—a *spool* 2 inches in circumference must be used. Large meshes may be formed by giving the twine two or more turns round the *spool*, as occasion may require, or the *spool* may be made flat, and of a sufficient width, having a portion cut away to admit the finger and thumb to grasp it conveniently (fig. 3). A pair of *round-pointed scissors*, so as to be carried conveniently in the pocket, and a *knife*, are likewise useful. To *return on your work* is when, in *breeding* a cylindrical net, you stop at any given point, turn your work and net back again, instead of going on round and round, as in forming the *regard* of the *hoop* net, which is a slit made in that engine, through which the fisherman introduces his hand to extract the fish caught therein, when he goes to *look* (*regarder*, French) what success he has had. *Taught*, tight; the twine is pulled *taught* when a knot is made. 2. The method of making the loop or stitch in netting can be taught, but it is not easy to describe it in writing. 3. The same may be said of *making accrues*. 4. The *bend-knot* is constantly required for uniting two ends of twine together, and it is made as shown in fig. 4, in which A and B are to be joined. 5. *The art of mending* is of great importance; for if the fisherman cannot mend an occasional rent, he will soon be obliged to have a new net. The amateur netter and game-keeper often neglects this part of the art of reticulation, and a bungling confusion of threads, drawn together anyhow, serving rather to increase the mischief, is substituted for a neat and efficient repair. In order to explain the method to be pursued, we will suppose that a net (fig. 5) has an injury in the middle of the space indicated

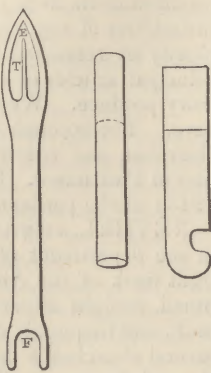


Fig. 1. Fig. 2. Fig. 3.

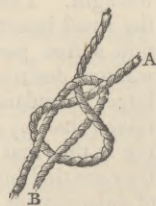


Fig. 4.

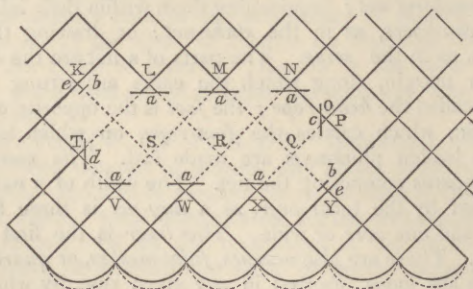


Fig. 5.

by the dotted lines. We must begin by *cutting* the net,—that is, the hole must be enlarged, not only by removing that portion which is actually torn, but by cutting into the sound parts. The parts to be cut away are marked by the transverse lines *b, a, a, a*; *c, b, a, a, a, d*, below the knots of the original net. It will be observed that, whereas at *a, a, a*,

c, a, a, a, d, two sides of the meshes are cut, *one* only is removed at *bb*. In performing this manœuvre, the workman must have the net hung before him in its proper position,—viz., in the order in which the rows were netted, as in fig. 5. This requires attention, because if either of the sides *c* or *d* were uppermost, the mischief would be increased when he came to cut away according to the above instructions. The next thing to be done is to unpick the knots of the old meshes, *a, a, a, a, a, a*; but the lateral knots *c, d* must not be unpicked, for that would destroy the adjoining sound meshes; for the same reason, only *one* side of the meshes *b b* is cut. We must suppose, then, that the meshes represented by the dotted lines are entirely removed; the next thing to be done is to replace them. It is evident that this cannot be properly accomplished unless the inserted meshes resemble as accurately as possible those that have been removed. A practised hand will effect this without a spool; but some skilful workmen think that it is less troublesome, and that the required regularity of the meshes is better insured if a spool be used suitable to the meshes of the old net. Having filled a *small* needle with twine, make fast the end above the knot at K (fig. 5), hold the spool and needle in the usual way, and take up the loops L, M, N, as in common netting; when at N, lay aside the spool, and make the side NO. This is done by means of the *bend-knot*, the angle P being the *bend* or loop of the knot. The second row is now to be netted in the same way as the first, and so on with the rest, the single side at the end of each row being managed as at NO, and leading down to the row beneath. We have supposed the workman to have begun and ended this first row, netting from left to right; to work back the second row, he has simply to get on the other side of his net, or to turn the latter over, as may be most convenient, and thus to net on as usual from left to right, changing at the end of each row either the position of his net or of his own person. We shall next suppose that the required number of rows save one is completed; we must insert a *junction* row between the row QRST, and that of the old net VWXY. This is done without a spool, by making the side TV fast at V with a *bend-knot* round the loop of the old net at V; then the side VS, with a *bend-knot* at S, round the loop of the new piece at S: then the sides SW, WR, RX, XQ, QY, in the same manner. Care must be taken that these sides be of the same length as the sides of the other meshes. At the beginning K and the end Y of your work, leave ends *e, e* to prevent the knot slipping. In fig. 5 three rows have been removed; and it will be seen that those loops which have only *one* side removed are diagonally opposite to each other; and thus it is when an *uneven* number of rows is to be cut away; but when an *even* number is removed, those loops of which only one side is cut are at opposite angles of the orifice, but on the same side of the square. 6. *Oblong and square netting*.—If it be required to have a net with meshes setting in squares with their sides accurately at right angles with each other, like the squares in a sash-window frame, the following method is to be pursued. Net one loop for the first row, draw the spool out and net two loops for the second row, the additional loop being obtained by taking up that one loop which formed the first row twice, or, as it is technically termed, *by setting in a false mesh*. The second row will thus consist of two loops. Remove the spool, begin the third row, which is to consist of three loops, the additional one being gained as before. Continue thus adding a loop at the *end* of each row until you have made your half square as large as you require, the two *selvages* on each side of the netting forming two sides of the square; then, before you begin to form the other two sides of the square, net one row of *dead* netting,—i.e., do not increase or diminish anywhere; but at the *end* of the following rows set in a *stole* mesh,—i.e., take up

Reticulation.

Reticulation.

the last two loops of the row together. The net will at last be reduced to one loop again, and will, when stretched out, form a complete square, and all the meshes will stand square with each other. But supposing you want the net to be longer than it is wide, and yet the meshes composing it to be square, as in the other, you are to proceed as follows:—Form half a square as before, the length of one side of which will determine the width of the oblong to be made. When this is done, you must set in a *false mesh* at the end of one row, and a *stole mesh* at the end of the other row. Continue thus adding and diminishing *alternately*, until your oblong is of the required length, and this is ascertained by measuring the long side of the netting from the corner to the last knot. Finish off by taking two loops up at once at the end of each row. In the *oblong* you need not net a row of plain loops before you begin to finish off, as was done in the *square net*. Oblong and square nets, when worked as now directed, will when finished appear in the shape of a lozenge, and so will all the meshes of which they are composed; but when stretched out with the sides at right angles, each to the other, the whole net will assume its proper shape. It adds to the finished appearance of the net if, on making the last loop of the net, the spool be withdrawn before the knot is *taught*, and then draw the twine up; the last loop is thus as it were *absorbed*, instead of remaining there to spoil the neatness of the work. The single loop, too, with which the net was begun may have its knot sufficiently loosened to enable the workman to tighten up the loop and make it *vanish*, as he did at the other end. A little practice will make this clear. Many net-makers consider it a great saving both of time and twine to make their *hay-nets*, and the like, after this manner; besides which, the *selvage* thus formed along each side of the net affords sufficient strength without any additional cord to border it. 7. *How to net a round or cylindrical net without having to join*.—Net any given number of loops, and when you come to the end of the row, instead of turning the net over to net a second, keep the spool in the last loop, and with the needle pick up the *first* loop of the row just finished, and net into it in the usual manner, and thus the row will be united. Continue to take up each loop on your right hand in succession, as in ordinary netting, and thus go on netting round and round until you have obtained the required length. The rows will resemble the turns of a spiral spring descending from the top to the bottom. 8. *How to make a bag-net from a square*.—Net a piece of *dead netting* containing any given number of loops in the row, observing always an *odd* number, as 3, 5, 7, 9, 11, according to the proposed size of the bag; net double the number of rows that there are loops in the row save one, as 5, 9, 13, 17, 21. This done, draw the foundation string,—viz., the string on which you netted the *lever*, and fix it in the middle of your square, then net round and round it. The corner loops must be carefully worked for the first few rounds to make them set even. It is always in the workman's power to increase the circumference of the bag as he proceeds from the bottom to the mouth, by setting in *false meshes*. In doing this, however, he must observe regularity, and take care to insert his *quarterings* at equal distances, else the net will be lop-sided and distorted. 9. *Of joining two nets together*.—Apply one net on the other, supposing each to contain the same number of meshes in the rows to be united, and that the meshes are of the same size; then, with a spool a full quarter less in size than that on which the nets were *breaded*, net one row along the margins to be joined, taking up two loops on the needle,—i.e., one mesh of each net together; or if the object be to join the first with the last row of the same net, the two rows must be accurately placed one upon the other, by folding the net over on itself; then proceed as before. Sea-nets, such as those for herrings and mackerel, which

Reticulation.

are made in *rands* or breadths, are joined rand to rand lengthways, or along the *selvages*. The former are composed of three breadths, each thirty-two yards long by fifty loops deep, on a spool three inches in circumference. At the close of each year the lowest rand, which goes deepest into the sea, is removed, and a new one joined on at the top of the net; so that the rand which was uppermost now becomes second, and that which was second is now the lowest. This latter is removed at the end of the next season, when the same rule is observed in replacing it, and so on every year; thus the whole of the original net is renewed every three years. This operation is called by net-makers giving the net a *new jacket*. Another mode of joining, and when performed carefully it is the neatest, is by uniting the two nets, or the two margins of one net, in the same way as the last row of the new piece is joined to the meshes of the old net in *mending*. The first-made side of the *inserted* or *joining work* must be twice as long as the rest, as also the last side of the suture; for they in fact are equivalent to *two* sides of a mesh.

The following description of specific nets will serve to furnish examples of the foregoing rules, and of the mode of *mounting* nets, which yet remains to be noticed:—*The casting-net* is netted round and round (see No. 7 in this article); the number of the loops for the *lever* vary, as well as their size, according as it is intended for *gudgeons*, &c., or *minnows*; in either case, it would be a great loss of labour if the whole net were made on one spool so small as it is necessary the lower part of the net should be. Spools, therefore, of different circumferences are used, diminishing gradually from the largest for the top, to the smallest for the *tuck*. The following will form a good-sized net for *gudgeons* and larger fish:—Fill the needle with double twine; net four rounds with a spool two inches and a half circumference on a *lever* of thirty-six loops; then use single twine, and in the fifth row set in twelve *false meshes*; net two rounds *dead netting*, and then set in *false meshes* in the same line with the others, having taken care to set in the *quarterings* of the fifth row to as to divide the circle into equal parts. Net two feet down on the first spool, then one foot down on each of seven other spools, each spool being an eighth of an inch less than the preceding one. Continue to set in *quarterings* in their proper places, and at the commencement of the *eighth* foot set in four additional *false meshes* equidistantly between the *original quarterings*, and continue putting in the *accrues* until you have netted a foot and a half more, having taken to your *eighth* spool at the beginning of the *ninth* foot; then net four rows *dead netting* in double twine; take your *ninth* spool, and net two feet six inches of *dead netting* for the *tuck*, the last two rounds in double twine. Have a stout line with leaden bullets threaded on it, and sew this line, with running stitches, through each mesh, along the lowest row of the net, the interval between each *lead* being two inches. This weighted margin is then turned upwards and inwards, and made fast to the *double twine-work* above the *tuck*, at about every foot of the circumference, by means of ratlines three inches long. The *lead-line* should be about a foot less in length than the row of the *tuck* to which it is sewn. The leads are made fast to the line by being tied at each end to prevent slipping and the holes should be bored as near the size of the line as possible. The *trammel* consists of three separate layers of nettings, and derives its name from its conformation (*trois mailles*, French), because it ensnares by *threefold meshes*. The three parts consist of two *out-wallings* and the *lint*; this latter is suspended loosely between the two former, it being made twice their length and twice their depth. The two *out-wallings* are of the same size. The length and depth of this net vary according to the service it is intended to perform, either in fishing or fowling; the same may be said of the

Reticulation.

size of the meshes; those of the *out-wallings*, however, are generally five times larger from knot to knot than those of the *lint*. All the parts should be netted *four square* (as *oblong* and *square* netting is sometimes called, see No. 6 in this article), the *lint* in twine as fine as may be consistent with the required strength, and the *out-wallings* with much stouter material in proportion. These, when finished, are to be *mounted*. Fix each of the four corners of one *out-wallings* to four pegs driven into the ground, which should be cleared of rubbish, &c. The *out-wallings* is to be stretched tight. Pass all round the *lint*, through each mesh, a stout line of twine as thick as that of which the *out-wallings* are made. This line, and likewise the *lint* at its four corners, is made fast to the four pegs; the former is drawn tight from peg to peg; but the latter, being longer and wider, hangs loosely. The meshes of the *lint* should be as equally distributed along the line as possible. Over the *lint* is applied the other *out-wallings*, the four corners of which are to be fastened to the four pegs. If the net is intended for fishing, a stout cord must be threaded with round flat corks two inches diameter, and half an inch thick, more or less. This cord is to be fixed along the *head* of the net by means of pieces of twine whipped two or three times round, and embracing the line of the *lint*, the margins of each *out-wallings*, and the cord itself. The twine is tied into a firm knot at those points where the cord meets the angles of the *out-wallings*' meshes. The floats are placed about six inches apart, and are pierced so as to embrace the *head-rope* firmly. This last is made fast down *each side* of the net, at the angles of the meshes of the *out-wallings*; but it has here no floats; it is extended along the bottom of the net, where it is called the *foot-rope*, and is weighted with small plates of lead rolled and beaten round it with a hammer, as a tag is fixed round a boot-lace, at about every three inches. The cord that thus surrounds the net must be bent into a loop at each end of the top of the net, for to these is to be made fast a *draw-rope* when the net is *shot*. Some net-makers also tie the three layers of net together at each angle of the meshes of the *out-wallings* throughout the area of the net, to give additional strength, and to prevent the *lint* getting *huddled* together at the bottom when suspended in the water or drawn along the ground. This net acts thus:—The fish or fowl passes through the large mesh of the *out-wallings*, strikes against the *lint*, which, hanging loosely, yields, and protrudes through the corresponding mesh of the other *out-wallings*, and thus forms a *cæcum*, into which the animal falls, and is entangled. The *hoop-net* consists of two parts; the *body*, and the *valve*, *funnel*, or *gullet*, which are united in the manner hereafter to be described. Begin with the *body* at its lower or pointed end, and work up to its entrance, thus: Net thirty-seven loops round on a spool four inches circumference, one row. Take a spool two inches circumference, and net twenty rows of *dead* netting. In the next row set in five *false meshes* equidistantly, then twenty rows of *dead* netting, then a row with five *false meshes*; repeat this manœuvre; then net thirty-six rows of *dead* netting, and the next row in *double* twine; thus you have an upper and a lower row, as shown in fig. 5, the dotted lines representing the lower row. Cut off the thread which has worked the *upper* row, leaving an end; empty your needle, and wind on it the thread that proceeds from the *lower* row, and work on with the single twine as follows, taking care, however, to pick up only the loops of the *lower* row as you go round. Net on the same spool fourteen rows of *dead* netting, then at equal distances in the circumference of the fifteenth row set in eight *stole* meshes, then net two rows of *dead* netting, in the next row eight *stole* meshes in a line with the others; repeat this action three times more. After you have for the fifth time set in your *stole* meshes, net a row of plain netting; lay aside the two-inch spool, and take

a twelve-inch and net one row. The *valve* is now finished, and must be reflected inwards to gain its right position. You now take your needle, charged with single twine, and join on to that end which was left at the upper row where the valve issued from the *body* of the engine; with the two-inch spool net eleven rows of *dead* netting. In the next row set in five *false meshes* at equal distances each from the other, and continue to set in these at every third row eleven times in the same line. This done, make seven rows of *dead* netting, then one row on a four-inch spool in *double* twine. Through this last row a pliant stick is passed, about six feet long, and bent into a *bow* (BBB, fig. 6); a

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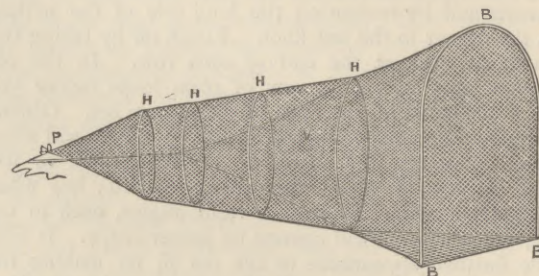


Fig. 6.

piece of cord keeps the extremities in place, answering to the string of the archer's bow; the lower meshes of the net's mouth are strung on this cord. A weight is generally attached to the *bow* at its extremities, somewhere towards BB. Four hoops are lashed round the net at HHHH, to prevent its collapsing; these are larger as they proceed from the point to the mouth, and are made of slighter wood than the bow, the smallest being about one foot three inches diameter, and the largest two feet.

Some *hoop-nets* have more than one *valve*. In that case the hoops must always be placed at the entrance of the *valves*, and many netters make a row of *double* twine at those parts, to give additional strength where there is most strain on the netting. The large loops at the bottom of the *funnel* are tied together in *fascies* of equal number of loops, to four lines, and these are made fast to another line which is threaded through the last row of meshes belonging to the point of the *body*, and which, being drawn tight, closes up the entrance at that part. All the lines are then tied to a support at P, and thus the net is kept extended. The principle of this engine is analogous to that of the common mouse-trap. When there is only one valve (as in fig. 6, V), the fisherman withdraws the fish by loosing the line that closes the body of the net at P; but when there are more valves than one, he makes a *regard* in the *body* between each hoop. A *regard* is thus made: Net round and round, and when arrived at the part wherein you wish to put a *regard*, *return on your work*; and when you again come to the place where you altered your mode of netting, *return* again; and thus continue until you have made the *regard* of sufficient length, then work round and round as before.

A *tunnel* for partridges is made like the hoop-net, but without valves.

The *trawl* is a very large and rapacious net, and much discussion has been held as to whether it should be permitted. It appears, however, that under proper restrictions it is not detrimental to the fisheries. This net is composed of two separate pieces, called the *upper* and the *lower leaf*; the meshes are about two inches square. For the *under leaf* or *blade*, net 160 loops in *double* twine, two rows; then with single twine net a plain row; in the next, set in a *stole* mesh at about the sixth mesh from the beginning, and another at about the sixth mesh from the end of the row; net three rows of *dead* netting, then set in *stole* meshes as before; repeat this once again, afterwards go on setting in

Reticulation.

Reticulation.

stole meshes less frequently,—i.e., leave five rows of dead netting between, until the width of the *blade* is reduced to thirty-six meshes, then net about five feet for the *hose* or *ail* H (fig. 7). The *wings* are now to be set on to this *leaf*. For this purpose, you must begin working at the other extremity, or top of the *leaf*, as at T or t; net fifty-six loops and stop; return on your work; net again to the end of your row (the third), and here, quite at the extremity, set in a *false mesh*; but when, in the course of netting row after row, you come to the *false meshes*, do not take them up, but let them hang, as is shown at B and B of the *wings* W and W. At the commencement of every row which alternates with those to which you add a *false mesh*, at about three loops from the beginning, set in a *stole mesh*: thus the *false meshes* will always be on one side, and the *stole meshes* on the other side of the *wing*, which will thus be diminished at last to eighteen meshes. When this is effected, net two rows in *double twine*, not adding or diminishing. Thus one *wing* is done; net the other in the same way, and take care that the one is exactly the same as the other. The *under leaf* being now finished, we pass on to the structure of the *upper blade* (fig. 8). Net 180 loops in *double twine*, two rows; then with single twine forty rows of *dead netting*; diminish evenly and gradually from 188 to 160 meshes, taking notice that this reduction must be made before you come to a level with the *double rows* whence the *wings* rose in the other *blade*. Diminish from 160 to 36, as you did when working down the *lower leaf*, making the *hose* as before. The *blades* being now finished, must be joined together down their sides, as the sides of a sack are; and a rope, acting as a binding along the seams, is sewn on, in the same way as the *head-rope* of the *trammel*. Round the top of the *upper blade* a rope is strung through the meshes, and carried round the *bosom* BBB (fig. 7), being sewn to, and not threaded through, the *hanging false loops* of the *wings* W, W. The two *blades* are then sewn together at certain parts to form *pockets*, in the direction of A, A, A, A, A, A; o, o, o, o, o, o, being the orifices of the pockets. At L, L loops of rope are bent, to which lines are hitched for hauling the net out of the sea into the boat. The two *blades* or *leaves* must be exactly of the same length; for, when joined, the top row of the *wings* must be even with the top row of the back of the net or *upper blade*, and the *hose* should meet no less accurately at the bottom. When the *trawl* is in the sea, a long beam of about thirty feet in length, and seven inches in circumference, is lashed to the top of the net, keeping the *wings* and back extended from point to point. This beam is let into irons, called *trawl-heads*, at each extremity, which

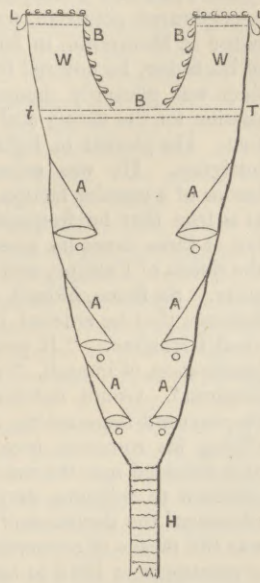


Fig. 7.

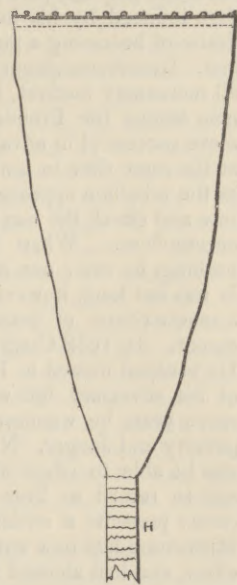


Fig. 8.

serve to sink it. A heavy rope, usually made of old netting, tightly twisted and bound round with strong twine, is lashed along the bosom of the net. Thus mounted, the engine is lowered into the sea, being *trawled* or *trawled* along the bottom by means of a rope attached to the boat's mast, and communicating with each end of the *beam* by a *bridle*. The *bosom* touches the ground, and the *upper blade* and *beam* floats over it; the *bosom's* rope disturbs the fish at the bottom; they are, however, stopped from escaping by striking against the *upper blade*, which extends over the *bosom*, so they swim down the *trawl* to the *hose*; but this is tied up, so they next attempt to return towards the mouth of the net; but in their way they fall into the pockets, which only open inwards towards the *hose*, and thus are secured. A *day-net* is used for catching larks from 14th September to 14th November; after that, until 25th February, the *trammel*. The reason of this is, that during the latter division of the season the weather usually is cloudy, and the *doring-glass* of the *day-net* cannot act. The structure of this net is very simple, and is represented in fig. 9. The thread

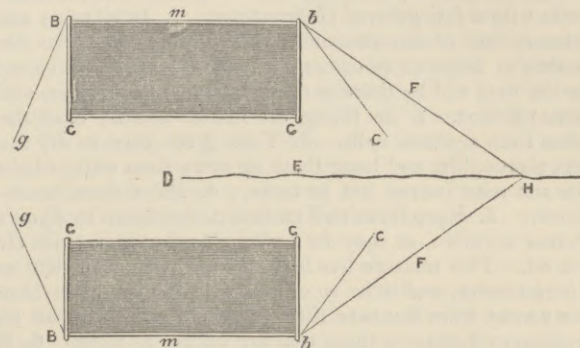


Fig. 9.

should be very fine, as also that used for the *trammels*; the meshes three-quarters of an inch from knot to knot; two pieces of *oblong* netting, measuring three fathoms by one, are extended to their full width, by being lashed to light staves of the required length, one at each end. These two leaves are to be laid on the ground exactly opposite each other, so accurately that when they are drawn over, the two margins *m, m* shall touch each other. Each leaf is to be staked down with pegs at the lower corners, at G, G, G, G. Lines *Bg* and *Bg* are to be stretched from the top of the stakes B, B, and fastened firmly to the ground by the pegs *g, g*. Other lines are to be stretched from the head of the stakes *b* and *b*, in the direction of *bC*, *bC*, and fixed to the ground by a peg C and C. Other lines F and F are to proceed from the head of each stake *b, b*, and are to be joined at H to the *main line*, which draws the leaves over; F, F should each be at least a fathom long. In the centre D is to be placed the *doring-glass*, whence proceeds a line E. The fowler retires to his ambuscade, and with his left hand he plays the *doring-glass* with the line E, and holds the *main line* H in his right; when the birds are seen playing around the glass, and within reach of the net, he pulls the leaves over with a quick jerk, and thus secures them. The *doring-glass* is thus made:—Take a piece of wood (AC, fig. 10) nine inches long and one and a half thick, cut out in the shape of an arch, and the edges at the top bevelled off so as to make it a six-sided figure. This bow is to be painted red, and covered with pieces of looking-glass along the sides and at each end; a wooden peg B, six inches long and three-fourths of an inch in circumference

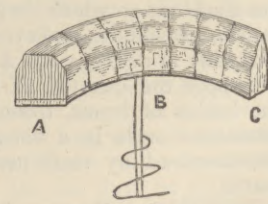


Fig. 10.

Retimo. a little pointed at the end, with a hole at I, through which the line E (fig. 9) is threaded, must be fixed to the under surface of the arch, at the centre. Take another piece of wood six inches thick and one foot long (fig. 11), sharpened at the end in order to fix it in the ground; cut out a mortise in it two inches high, and one inch and three-fourths deep; bore a hole at N and O, large enough to receive the peg B (fig. 10). This device is made to act by winding up the string round the peg several turns, and then pulling it; then letting it wind itself up again, and then jerking it again; thus making the glass revolve briskly, as children do their toy wind-mills.

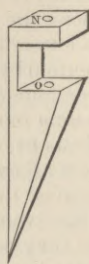


Fig. 11.

The various nets above described may be modified, altered, and combined, as occasion requires. It would be endless to enter into these minutiae, or to give a catalogue of the different nets used, with the technical name for each in different parts of the kingdom. We shall therefore conclude with a few *general observations*. 1. In all cases use twine as fine as circumstances will permit, and make the meshes as large as is consistent with the object in view; for the nets will be thereby more easily dried, lighter, and more efficient. 2. In filling the needle *double*, draw the twine from separate balls. 3. Take great care to dry the nets thoroughly, and hang them up away from walls, where rats and mice cannot get at them. 4. Mend them immediately. 5. Keep them well tanned, or immersed in *Kyan's Patent* as often as may be necessary; but never use tar and oil. This mixture has been proved to be inefficient as a preservative, and to be so offensive to the fish as to drive many away from the nets thus prepared, and to impart an unpleasant flavour to those that are caught in them. 6. If you wish to *dye* the nets green, russet, yellow, &c., for fowling or other purposes, send them to the nearest dyer or tanner, as the cheapest and best mode of treatment. Machines have at various times been invented for making nets. Jacquard, the inventor of the celebrated weaving apparatus which gives his name to the loom to which it is attached, was the first to construct a machine of this kind. He was prompted thereto by seeing an advertisement offering a reward for such a machine, and although he had not previously directed his attention to mechanical invention, he succeeded without much difficulty. Napoleon I., who was attentive to every display of talent likely to be turned to account in his contest with Great Britain, no sooner heard of the invention than he sent to Lyons and ordered Jacquard to be brought to Paris. This was done; and no sooner did the emperor see him than he exclaimed, as coarsely as profanely, "Are you the man that pretends to do what God Almighty cannot—tie a knot in a stretched string?" The net-making machine did not produce much fruit, but it served to develop the latent mechanical genius of the inventor. Other machines intended to effect a similar object have not met with much favour. Nor need we be surprised at this when it is considered that the demand for nets is for the most part met by those who use them, and fishermen and others have a good deal of leisure which cannot be better employed than in mending and making the machines on which they depend for subsistence. Gardeners, school-boys, and even females also amuse themselves profitably in netting; and a very easy exertion is sufficient to supply the quantity of net required. The meshes of the healds of looms, through which the warp passes, are sometimes made by a net-making machine. Lace-net is manufactured by machinery, as described in the article **LACE**.

(C.B.) (C.T.)

RETIMO, or **RETTIMO** (anc. *Rithymna*), a sea-port town of the island of Crete, on the N. coast, 38 miles W. of Candia. It has a citadel, a harbour (now so choked up as

to be very shallow), and a considerable trade in oil and soap. Pop. 6000.

RETZ, JEAN FRANÇOIS PAUL DE GONDI, *Cardinal de*, a celebrated politician, was born of a rich and powerful house at Montmirail in 1614. In accordance with the wish of his father, he entered the church; but his youthful conduct was glaringly inconsistent with his profession. A passion for the daring and the romantic was his ruling motive. He gloried in fighting duels and carrying on love-intrigues. He was especially ambitious to become the leader of a popular faction, and the declared foe of tyrants. It is true that he frequently settled down to his studies; but at those times his attention was chiefly engrossed with the deeds of Catiline, and other great conspirators of antiquity. So fierce, indeed, did his revolutionary enthusiasm become, that he entered into a plot for assassinating Cardinal Richelieu. "It would have been an act," said he, in justification of himself, "which ancient Rome would have admired." Gondi, however, soon saw occasion to lay aside his wayward impetuosity, and to adopt a new mode of gratifying his romantic love of effect. The fiery politician now subsided into the meek-eyed churchman. He became addicted to religious duties and religious company. He advocated the doctrines of the church, and on one occasion was the means of converting a Protestant gentleman. His appointment in 1643 to be coadjutor to his uncle the Archbishop of Paris only increased his ecclesiastical zeal. He began to be a great stickler for the forms and observances of the church. All the mere outward duties of his office were performed with astonishing thoroughness. He even plunged himself into debt, in order that he might practise Christian liberality to the utmost. It was not until the civil broils of the Fronde had broken out in 1648 that he ceased to play the part of a religious devotee. Gondi was then induced by his love of political excitement, and his desire of becoming a popular leader, to mingle in the contest. Dexterous, eloquent, generous-hearted, and free from all mercenary motives, he soon became the most influential man among the Frondeurs. There was no one who was more successful in advancing the interests of the party, and at the same time in providing for his own safety. As long as the rebellion appeared successful, he managed to moderate and check the wayward and discordant impulses of his accomplices. When it was clear that it would effect nothing, he came out of it, in 1651, with a cardinal's hat. It was not long, however, before De Retz was subjected to a severe course of punishment on account of his political career. In 1652 Cardinal Mazarin threw him into prison. He escaped indeed in 1654; but the persecuting influence of his adversary followed him wherever he went. For seven years he wandered about the Continent beset with poverty and danger. Not until Mazarin had died, in 1661, was he able to effect his reconciliation with Louis XIV., and to return to France. The remainder of De Retz's career presents a striking contrast with the former part. Misfortune had now stripped away all his romantic love of effect, and had allowed the other qualities of his fine disposition to come into play. No longer fond of public activity, he resigned the see of Paris, and devoted himself to the peaceful pursuits of private life. His first act was to sell his estates. With one part of the proceeds he paid his immense debts, and with the other part he assisted his friends and relieved the poor. He then sat down to write his *Mémoires*, and to recall and criticise with impartial spirit the noisy and eventful scenes of his bygone days. Thus did he live an honourable, benevolent, and eloquent old man, till death closed his career on the 24th of August 1679. The *Mémoires* of De Retz are characterized by Voltaire as "written with an air of grandeur, an impetuosity of genius, and an inequality which are the image of his conduct." The best edition is that in 4 vols. 8vo, Am-

Retz.

Reuchlin. sterdam, 1731. An English translation, by P. Davall, was published in 4 vols. 12mo, London, 1774.

REUCHLIN, or CAPNIO (a Greek equivalent), JOHANN, a scholar illustrious for his services in the revival of letters and liberation of thought in the fifteenth and following centuries, was born at Pforzheim 28th December 1455. It is stated, on the authority of an ancient chronicle, that his father George was a common messenger; at all events, he was of the humblest ranks of life. A younger brother, Dionysius, who afterwards rose to some distinction, and a sister, Elizabeth, completed the family. At school his sweetness of voice and natural talent for music were remarked, and he was placed in the choir of the chapel of the margrave, who, pleased with his talents, his progress in grammar, and the sweetness of his disposition, sent him to Paris in 1473 with his son Frederic, afterwards bishop of Utrecht. Here he perfected himself in Latin, and applied himself to Greek under Hermonymus of Sparta, the second teacher of Greek in Paris, Georgius Tiphemas having been the first. He also profited by the instructions of Johannes à Lapide, Tardivus, and Robert Gaguin, supporting himself partly by copying parts of Greek authors for richer students. At the end of 1474 he went to Basle, where, while teaching Latin and Greek, he improved his knowledge of the latter under Andronicus Contoblacas. Here also, or previously at Paris, he came under the influence of Wessel (*Lux Mundi*) who encouraged him in his Greek studies and initiated him in the elements of Hebrew. At Basle he had access to the valuable Greek manuscripts brought thither at the time of the council by the Cardinal de Ragusio. His simpler method of instruction, and the freer exercise of thought and speculation with which he familiarized his pupils in expounding the original text of Aristotle, attracted many, and also brought him much envy and enmity. Having remained at Basle four years, he went to Orleans to study the civil and canon law, and while there taught Latin and Greek with great reputation. He continued these studies in 1480 at Poitiers, and in 1481, having received there the highest degree in law, he returned to his native country, fixing his residence at Tübingen, a town recommended to him by the society of learned men connected with the new university founded by Eberhard *im Bart* ("the Bearded"), and by the well-known enlightenment of that prince. Here he practised as advocate with great prosperity, and married. Having been taken into Eberhard's confidence, he accompanied him to Rome in 1482, where the regard and esteem he conciliated by his learning, his purer Latin, and eloquence, confirmed him in Eberhard's favour, who till his death, 24th February 1496, continued to employ him in diplomatic business. More important for Reuchlin himself was his intercourse at Rome and Florence, during his two visits to Italy in 1482 and 1489 with Chalcondylas, Marsilius Ficinus, Politianus, and Pico di Mirandola, for from that intercourse his studies and speculations received an entirely new direction.

On his return to Germany in 1482 he remained at Stuttgart with Eberhard. In 1484 he was nominated assessor of the supreme court, and during the life of Eberhard was engaged in many missions which need not be enumerated here. Being employed at the court of the Emperor Frederick III., he so gained the esteem of that potentate as to be ennobled, and presented by him with a valuable Hebrew MS. of the Bible, now preserved in the library of Durlach. From the emperor's Jewish physician, Jakob Jehiel Loanz, he received further instruction in Hebrew. On the death of Eberhard a revolution took place in the court of Würtemberg. Eberhard the younger, who succeeded, dismissed his predecessor's counsellors, and a previous adviser of his own, Holzinger, who had been, at Reuchlin's suggestion, thrown into prison, was restored to favour. Reuchlin, who

had everything to fear, fled, first to Worms, and then, on the invitation of his warm friend Johann von Dalberg, Bishop of Worms, to Heidelberg. Here his life seems to have been one of pleasant labour in the most congenial society. He did much for the university: arranged and increased its library, wrote a *Manual of Civil Law* for the Bursa or law college, made various translations of Greek books, wrote an epitome of universal history, and procured the erection in 1498 of a Greek chair, to which his brother Dionysius was called from Tübingen. He also wrote a comedy entitled *Sergius*, aimed at Holzinger, and satirizing the dissolute lives of the monks, but was dissuaded by Dalberg from having it acted, and substituted another, *Scenica Progymnasmata*, an imitation of *Patelin*. Another visit to Rome in 1498, in the cause of Philip the elector-palatine, who had been excommunicated by the Pope for the detention of some monastic revenues, he turned to advantage by availing himself of the instructions in Hebrew of Obadiah Sphorno, a learned Jew, who exacted, however, a heavy price for his lessons. His meeting with Argyropulus, then teaching Greek at Rome, and astonishing him by expounding a passage of Thucydides, is well known. He returned, having succeeded in his mission, and brought with him many manuscripts and printed works. While in Rome a counter revolution had taken place in Würtemberg; Eberhard had been deposed, and a council appointed till the majority of Ulric. Reuchlin, therefore, returned to Stuttgart, resolved to devote himself entirely to learning. He was again, however, pressed into public business, being appointed (1501) judge of the Swabian League (renewed in 1500), an office he filled for eleven years. With the duties of this office, and the toils of his profession, he contrived to unite laborious study, the fruit of which appeared in 1506 in his great work *Linguae Hebraicae Rudimenta*, a work important for that time not only in a philological point of view, but as rendering possible that free study of the original Scriptures on which the religious emancipation that was shortly to follow could only have securely founded itself. Besides this work, he put forth many Latin translations of small Greek works; and by his extensive correspondence exerted great influence in directing the studies of earnest scholars. It is clear also, from an inspection of this correspondence, that, while by no means a profound or systematic thinker, or advocate of formulas, his sound discernment of the true end, and proper methods of education, contributed powerfully to its elevation in Germany, and its liberation from an oppressive pedantry. It may be remarked here also, that these letters are of the highest value for the literary history of a period which, in regard to the subsequent revolution, may be called the period of causes, and which has been too exclusively studied from fixed dogmatic stand-points. While to Luther, as chief, is due the positive Reformation, by proclaiming a return to Scripture and free thought as the basis of a purer Christianity, yet previous to Luther's outburst there had long been going on round Reuchlin, as a centre, a quiet movement of free intelligence which could not fail, in spite of its merely negative and unreligious character, to come at last into open collision with the dominant ignorance and superstition. Only an occasion was wanting; and this occurred in 1509. Johann Pfefferkorn, a converted (or rather apostate) Jew of Cologne, and protégé of the Dominicans there, who had already distinguished himself by writing against his former faith, procured, with the assistance of the monks, an order from the Emperor Maximilian that the Jews should give up to be burnt all their books hostile to Christianity. Finding the execution of this order very difficult, partly on account of the restriction stated, partly from the rarity of zeal like his own, he petitioned for a new mandate, removing the restriction, and ordering the destruction of all Jewish books but the Bible. The

Reuchlin. emperor named a commission to consider the question, of whom Reuchlin was one. He accordingly forwarded his *Opinion* to the Elector of Mentz in August 1510. In this able document, which, with the one presently to be mentioned, will be found in Von der Hardt's *Histor. Liter. Reformationis*, the reasoning is almost entirely based on the mischievous results to christian learning and zeal of the proposed destruction, but there are indications of a sound doctrine concerning liberty of conscience, and true perception of the real nature of religion, which cannot be propagated by violence, that must have appeared very strange to the monks of Cologne. The *Opinion* getting abroad by treachery, Pfefferkorn published a virulent personal reply, entitled *Handspiegel* ("Mirror"), to which Reuchlin returned an *Augenspiegel* ("Spectacles"). Frightened at the violent measures the Cologne were taking against this book and the author, he was yet unable to concede the essence of his position, and accordingly the *Klare Verstantnus in Teutsch*, which he published in 1512 by way of sedative, was as offensive as his two previous tracts. His enemies selected Judaizing propositions from it, and published them. Reuchlin replied in a *Defensio contra Calumniatores Colonenses*. In 1513, the emperor having imposed silence on both parties, the Dominicans called forth Hochstraten, a Dutch inquisitor, who took charge of the affair as a heresy. We need not follow his proceedings, remarkable only for irregularity and failure. On appeal to Rome in 1516, the Pope (Leo X.) appointed a commission, which by a majority decided in favour of Reuchlin; but Hochstraten, by means, it was said, of bribery, procured from the Pope a *mandatum de supersedendo* putting off a settlement of the business at his pleasure. In the meantime the literary warfare raged in Germany: a confederacy of Reuchlinists, the most active of whom were Ulrich von Hutten and Willibald Pirckheimer, was formed; and on the other side, Ortuinus Gratius, a Dominican and professor at Cologne, published, under Pfefferkorn's name, many libels against Reuchlin, while Hochstraten sought, among other modes of attack, to find heresy in Reuchlin's cabalistic writings. All these libels and epigrams have perished, but the *Epistolæ Obscurorum Virorum*, which astounded the combatants on both sides in 1516 (part second, 1517), remains an unsurpassed masterpiece of the cruellest and most truthful satire. The laughers, and they are the most of the world, were now all on one side, and the laugh could only be redoubled by the *Lamentationes Obscurorum Virorum*, which appeared in 1517 as an answer. To answer a laugh is, in any way, a hopeless thing, but to answer it by a lamentation is a desperate thing. In the war between Franz von Sickingen and Duke Ulrich of Württemberg, Reuchlin was obliged to leave Stuttgart, and retired, by the invitation of Duke William of Bavaria, to Ingoldstadt, November 1519. While there, his process was settled by the intervention of Sickingen, who sent an embassy to Cologne, threatening that, unless they paid Reuchlin his expenses, and made him compensation and apology, he would make war on the city. The conditions were, after some attempts at compromise, complied with. At Ingoldstadt he received a pension of 200 gold crowns annually from the duke; and lectured on Hebrew and Greek to a great concourse of students. He returned in 1521 to Stuttgart, on account of the plague appearing in Ingoldstadt, and was immediately invited by the university of Tübingen to teach there. He removed thither, and began his labours, but falling ill, returned to Stuttgart, where he died of jaundice, December 21, 1521. Erasmus, a cold and timid friend when Reuchlin was alive, wrote the dialogue entitled *Apotheosis Capnionis*, and introduced him into heaven.

Reuchlin was in his age regarded with singular admiration and affection by scholars of all countries; and Germany still regards him, as well she may, as the patriarch of her

erudition. Of his cabalistic philosophy a full account, and a rather one-sided one, will be found in the fourth volume of Brucker's *Histor. Crit. Philos.* He derived it partly from Mirandola, and partly from his study of the forged cabalistic books of the Jews. A full list of Reuchlin's works will be found in the supplement to Jöcher's *Lexikon*. His library has been mostly incorporated in that of Carlsruhe. A portrait of him exists in the university of Giessen. (W. H. C.)

REUS, a town of Spain, Catalonia, in the province and 9 miles W. of Tarragona, stands at the foot of a chain of hills in a fertile plain, about 4 miles from the sea. It is a bustling, flourishing town, forming a striking contrast to the decaying grandeur of its neighbour city Tarragona. One portion, however, is as old as 1151; the rest was built about six centuries later. This modern town is regularly laid out, with broad streets and squares; cold in winter, and exposed during the summer to the rays of a glaring sun, from which the more ancient town is sheltered by its narrow and crooked lanes. The houses are generally well built: many of the public squares are adorned with fountains; and the largest of them, which is the chief place of resort for the people, is surrounded with wide colonnades. The large Tuscan town-house, with its spacious halls enriched with paintings and statues, is one of the chief buildings; the plain Gothic parish church lifts high its hexagonal tower; the college and schools are accommodated in the splendid buildings of a former Franciscan convent; a Carmelite convent has likewise given place to the hospital, to which belongs the theatre of the town; and there is also an orphan asylum, and a large new prison. Silk, cotton, and linen are the chief produce of the industry of Reus; dyeing, bleaching, tanning, distilling, and other operations are also carried on. The prosperity of the citizens is attested by their many fine villas scattered round the town. The trade too is very considerable; the weekly markets determine the prices of various articles throughout Spain. There is a railway from this place to Tarragona; and a canal connecting Reus with the port of Salou, which is very exposed, and safe only in summer. By this port the produce of the country and of the manufactories in the town is exported abroad; while in return there is much importation of flour, timber, hides, live-stock, &c. During the peninsular war Reus tamely submitted to the French in 1808, and in consequence was much impoverished by their exactions under Macdonald. Pop. 28,034.

REUSS, the name of two principalities in Germany, among the smallest of the states of the German Confederation, but which form the remains of a country that was anciently much more extensive. The country, bounded by Bohemia, Bavaria, and Thuringia, seemed to the German kings to be from its position and natural character, so defended as not to require the protection of a margrave, but was to be governed by officers of the crown; and accordingly divided into five bailiwicks (*Vogteien*), viz.,—Weida, Plauen, Gera, Greiz, and Hof. Of these, Weida and Gera belonged in the twelfth century to Henry the Rich, a prince probably descended from the ancient families of Luxemburg, Schwartzburg, and Gleisberg, who afterwards obtained possession of the other three bailiwicks. His four sons, dividing the land among them, founded the lines of Plauen, Greiz, Weida, and Gera. The three last became extinct in 1236, 1532, and 1550 respectively; from the first are descended the present princes of Reuss, from Henry II., second son of Henry the Rich. The family did not at this time bear the name of Reuss, but this title was introduced in the next generation. The son of Henry II. left two sons, who were surnamed, from the nationality of their mothers, Henry the Bohemian and Henry the Russian (*Russe* or *Reusse*). From the Bohemian descended a line of lords (*Herren*) of Plauen, which became extinct in 1572; their possessions being lost in various

Reuss. ways to the surrounding states, till the last of them was sold in 1569 by the last of the family to the Elector of Saxony. But the other family, with the name of Reuss and a part of the original territory, was more durable. It was, and still is, a peculiarity in this family, that all its members, in honour, it is said, of the Emperor Henry IV., who first elevated the original Henry the Rich, bear the name of Henry, and were distinguished at first by surnames, or by the titles of Elder, Middle, and Younger; afterwards by numbers, with the necessary provision that after reaching C. in the elder branch, and at the end of each century in the younger, they begin again with I. The two lines at present existing are derived from two of the sons of Henry the Peaceful, who died in 1535. Both branches were raised in 1673 to the rank of counts of the empire and to that of princes,—the elder or Reuss-Greiz line in 1778, and the younger or Reuss-Schleiz in 1806. The younger line was subdivided in 1666 into the branches of Gera, Schleiz, and Lobenstein; the first became extinct in 1802, and its possessions were governed in common by the others, till in 1848 the last prince of Reuss-Lobenstein, Henry LXXII., abdicated in favour of the Prince of Reuss-Schleiz; so that there now exist only the two principalities. The country consists of two parts, separated from each other,—the more northerly bounded N. by Prussia, S. by part of Saxe Weimar, E. and W. by the two parts of Saxe Altenburg; the more southerly lying between Saxony and Bavaria on the S., and parts of Schwartzburg, Prussia, and Saxe Weimar on the N. The former and the western portion of the latter form the principality of Reuss-Schleiz, the remainder that of Reuss-Greiz. The area and population of the two countries are:—

	Sq. miles.	Pop. (1855.)
Reuss-Greiz.....	144	35,159
Reuss-Schleiz.....	447	80,203
Total.....	591	115,362

A considerable part of the principalities is mountainous, being occupied by branches of the Erzgebirge and Frankensteinwald. This part of the country is for the most part well wooded; but there are also valleys and small plains. The principal rivers that water the country are the Saale and its affluent the Elster, both flowing in general from S. to N. Though in some parts light and sandy, yet the greater part of the soil is fertile, and yields in both principalities the ordinary productions of Germany. The climate is temperate. Among the mineral riches of the land are to be numbered iron, salt, building-stone, slate, potters' and porcelain clay, and alum. Farming is largely carried on. Corn is produced in Reuss-Greiz below, and in Reuss-Schleiz above the demands of the inhabitants. In both there are also raised potatoes, pulse, flax, and hops. Of the former, the most important produce is timber, especially pines and firs; the latter derives much of its wealth from the rearing of cattle; and contained in 1849, 2074 horses, 29,677 horned cattle, 33,419 sheep, 5046 goats, and 14,963 pigs. The principal manufactures in both are those of woollen and cotton fabrics; the larger principality manufactures also tobacco, beer, brandy, pottery, and other articles. There are exported manufactured articles, iron, timber, butter, and cattle. In both principalities the government is in the hands of a prince, limited in each by a separate diet. The highest law tribunal is the upper court of appeal at Jena, beneath which there are courts at Greiz, Gera, and other places. The princes and the great majority of their subjects are of the Lutheran religion. Education is well provided for by numerous elementary schools, two Latin schools, a gymnasium, and three normal seminaries; the university of Jena is considered the national one. The military force of Reuss-Greiz is 609, that of Reuss-Schleiz 260; total, 869. The annual public revenue of the former amounts to about L.8400, of the latter L.38,000; the expenditure L.37,000.

REUTLINGEN, a town of Würtemberg, capital of the circle of Schwarzwald, at the foot of the Swabian Alp, on the Echatz, the water of which flows through the town, 6 miles E. of Tübingen, and 20 S. of Stuttgart. It is a stately old town, walled and moated, in an exquisitely beautiful position, with the long line of steep hills, the dark, dense pine forests, green meadows, and rich, waving fields of corn, all combining to enhance the picturesqueness of the scenery, a fine view of which is obtained from the lofty isolated hill Achalm, close at hand. The Protestant church of St Mary is considered the finest ecclesiastical building in Würtemberg; it is of elegant proportions, and contains some curious ancient ornaments. A large, handsome town-hall, and a Franciscan convent, now occupied by government offices, are among the other edifices of the town. There are here too several schools and a public library; manufactures of woollen cloth, cotton, leather, hats, &c.; and a considerable trade in these, as well as in the produce of the country. Reutlingen formerly belonged to the counts of Achalm, the ruins of whose castle, on the hill of that name, are still to be seen. Pop. (1855) 12,367.

REVEL, or **REVAL** (Esth. *Talline*, Russ. *Kolyvan*), a seaport of European Russia, capital of the government of Esthonia, on a bay of the same name, on the S. coast of the Gulf of Finland, 200 miles W.S.W. of St Petersburg. It consists of an upper and a lower town; the former, on a steep rocky eminence, contains the cathedral and castle, and is encircled with walls and towers. This is the best quarter, and in it are most of the houses of the nobility. In the lower town the streets are narrow and irregular, but many of the houses are well built of brick. Revel has also two suburbs. The cathedral is an edifice of an incongruous architectural character, with a lofty and elegant tower, and contains many interesting tombs. In the same part of the town stands the hall of the nobility, where the Diets of Esthonia used to assemble. The church of St Olai, recently rebuilt, after a conflagration in 1820, contains many relics, including the archives and library, of a much higher antiquity, the original having been built in 1329. It is the cathedral church of the lower town, and is in the early Gothic style, with beautiful lancet windows. St Nicholas is another large church, with a massive square tower, and contains many antique monuments and works of art. The oldest church in the town, however, is the Esthonian, which is mentioned as early as 1284. A modernized town-house, the admiralty, and several guild-halls for the various corporations, the chief being that of the Black Heads (*Schwarzen Haupter*), a once famous club of merchants for the defence of the city, are among the public buildings. For education there is a gymnasium, founded by Gustavus Adolphus, and various other schools; also public libraries, a theatre, hospital, &c. The imperial palace of Catherinenthal, founded by Peter the Great, and bequeathed by him to Revel, is a favourite resort of the townsfolk during the summer. The manufactures of the place include leather, cotton goods, hosiery, hats, earthenware, mirrors, &c. The trade, though still considerable, both by sea and land, has within the last twenty years greatly fallen off, being transferred to St Petersburg and Riga, or even to Pernau and Libau. Revel was once one of the most flourishing of the Hanse towns. It has large and excellent harbours for merchantmen and men-of-war, the latter occupied by a division of the Russian Baltic fleet. On the island Nargen, at the entrance of the harbour, stands a lighthouse. Revel was founded about 1218 by Valdemar II. of Denmark; and afterwards, along with Esthonia, it belonged to Sweden, Brandenburg, and the Teutonic knights, and to Peter the Great. Pop. (1855) 27,905.

REVEL, a town of France, department of Haute-Garonne, 29 miles E.S.E. of Toulouse, on a hill overlooking a beautiful and fertile country. It has manufactures of linen and cotton cloth, hosiery, hats, leather, tiles, &c. Pop. 5960.

Revelation, REVELATION, BOOK OF. The following topics in relation to this book demand examination:—1. The person by whom it was written. 2. Its canonical authority, genuineness, and authenticity. 3. The time and place at which it was written. 4. Its unity. 5. The class of writings to which it belongs. 6. The object for which it was originally written. 7. Its contents.

1. *The Person by whom it was Written.*—The author styles himself John, but not an apostle (i. 4, 9; xxii. 8). Hence some have attributed the book to another John, usually designated the presbyter. The chief argument for believing that there was another John besides the apostle exists in a passage from Papias of Hierapolis, preserved in Eusebius (*Hist. Eccles.* iii. 39). In this fragment several of the apostles, among whom is John, are mentioned; while immediately after, the presbyter John is specified along with Aristion. In addition to Papias, Dionysius of Alexandria (Euseb. *Hist. Eccles.* vii. 25), Eusebius himself (*Hist. Eccles.* iii. 39), and Jerome (*Catal. Scriptor. Ecclesiast.*), allude to the presbyter. We must therefore believe with Lücke, Bleek, Credner, Neander, Hitzig, and indeed all the ablest critics who have had occasion to speak of this point, that there were two Johns,—one the apostle, the other the presbyter. It has been much debated which of the two wrote the book before us. On the Continent the prevailing current of opinion, if not in favour of the presbyter, is at least against the apostle. In England the latter is still regarded as the writer, more perhaps by a kind of traditional belief than as the result of enlightened examination.

The arguments against assigning the authorship to the apostle John are the following:—The apocalyptic writer calls himself John, while the evangelist never does so. The language of the book is entirely different from that of the fourth Gospel and the three Epistles of John the apostle. It is characterized by strong Hebraisms and ruggednesses, by negligences of expression and grammatical inaccuracies; while it exhibits the absence of pure Greek words and of the apostle's favourite expressions. The style is besides unlike that which appears in the Gospel and Epistles. It is alleged likewise that the doctrinal aspect of the Apocalypse is different from that of the apostle's acknowledged writings. Such are the arguments advanced by De Wette. They are chiefly based on the investigations of Ewald and Lücke. It will be observed, however, that they are all *internal*, and do no more than prepare the way for proving that John the presbyter was the writer. Let us glance at the *external* evidence adduced for the same purpose.

In the third century Dionysius of Alexandria ascribed the book to John the presbyter, not to John the apostle (Euseb. *Hist. Eccles.* vii. 32). The testimony of this writer has been so often and so much insisted on that it is unnecessary to give it here. However, there is no *direct* evidence in favour of the opinion that John the presbyter wrote the Apocalypse. Many internal considerations have been adduced to show that *John the apostle was not* the author; but no *direct* argument has been advanced to prove that John the presbyter was the writer. Others think that a disciple of John undertook to write on a subject which he had received from the apostle; and Hitzig has lately written a treatise to prove that the writer is John Mark, the same from whom the second Gospel proceeded. His arguments are mainly based on parallelisms of language and construction (*Ueber Johannes Marcus und seine Schriften, oder welcher Johannes hat die Offenbarung verfasst?* Zurich, 8vo, 1843.)

Justin Martyr is the earliest writer who attributes it to John the apostle (*Dial. cum Tryph.*) Tertullian, Clement of Alexandria, and Origen ascribe it to the apostle. The internal evidence in favour of John the apostle, urged by De Wette, Lücke, Ewald, and Credner, at considerable length, bears mainly upon the language of the writing,

characterized as it is by strong Hebraisms, deficient as it also is in purely Greek idioms, and contrary as are some of the Gospel statements to those of the Epistles. Some have attempted to turn aside the force of those arguments by resorting to the hypothesis, that the book was originally written in Hebrew, and then translated into Greek. This, however, is contradicted by the most decisive internal evidence, and is in itself highly improbable. One circumstance to be taken into account is, that the nature of the gospel is widely different from that of the Apocalypse. The latter is a prophetic book—a poetical composition—while the former is a simple record in prose of the discourses of Jesus in the days of his flesh. It is apparent too, that John in the Apocalypse imitates the manner of Ezekiel and Daniel. The New Testament prophet conforms to the diction and symbolic features of the former seers. “If the question should be urged, why John chose these models? the obvious answer is, that he conformed to the taste of the times in which he lived. The numerous apocryphal works of an apocalyptic nature which were composed nearly at the same time with the Apocalypse, such as the book of Enoch, the ascension of Isaiah, the Testament of the twelve patriarchs, many of the sibylline oracles, the fourth book of Ezra, the Pastor of Hermas, and many others which are lost,—all testify to the taste and feelings of the times when, or near which, the Apocalypse was written. If this method of writing was more grateful to the time in which John lived, it is a good reason for his preferring it. (Stuart, in the *Bibliotheca Sacra*, pp. 353, 354.) In view of the whole question, we are disposed to abide by the ancient opinion, that John the apostle wrote the Apocalypse. Ecclesiastical tradition clearly favours this view; while the internal grounds so carefully drawn out and earnestly urged by recent German critics, do not appear sufficiently strong to overturn it. When such grounds are soberly examined, after being divested of all the extravagance with which they are associated; when the nature of the subjects discussed is seen to be such as the fourth Gospel does not present; an impartial critic will probably rest in the opinion, that both writings proceeded from the same author.

The entire question of authorship, so much debated in Germany, is more curious than profitable. The book may not have been written by an apostle, and yet be equal in authority to any acknowledged production of an apostle.

2. *Its Canonical Authority, Authenticity, and Genuineness.*—We shall first of all consider the external testimonies adverse to its canonicity.

The Alogi or Antimontanists in the second century, ascribed all John's writings, including the Apocalypse, to Cerinthus, as Epiphanius relates. It is obvious that no weight can be attached to these assertions. Caius of Rome, from opposition to Montanism, ventured to make the same statement, as we learn from Eusebius (*Hist. Eccles.* iii. 28). The 85th of the “Apostolic Canons,” which are supposed to belong to the fourth century, does not mention the Apocalypse among the apostolic writings. In the “Constitutions” also, which probably originated in Syria and the adjacent regions, there is no notice of the book. Chrysostom, Theodoret, Theodore of Mopsuestia, the theologians of Nisibis, Junilius, Cyril, Gregory of Nazianzen, Euthalius, all probably agreed in rejecting the Apocalypse. At the time of the Reformation the controversy respecting the Apocalypse was revived. Erasmus speaks suspiciously concerning it, while Luther expresses himself very vehemently against it. With Semler a new opposition to it began. That distinguished critic was unfavourable to its authenticity. He was followed by Oeder, Merkel, Michaëlis, Heinrichs, Bretschneider, Ewald, De Wette, Schott, Bleek, Lücke, Neander, Credner, E. Reuss, Hitzig, Tinius, &c. It should, however, be distinctly observed that most of these recent critics go no farther than to deny that John

Revelation, the apostle was the writer; which may certainly be done without impugning its indirectly apostolic authority. They do not exclude it from the canon as a divinely-inspired writing; although in attacking its direct apostolicity, some may imagine that they ruin its canonical credit.

We shall now allude to the evidence in favour of its canonicity. The earliest witness for it is Papias, as we learn from Andreas and Arethas of Cappadocia, in their preface to Commentaries on the Apocalypse. (Hävernicks *Lucubrationis Criticæ ad Apoc. spectantes*, Regiom. 1842, 8vo, No. 1, p. 4, sq.) Melito, Bishop of Sardis, one of the seven apocalyptic churches, wrote a work exclusively on this book. Jerome, in his catalogue of illustrious men, explicitly distinguishes two works, one respecting the devil, the other relative to the Apocalypse. Theophilus, Bishop of Antioch (Euseb. iv. 24), in his book against Hermogenes, drew many proofs and arguments from the Revelation; so also Apollonius of Ephesus, according to the same ecclesiastical historian (v. 18). The testimony of Irenæus is most important, because he was in early life acquainted with Polycarp, who was John's disciple, and because he resided in Asia Minor, where John himself abode during the latter part of his life. In one place he says, "It was seen no long time ago, but almost in our age, towards the end of Domitian's reign;" while he frequently quotes it elsewhere as the *Revelation of John, the disciple of the Lord*. To these may be added the testimony of the martyrs at Lyons, of Nepos (Euseb. vii. 23), Methodius of Tyre, Didymus of Alexandria, Cyprian, Lactantius, Augustine, Athanasius, Basil the Great, Epiphanius of Cyprus, Jerome, Ephrem the Syrian, Rufinus the presbyter, Isidore of Pelusium, Hilary of Poictou, Cyril of Alexandria, Arethas and Andreas of Cappadocia, the Synod of Hippo (A.D. 393, canon 36), the Synod of Toledo (A.D. 633), the third council of Carthage (A.D. 397), Victorin of Pettaw in Pannonia, Dionysius the Areopagite, Sulpicius Severus, Joh. Damascenus, Ecumenius, Amphilocheus, Novatus and his followers, the Manichees, the Donatists, the Arians, the latter Arnobius, Rhaban Maurus, Isidore of Spain, Commodian, and others. At the period of the Reformation Flacius strenuously upheld the authority of the Apocalypse, and since his day able defenders of it have not been wanting. Twells, C. F. Schmid, J. F. Reuss, Knittel, Storr, Lüderwald, Hartwig, Kleuker, Herder, Donker Curtius, Hänlein, Bertholdt, Eichhorn, Hug, Feilmoser, Kolthoff, Olshausen, J. P. Lange (Tholuck's *Lit. Anzeig.* 1838), Dannemann, Hävernicks (*Evangel. Kirchenzeit.* 1834, and *Lucub. Criticæ*), Guerike, Schnitzer (*Allgem. Literaturzeit.* 1841), Zeller (*Deutsche Jahrb.* 1841), and others. Thus the general tenor of the external evidence is clearly in favour of the canonical authority, while internal circumstances amply confirm it. The style, language, and manner of the book, cannot be mistaken. In dignity and sublimity it is equal to any of the New Testament writings, if not superior to them all. The variety and force of the images impress the mind of every reader with conceptions of a divine origin. Surely no uninspired man could have written in such a strain.

3. *The Time and Place at which it was Written.*—In ascertaining these points there is considerable difficulty. The prevalent opinion is, that the book was written A.D. 96 or 97, at Patmos or Ephesus, after Domitian's death, —i.e., under Nerva. So Mill, Le Clerc, Basnage, Lardner, Woodhouse, and others suppose. In view of all the circumstances of the case, which cannot here be fully entered into, we are inclined to believe that it was written at Patmos in the time of Nero, A.D. 67 or 68, a date fixed upon long ago by Sir Isaac Newton.

4. *Unity of the Book.*—A few writers have thought that the Apocalypse was written at different times by the same author, as Grotius, Hammond, and Bleek; or by different authors, as Vogel. Such dismemberment is now aban-

doned. Even De Wette allows that no reasonable doubts can be entertained of its unity.

5. *The Class of Writings to which it belongs.*—Pareus seems to have been the first who started the idea of its being a dramatic poem. The same opinion was also expressed by Hartwig. But the genius of Eichhorn wrought out the suggestion into a theory pervaded by great symmetry and beauty. Hence the opinion that it forms a regular dramatic poem is associated with his name alone. As this theory, however, is now abandoned by all expositors, it needs no refutation.

6. *The Object for which it was originally Written.*—The books of the New Testament, like those of the Old, were designed to promote the instruction of God's people in all ages. They were adapted to teach, exhort, and reprove all mankind. They do not belong to the class of ephemeral writings that have long since fulfilled the purpose for which they were originally composed. Their object was not merely a local or partial one. So of the Apocalypse. It is suited to all. "Blessed is he that readeth, and they that hear the words of this prophecy." But this general characteristic is perfectly consistent with the fact, that it arose out of specific circumstances, and was primarily meant to subserve a definite end. When first written, it was destined to suit the peculiar circumstances of the early Christians.

7. *Its Contents.*—The body of the work is contained in chaps. iv.—xxii. 6, and is almost entirely a series of symbolic representations. To this is prefixed a prologue (i.—iv.) A brief epilogue is subjoined (xxii. 6—21). After the prologue or introduction, which is peculiarly fitted to admonish and console amid suffering, we come to the body of the work itself, commencing with the fourth chapter. This may be appropriately divided into three parts,—(1.) iv.—xi.; (2.) xii.—xix.; (3.) xx.—xxii. 5.

By far the greater number of works on the Apocalypse are of no value, the authors having failed to perceive the primary purpose of the apostle. We shall only mention a few. The best book on the literature of the Apocalypse is that of Lücke, published in 1832. It is both copious and excellent. In addition to it may be mentioned the *Introduction* of Michaëlis, Haenlein, Eichhorn, Bertholdt, Hug, Feilmoser, De Wette, Credner, Schott, Guerike; and the *Introduction* of Samuel Davidson, London, 1848. Bleek's *Beiträge zur Kritik der Offenbarung Johannis* (in the *Zeitschrift* of Schleiermacher, De Wette, and Lücke, ii. 252 sq.); Kleuker, *Ueber Ursprung und Zweck der Offenbar. Johannis*; Steudel, *Ueber die richtige Auffassung der Apocalypse* (in Bengel's *N. Archiv.* iv. 2); the treatises of Kolthoff, Lange, and Dannemann, already referred to; Knittel's *Beiträge zur Kritik über Johannis Offenbarung*; Vogel's *Commentatio de Apoc. Johannis*, pt. i. vii.; Neander's *History of the Planting and Training of the Christian Church*; Olshausen's *Proof of the Genuineness of the Writings of the New Testament* (translated by Fosdick, Andover, 1838); Lardner's *Credibility of the Gospel History*, vols. i. and iii. 4to edition; Hävernicks, in the *Evangelische Kirchenzeitung*, and *Lucubrationes*, already quoted.

The principal commentaries on the Apocalypse are those of Pareus, Grotius, Vitringa, Eichhorn, Heinrichs, Scholz, Ewald, Tinius, Bossuet, Alcasar, Hentenius, Salmeron, Herrensneider, Hagen, and Hengstenberg's *Revelations of St John Expounded for those who Search the Scriptures*. Of English works, Lowman's *Commentary* has been highly esteemed, though his scheme is wrong. Mede's *Clavis*, and the *Commentary* attached to it, have had great influence on subsequent writers; Faber's *Sacred Calendar of Prophecy* is able and ingenious, but radically wrong; Sir Isaac Newton's *Observations on the Apocalypse*, and Bishop Newton's *Remarks*, are generally incorrect. Cunningham has written various treatises illustrative of the

Revelation,
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Review.

Apocalypse, but his lucubrations are dark and doubtful. Woodhouse's *Commentary* is pre-
vaded by commendable diligence and sobriety, though he has greatly deviated from the right mode of interpretation. We specially recommend Hammond and Lee (*Six Sermons on the Study of the Holy Scriptures*, London, 1830, 8vo). English apocalyptic literature has of late years greatly accumulated; and we can only mention the following:—*Horæ Apocalypticæ*, London, 1848; Moses Stuart, *A Commentary on the Apocalypse*, third edition, London, 1854, a voluminous and exhaustive treatise; Albert Barnes, *A Commentary on the Book of Revelation*, 1851, published both in America and London; Desprez, *The Apocalypse fulfilled in the Consummation of the Mosaic Economy, and the coming of the Son of Man, an Answer to the "Apocalyptic Sketches" and "The End,"* by Dr Cumming, second edition, London, 1855.

REVELATION. See THEOLOGY.

REVEREND, a title of respect given to ecclesiastics. In England, bishops are *right reverend*, and archbishops *most reverend*. In France, before the Revolution, the bishops, archbishops, and abbots were all alike *most reverend*. In Scotland, the clergy individually are *reverend*, a synod is *very reverend*, and the General Assembly is *venerable*.

REVERSION, in the law of England, has two significations; the one of which is, an estate left, which continues during a particular state in being; and the other is the returning of the land, after the particular estate is ended; and it is further said to be an interest in lands when the possession of it fails, or where the estate, which was for a time parted with, returns to the granters or their heirs. But according to the usual definition of a reversion, it is the residue of an estate left in the granter, after a particular estate granted away ceases, continuing in the granter of such an estate.

The difference between a remainder and a reversion consists in this, that the remainder may belong to any man except the granter; whereas the reversion returns to him who conveyed the lands.

REVERSION, in annuities. See ANNUITIES.

REVIEW, the name ordinarily employed by literary usage to designate that species of periodical publication containing a collection of critical essays. The first review, properly so called, was the *Journal des Savans*, commenced at Paris on the 30th May 1665. The most noted modern French journals of this class are the *Revue Française* and *Des Deux Mondes*. The French "revues" are conducted on a different plan from the English. With the former the form of a *review* is not preserved, tales, poetry, &c., being admitted indiscriminately; and the name of the contributor must be attached. The first publication of this kind in England was the *Monthly Review*, begun in 1749. However, it was reserved for the *Edinburgh Review*, commenced in 1802, and the *Quarterly*, in 1809, to inaugurate a new era in criticism. Since the beginning almost of the present century the review has been the favourite organ of all sects and parties for disseminating their peculiar views on religion, politics, or literature. For the most part, the leading reviews appear quarterly, although the tendency seems to be increasing of having monthly, or in some cases weekly reviews. A good specimen of the latter species of journal is to be had in the *Saturday Review* (1856). The prevailing period, however, of publishing the review is quarterly; and all the principal organs of that class published at the present day, viz., the *Edinburgh* (1802), *Quarterly* (1809), *North American* (1815), *Westminster* (1824), *Southern American* (1828), *Calcutta* (1843), *North British* (1844), *British Quarterly* (1844), *National* (1855), *Bentley's* (1859), and a number of others, are of this description. In England the management of a review is placed in the hands of an editor, the publisher being alone responsible in

Revolution
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Rewah.

all monetary affairs connected with the publication. The Revolution articles are for the most part anonymous; and the reviewer confines himself, although not very strictly, to the production of a review or general essay on some work or works, placed at the head of his article, which he either notices in detail, or which serve to indicate the general character of his subject. The pay of writers in reviews is various, depending on the means of the review, and likewise on the rules adopted by the editor. In Germany reviews have taken even a deeper root than in England; and the *Göttinger Gelehrte Anzeige* which is the oldest publication of the kind, still maintains a high character.

REVOLUTION of 1688. See BRITAIN.

REVOLVER. See GUN-MAKING.

REWA CAUNTA, a division of India, Guzerat, in the presidency of Bombay, lying between N. Lat. 21. 23. and 23. 33., E. Long. 73. 3. and 74. 18., and bounded on the N. by Myhee Caunta, E. by the small states of Banswarra, Dohud, Jabooah, Allee, and Akrauna, S. by the British collectorate of Candeish and the district of Wusravee, and W. by the collectorates of Kaira and Sura. It comprises the following states:—

Name.	Square Miles.	Popnlation.	Revenue.	Annual amount of Subsidy, Tribute, or other Payment.	Military Resources.
Barreeah.....	870	64,380	L. 5765	L. 1200	211
Loonawarra ...	500	37,000	4000	1920	150
Oodepoor	1059	78,366	7400	1050	438
Rajpeeppla.....	1650	122,100	20,397	6000	384
Soauth	425	31,450	2000	700	140
Mewasi chiefs..	375	27,750	...	6761	...
Total.....	4879	361,046	...	17,631	...

Barreeah is tributary to the British, whose protection it enjoys; Loonawarra is protected by the British, and tributary to Scindia and the Guicowar; Soauth is protected by the British, and tributary to Scindia; the others in like manner tributary to the Guicowar.

REWAH, or BAGHELKUND, an independent state of India, bounded on the N. by the British districts of Allahabad and Mirzapore, E. by the latter and the native state Korea, S. by the British districts of Sohagepoor and Saugor and Nerbudda, and W. by that of Saugor and Nerbudda and by Bundelcund, lying between N. Lat. 23. 20. and 25. 10., E. Long. 80. 40. and 82. 52; length, from E. to W., about 140 miles; breadth, 120; area, 9827 square miles. A considerable part of the country, its western and north-western portion, is occupied with hills, rising in three successive terraces from the level of the plain. The first of these averages from 500 to 530 feet high, the second from 900 to 1200 feet, and the third attains a still greater height. Sandstone, limestone, schist, and quartz are the principal geological constituents of the hills. Most of Rewah belongs to the valley of the Son, an affluent of the Ganges, which flows through the country in an irregular course generally towards the N. and E., receiving from the left the Mahanuddee, and various smaller streams from both sides. The north-western portion is very well cultivated, and produces large crops; wheat, barley, and peas being chiefly raised. Cattle and sheep are kept in large numbers. Much of the surface, however, is unfit for cultivation, and a great part is occupied by wood, which furnishes timber to the British districts in the valley of the Ganges. The inhabitants are Rajpoots, and of the Brahminical religion; they are governed by a rajah, who is bound by treaty, since 1813, to receive a permanent British agent. His revenue is estimated at L.200,000, and his military force exceeds 8000 men. Pop. 1,200,000.

Reynolds.

The capital is a town of the same name, on the Beher, an affluent of the Tons, which flows into the Ganges, 131 miles S.W. of Allahabad. The town is inclosed by two lofty and thick walls, flanked with towers, and the large ruinous palace of the rajah by a third of similar construction. It is a mean and poor-looking place, with a population of 7000.

REYNOLDS, SIR JOSHUA, a celebrated English painter, was born at Plympton, a small town in Devonshire, on the 16th July 1723. His father was minister of the parish, and also master of the grammar school; and being a man of learning and philanthropy, he was beloved and respected by all to whom he was known. Such a man, it will naturally be supposed, was assiduous in the cultivation of the minds of his children, amongst whom his son Joshua shone conspicuous, by displaying at a very early period a superiority of genius and the rudiments of a correct taste. At an early age he grew passionately fond of painting, and, by the perusal of Richardson's theory of that art, was determined to make it his profession through life. At his own earnest request, therefore, he was removed to London; and about the year 1742 became a pupil to Hudson, a Devonshire man, who was the most eminent painter of his day, although very little real ability was implied in that distinction, and was preceptor to several who afterwards excelled in the art. One of the first advices which he gave to Reynolds was to copy carefully Guercino's drawings. This was done with such skill that many of the copies are said to be now preserved in the cabinets of the curious as the originals of that very great master.

About the year 1749 Reynolds went to Italy under the auspices and in the company of Lord (then Commodore) Keppel, who was appointed to the command of the British squadron in the Mediterranean. In this garden of the world, this magical seat of the arts, he failed not to visit the schools of the great masters, to study the productions of different ages, and to contemplate with unwearied attention the various beauties which are characteristic of each. His labour here, as has been observed of another painter, was "the labour of love, not the task of the hireling;" and how much he profited by it is known to all Europe.

Having remained about two years in Italy, and studied the language as well as the arts of the country with great success, he returned to England, improved by travel and refined by education. On the road to London from the port where he landed, he accidentally found in the inn where he lodged Johnson's *Life of Savage*; and was so taken with the charms of composition and the masterly delineation of character displayed in that performance, that, having begun to read it whilst leaning with his arm on the chimney-piece, he continued in that attitude, insensible of pain, till he was hardly able to raise his hand to his head. The admiration of the work naturally led him to seek the acquaintance of its author, who continued one of his most sincere admirers and warmest friends till 1784, when they were separated by death.

The first thing that distinguished him after his return

to his native country was a full-length portrait of Commodore Keppel, which in the polite circles was spoken of in terms of the highest encomium, and testified to what a degree of eminence he had arrived in his profession. This was followed by a portrait of Lord Edgumbe and a few others, which at once introduced him to the first business in portrait-painting; and that branch of the art he cultivated with such success as will for ever establish his fame with all descriptions of refined society. Having painted some of the first-rate beauties of the age, the polite world flocked to see the graces and the charms of his pencil; and he soon became the most fashionable painter, not only in England, but in all Europe. He has indeed preserved the resemblance of so many illustrious characters that we feel the less regret for his having left behind him so few historical paintings; though what he has done in that way shows him to have been qualified to excel in both departments.¹ The only landscape, perhaps, which he ever painted, except those beautiful and chaste ones which compose the backgrounds of many of his portraits, is a "View on the Thames from Richmond," which in 1784 was exhibited by the Society for Promoting Painting and Design in Liverpool.

In 1764 Reynolds had the merit of being the first promoter of that club which, having long existed without a name, became at last distinguished by the appellation of the *Literary Club*. Upon the foundation of the Royal Academy of Painting, Sculpture, and Architecture, he was appointed president; and his acknowledged excellence in his profession made the appointment acceptable to all the lovers of art. To add to the dignity of this new institution, his Majesty conferred on the president the honour of knighthood; and Sir Joshua delivered his first discourse at the opening of the academy in the beginning of the month of January 1769. The merit of that discourse has been universally admitted among painters; and it contains some directions respecting the proper mode of prosecuting their studies, to which every student of every art would do well to pay attention. "I would chiefly recommend," says he, "that an implicit obedience to the rules of art, as established by the practice of the great masters, should be exacted from the young students. That those models which have passed through the approbation of ages should be considered by them as perfect and infallible guides; as subjects for their imitation, not their criticism. I am confident that this is the only efficacious method of making a progress in the arts; and that he who sets out with doubting will find life finished before he becomes master of the rudiments. For it may be laid down as a maxim, that he who begins by presuming on his own sense has ended his studies as soon as he has commenced them. Every opportunity, therefore, should be taken to discountenance that false and vulgar opinion, that rules are the fetters of genius. They are fetters only to men of no genius; as that armour which upon the strong becomes an ornament and a defence, upon the weak and misshapen turns into a load, and cripples the body which it was made to protect."

Reynolds.

¹ As the lovers of painting may wish to have a catalogue of this great master's historical pieces, we subjoin the following:—Hope nursing Love; Venus chastising Cupid for having learned to cast accounts; Count Ugolino in the Dungeon; the Calling of Samuel; Ariadne; a Captain of Banditti; a Beggar Boy; a Lady in the character of St Agnes; Thais; Dionysius the Areopagite; an infant Jupiter; Master Crewe in the character of Henry VIII.; the Death of Dido; a Child asleep; Cupid sleeping; Covent Garden Cupid; Cupid in the Clouds; Cupids painting; a Boy laughing; Master Herbert in the character of Bacchus; Hebe; Miss Meyer in the character of Hebe; Madonna, a head; the Blackguard Mercury; a little Boy (Samuel) praying; an old Man reading; Love loosing the zone of Beauty; the Children in the Wood; Cleopatra dissolving the Pearl; Garrick in the character of Kitely; Garrick between Tragedy and Comedy; Mrs Abingdon in the character of Comedy; a Child surrounded by Guardian Angels; Miss Beauclerc in the character of Spenser's Una; Resignation; the Duchess of Manchester in the character of Diana; Lady Blake in the character of Juno; Mrs Sheridan in the character of St Cecilia; Edwin, from Beattie's *Minstrel*; the Nativity, Four Cardinal Virtues, and Faith, Hope, and Charity, for the window of New College Chapel, Oxford; the Studious Boy; a Bacchante; a daughter of Lord W. Gordon as an Angel; the Holy Family; the Cottagers, from Thomson; the Vestal; the Careful Shepherdess; a Gipsy telling Fortunes; the infant Hercules strangling the Serpent; the Mouse-trap Girl; Venus; Cornelia and her Children; the Bird; Melancholy; Mrs Siddons in Tragedy; Head of Lear; Mrs Talmash in the character of Miranda, with Prospero and Caliban; Robin Goodfellow Death of Cardinal Beaufort; Macbeth, with the Cauldron of the Witches.

Adv. Phil.

Reynolds.

Each succeeding year, on the distribution of the prizes, Sir Joshua delivered to the students a discourse of equal merit with this; and perhaps we do not hazard too much when we say that, from the whole collected, the lover of belles lettres and the fine arts will acquire juster notions of what is meant by taste in general, and better rules for acquiring a correct taste, than from multitudes of those volumes which have been professedly written on the subject.

In the autumn of 1785 he went to Brussels, where he expended about L.1000 on the purchase of paintings, which, having been taken from the different monasteries and religious houses in Flanders and Germany, were then exposed to sale by the command of the Emperor Joseph. Gainsborough and he had engaged to paint each other's portraits; and the canvas for both being actually stretched, Sir Joshua gave one sitting to his distinguished rival; but, to the regret of every admirer of the art, the unexpected death of the latter prevented all further progress.

In 1790 he was anxiously desirous to procure the vacant professorship of perspective in the academy for Bononi, an Italian architect; but that artist not having been yet elected an associate, was of course no academician, and it became necessary to raise him to these situations in order to qualify him for being a professor. Gilpin being his competitor for the associateship, the numbers on the ballot proved equal, when the president by his casting-vote decided the election in favour of his friend, who was thereby advanced so far towards the professorship. Soon after this, an academic seat being vacant, Sir Joshua exerted all his influence to obtain it for Bononi; but finding himself outvoted by a majority of two to one, he quitted the chair with great dissatisfaction, and next day sent to the secretary of the academy a formal resignation of the office, which for twenty-one years he had filled with honour to himself and his country. His indignation, however, subsiding, he suffered himself to be prevailed upon to return to the chair, which within a year and a half he was again desirous to quit for a better reason.

Finding a disease of languor, occasioned by an enlargement of the liver, to which he had for some time been subject, increase upon him, and daily expecting the total loss of sight, he wrote a letter to the academy, intimating his intention to resign the office of president on account of bodily infirmities, which disabled him from executing the duties of it to his own satisfaction. The academicians received this intelligence with the respectful concern due to the talents and virtues of their president; and either then did enter, or designed to enter, into a resolution, honourable to all parties, namely, that a deputation from the whole body of the academy should wait upon him, and inform him of their wish that the authority and privileges of the office of president might be his during his life; declaring their willingness to permit the performance of any of its duties which might be irksome to him by a deputy.

From this period Sir Joshua never painted more. The last effort of his pencil was the portrait of Charles James Fox, which was executed in his best style, and shows that his fancy, his imagination, and his other great powers in the art which he professed, remained unabated to the end of his life. When the last touches were given to this picture,

"The hand of Reynolds fell, to rise no more."

On Thursday the 23d February 1792 the world was deprived of this amiable man and excellent artist, at the age of sixty-eight years; a man than whom no one, according to Johnson, had passed through life with more observation of men and manners. The following character of him is said to be the production of Mr Burke:—

"Sir Joshua Reynolds was, on very many accounts, one of the most memorable men of his time; he was the first Englishman who added the praise of the elegant arts to the

other glories of his country. In taste, in grace, in facility, in happy invention, and in the richness and harmony of colouring, he was equal to the great masters of the renowned ages. In portrait he went beyond them; for he communicated to that description of the art in which English artists are the most engaged, a variety, a fancy, and a dignity, derived from the higher branches, which even those who professed them in a superior manner did not always preserve when they delineated individual nature. His portraits remind the spectator of the invention of history and the amenity of landscape. In painting portraits he appears not to be raised upon that platform, but to descend to it from a higher sphere. His paintings illustrate his lessons, and his lessons seem to be derived from his paintings. He possessed the theory as perfectly as the practice of his art. To be such a painter, he was a profound and penetrating philosopher. In full happiness of foreign and domestic fame, admired by the expert in art and by the learned in science, courted by the great, caressed by sovereign powers, and celebrated by distinguished poets, his native humility, modesty, and candour never forsook him, even on surprise or provocation; nor was the least degree of arrogance or assumption visible to the scrutinizing eye in any part of his conduct or discourse. His talents of every kind, powerful from nature, and not meanly cultivated in letters, his social virtues in all the relations and all the habitudes of life, rendered him the centre of a very great and unparalleled variety of agreeable societies, which will be dissipated by his death. He had too much merit not to excite some jealousy, too much innocence to provoke any enmity. The loss of no man of his time can be felt with more sincere, general, and unmixed sorrow." (See ARTS, *Fine*, and PAINTING.)

Memoirs of Sir Joshua Reynolds have been written by James Northcote and by Beechey, and very recently by William Cotton. Cotton has likewise published catalogues illustrative of Sir Joshua's art (1859).

RHABDOLOGY. (See NAPIER, *John*.)

RHADAMANTHUS (Ῥαδάμανθος), a son of Zeus and Europa according to Homer (*Il.* xiv., 322), and according to others a son of Hephæstus (Paus. viii. 53 § 2). Having fled from his brother to Bœotia, he there married Alceme, and led a life of such signal integrity and justice that at his death he was appointed one of the three judges of the infernal regions, and had his abode in Elysium.

RHÆTIA, a country of ancient Europe, was bounded on the N. by Vindelicæ, on the E. by Noricum, on the S. by Italy, and on the W. by the district of the Helvetii. It was a most romantic territory. The Alpes Rhæticiæ, and Mons Adula traversed it in all directions. Between the offshoots of these hills lay many a well-watered pastoral valley. The pastures were covered with flocks; and at intervals there appeared those vineyards out of which the favourite wine of Augustus was produced. The Rhætians, when they were invaded by the Romans, shortly before the Christian era, were chiefly composed of fierce Celtic freebooters. They struggled savagely with the legions for their mountain homes. The very women shot arrows; and when their missiles failed, threw their children in the face of their foes. Yet the Rhætians lost every vestige of independence. Their armies were completely routed in 15 B.C. by Drusus and Tiberius. Their language not long afterwards was displaced by the Latin. Their country continued to be a Roman province, at one time by itself, at another time in conjunction with Vindelicæ (to which it then extended its name). Nor after the fall of the empire did they recover their liberty. The Ostrogoths kept them in subjection until the Boioarii finally settled down in their country. The chief town in Rhætia was Tridentum (*Trent*).

Rhabdology
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Rhætia.

RHAMNUS, an ancient town of Greece, was situated on the eastern coast of Attica, about 60 stadia N. from Marathon, and received its name from the shrub *rhamnus*, which grew in its neighbourhood. The fame of the city was chiefly derived from its temple of Nemesis. That edifice, according to the commonly received opinion, was built shortly after the victory of Marathon, and was adorned by Phidias with a colossal image of the patron goddess. The fragments of its columns and great statue are still seen beyond the wall of the ruined city, on the same platform, with the remains of another and smaller temple.

RHAPSODIST (*ῥαψωδός*, from *ῥάπτω*, *I string together*, and *ὥδή*, *a song*), is strictly one who strings songs together, and is usually applied to a class of persons who earned their living by reciting the poems of Homer. These poems came accordingly to be divided into certain lengths called *rhapsodies*,—that is, lays, fyttes, or cantos. (Liddell and Scott's *Lexicon*.) In modern usage, the rhapsodist is one who composes rhapsodies, or collections of thoughts into a new whole, without any natural connection or necessary dependence.

RHAZES, or **RAZES**, the Latinized name of Mohammed Ibn-Zakaria Abu-Beker Al-Razi, a most distinguished Arabian physician, who was born at Rai, in the province of Khorassan, about 852. His professional studies were not begun in early life. At the age of thirty he was only known as a dexterous performer on the guitar. It was not until he was beyond forty that he vigorously applied himself to the study of medicine at Bagdad. Rhazes then took a high place in his profession. The directorship of the famous hospital of Bagdad was conferred upon him. Neighbouring princes frequently applied for his advice. In particular, Almansour of Khorassan (in honour of whom he called one of his books *Ketab Almansouri*), liberally patronized him. His fame increased until he was reckoned the most learned physician of his day. He had mastered philosophy, alchemy, and astronomy. He had travelled far in quest of knowledge. He had also written above 200 treatises on professional subjects. A characteristic anecdote is told regarding the close of the life of Rhazes. Happening from some cause not sufficiently ascertained to be struck with blindness, he called in a surgeon to operate upon his eyes. The operation was just about to be made, when he asked the surgeon how many optic membranes there were. The surgeon could not answer. Upon this he would not allow him to touch his eyes, and remained blind till his death in 932. The following is a list of those works of Rhazes which have been translated into Latin:—*Liber de Secretis qui Aphorismorum appellatur*, Bologna, 1489; *Havi seu Continens*, in 2 vols. folio, Venice, 1509; *Libri Decem ad Almansorem*, folio, Venice, 1510; and *De Variolis et Morbillis, Arabice et Latine; cura et impensis Johannis Channing*, in 8vo, London, 1766. An English translation of this last work, made directly from the original Arabic, was published by Dr Greenhill, 8vo, London, 1847.

RHEGIUM (the modern *Reggio*), an ancient Greek city in Italy, was situated on the Sicilian straits, at the end of the Brutian peninsula. The town seems to have been in existence before the historical period, but its importance did not begin till the eighth century B.C. A colony from Chalcis, along with some exiles from Messenia, then settled in it, and commenced to form themselves gradually into a regular corporation. The government was placed in the hands of a council consisting of 1000 Messenians. The laws of Charondas of Catana were afterwards adopted as a constitution. In course of time the state was so consolidated as to be able to extend its sovereignty over the small towns in the neighbourhood. The prosperity of Rhegium, however, received a still greater stimulus after Anaxilas had established a tyranny in 494 B.C. Its foreign policy

became more decidedly aggressive. Zancle, on the opposite side of the strait was subdued, and under the name of Messana, was made a colony of the Messenians. The promontory of Scyllæum was fortified and turned into a naval station. The command of the straits was thus effectually maintained against the Tyrrhenian pirates. At the same time, the state enjoyed great internal order. The tyrant Anaxilas and the regent Micythus ruled in succession with great justice and moderation. It was not until the accession of the two sons of Anaxilas that the people became turbulent, and, rising in rebellion, overthrew the monarchy in 461 B.C. In 399 B.C. a long course of severe disaster began to befall Rhegium. Dionysius the Syracusan tyrant, enraged at its opposition to his schemes of conquest, doomed it to destruction. Every attempt to avert his vengeance, both by force and negotiation, was ultimately unsuccessful. In 387 B.C. he starved it into capitulation, massacred or sold the inhabitants, and levelled the houses with the dust. It is true that the city was shortly afterwards rebuilt, and regained, in course of time, a great part of its prosperity; but it was only to meet with another calamity. In 280 B.C., alarmed at the successes of Pyrrhus, King of Epirus, the citizens applied to the Romans for assistance. The request was granted, and 4000 Campanians were sent to garrison the town. These ruthless soldiers had not been long there before they rose against the inhabitants. They slew all the men, fortified themselves within the town, and were not reduced till ten years afterwards. During the subsequent period of ancient history, Rhegium, though still retaining its importance, continued subject to foreign dominion. As long as Rome was supreme in Italy, it acknowledged the sway of that city. After the dismemberment of the empire it passed through the hands of various conquerors, until it was taken and made a part of the kingdom of the Two Sicilies by Robert Guiscard in 1060. (See **REGGIO**.)

RHEIMS, or **REIMS**, a town of France, the largest, but not the capital of the department of Marne, stands in a plain amid vine-covered hills, on the Vesle, an affluent of the Aisne, 27 miles N.N.W. of Chalons, and 82 E.N.E. of Paris. It is encircled by a moat and ramparts, which have been planted with trees, and now form an agreeable public walk. The four ancient gates once bore the names of Mars, Venus, Ceres, and Bacchus; the first of them consists of a triumphal arch, whose graceful Corinthian columns contrast beautifully with the Gothic structures about it. A modern gate was opened beside it in the sixteenth century, and another was opened in honour of Louis XVI. in 1774. Though one of the oldest towns in France, the streets of Rheims do not in general present that picturesque appearance which often accompanies antiquity; some of them indeed are quite modern. The houses, seldom more than one or two storeys high, have a very dull and uniform aspect. The great glory of the place is the cathedral of the metropolitan see of France, which is considered by many to be the most magnificent church north of the Alps. It was built by Robert de Coucy (1212–41), but its towers are still unfinished, so as to detract from the perfection of the building. Nothing is more striking about the exterior than the unity and harmony of the whole, notwithstanding the many statues and other ornaments with which it is profusely embellished. The interior has much resemblance to that of Westminster Abbey, only it is bolder and simpler, much more so than the exterior; but the exceedingly brilliant painted glass in the windows throws over the whole “a dim religious light,” which supplies the place of more elaborate decorations. There are few monuments in the cathedral now; the most remarkable being a white marble sarcophagus of Jovinus, an ancient prefect of Rheims. The abbey of St Remi is older than the cathedral, having been built partly in the eleventh and

Rhenanus
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Rhetoric.

partly in the twelfth century; partly too at later epochs, so that it is a curious medley of different styles. Much injury, now quite repaired, was done to it at the Revolution: archbishops and nobles were torn up from its vaults; and the *Sainte Ampoule*, the heaven-descended oil-flask for anointing the regal heads of France, was publicly broken in pieces, though a fragment of it mysteriously re-appeared at the coronation of Charles X. The town-hall is a handsome modern building, with a statue of Louis XIII. in front. A theatre, college, public library, and various schools are among the establishments of the town. The chief manufacture is that of woollen cloth, which has its centre here; hosiery, soap, candles, biscuits, and gingerbread are also produced; and dyeing, brewing, tanning, &c., are carried on. The principal article of trade is the wine of Champagne; but besides this, agricultural produce, woollen and cotton stuffs are exported here. Besides being the see of an archbishop, Rheims contains courts of law and a chamber of commerce. Previous to the invasion of Julius Cæsar the town was called *Durocortorum*, and was the capital of the Remi, a native tribe, from whom the modern name is derived. Under the Romans it was a place of much importance, the capital of Belgica Secunda, adorned with fine buildings, and probably the seat of a school of learning. Christianity is said to have been introduced and the cathedral founded in the fourth century. Soon after, the barbarian hordes invaded Gaul; but in 496 Clovis and his Franks were converted and baptized here. The cathedral of Rheims has been the scene of the consecration of most of the French monarchs, from Philip Augustus in 1179, till that of Charles X. Of these ceremonies, probably none had been more interesting than that which took place in 1429, when Charles VII. was crowned here; Joan of Arc, bearing her sacred banner, kneeling with tears of joy before the sovereign whom she had restored to his throne. The town was taken by the Russians in 1814, but before they had been in possession many hours Napoleon came down upon them, and gained here one of his last successes before victory deserted his standards. Rheims is celebrated as the birthplace of the statesman Colbert and the Abbé Pluche. Pop. (1856) 48,350.

RHENANUS, BEATUS, one of the revivers of learning in Germany, was the son of a wealthy butcher, and was born at Schlettstadt in 1485. From his youth upwards, the greatest facilities for acquiring knowledge were enjoyed

Rhenus
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Rhetoric.

by him. He studied at Paris under the ablest teachers of which that city could boast. He then resided for some time at Basel, in the learned society of Erasmus and Gelenius. His succession to his father's fortune in 1520 increased his advantages. Retiring to his native city, he was enabled to devote the remainder of his life exclusively to the quiet and congenial pursuits of his study. The result of this propitious career was, that Rhenanus at his death, in 1547, left a long list of publications. Among these was the *Editio Princeps* of Paterculus, the manuscript of which he discovered in the monastery of Murbach. There was also an original work entitled *Rerum Germanicarum Libri Tres*, folio, Basel, 1531, a work which has been often reprinted.

RHENUS. See RHINE.

RHETICUS, or RHÆTICUS, the surname which George Joachim derived, from having been a native of that part of the Tyrol which was anciently the territory of the Rhæti. This eminent scholar was born at Feldkirch in 1514, and was appointed professor of elementary mathematics at Wittenberg in 1537. His first appearance before the public was in the character of an enthusiastic convert to the newly-broached opinions of Copernicus. No sooner had he adopted these opinions than, resigning his chair, he repaired to Frauenberg to sit at the feet of their great promulgator. All his energy was forthwith devoted to the new system. His aid was given in completing it. His pen was employed in advocating it. His power of persuasion was used to get its founder to lay it before the public. Nor did he desist when it was ready for the press. Receiving the manuscript he superintended the printing, and placed the new work in the hand of the expiring author. Rheticus now commenced his great treatise, *Opus Palatinum de Triangulis*. It exacted from him the most arduous and the most patient labour. He continued to work at it, while he occupied his old chair at Wittenberg, while he taught mathematics at Leipsic, and while he travelled over different parts of the Continent. His toil was not yet over when he died in Hungary in 1576. The *Opus Palatinum* of Rheticus was published by Otho in 1596, and was found to contain the most extensive trigonometrical table that had hitherto appeared. This table was rendered still more complete by Pitiscus, the learned philologist, and published under the name of *Thesaurus Mathematicus*, folio, 1613.

RHETORIC.

Opinions as to the function of rhetoric.

1. The name Rhetoric is exceedingly flexible. In any just sense it signifies the theory of certain processes of communication, all of which have language for their instrument.

When, again, ideas expressible by language are thought worthy of being made communicable both widely and permanently, the expression of them is recorded, and constitutes what may rightly be called a literary work. The literary character is stamped on such works, more or less deeply, by the fact of their being recorded; whatever may have been the occasion that gave them birth, and whether it may have been to the eye or to the ear that they were in the first instance addressed. Works so preserved, besides being the only specimens accessible to patient criticism, are reasonably presumed to be the best in their several kinds: from the study of them, accordingly, are deduced systematic expositions of the laws governing the processes which they severally exemplify; and such laws are justly held to be binding on all similar processes, even though they should assert no claim to a place in the literary record.

The processes, therefore, which rhetoric aims at analysing,

may correctly be described as being Literary. Ought we, however, to place under that name the whole theory of literature—the theory of each and all of its departments? If we ought not, between what points is the line of extension to be drawn? The name, like every other that has long been in use, suggests to every one certain precise ideas; and to these, for the avoidance of confusion, due deference must be paid in any technical meaning that is to be attached to it.

When Rhetoric is said to be the Theory of Eloquence, a description is offered which will be accepted pretty generally. It leads us promptly to a limitation of the sphere. If rhetoric, theorizing admittedly processes which are literary, exhausts the theory of literature, poetry must be held to be a species of eloquence. But the word eloquence can hardly by any one be taken in a meaning so wide as to make this inclusion natural, or to save a theory which adopts it from the risk of frequent misapprehension. Popularly, indeed, we limit the name eloquence to an extent which cannot altogether be prevented from embarrassing the expression of rhetorical doctrines: we are apt

Introduc-
tion.

to confine it exclusively to compositions of an imaginative or passionate cast. Within this narrowed meaning there lies yet another, which restricts the name to spoken oratory; but this is not likely to mislead.

As to the function of rhetoric, accordingly, there have been entertained diverse opinions. The principal of these are four. These, however, as it will immediately appear, are practically brought, by inevitable short-comings in the analysis, within shorter distances from each other than they may at first seem to hold.

In the first place, the name has been applied to the whole theory of literature or literary composition. This view guides the outline of Campbell's *Philosophy of Rhetoric*; although the treatise, left incomplete, hardly carries the analysis of poetry further than a few hints on style. It has already been said that this widest meaning of the term is inadmissible.

Secondly, the name has been applied to the theory of all kinds of literature that are not poetical. Eloquence being that which is theorized in rhetoric, the whole realm of literature is in this view distributed into two provinces, designable severally as eloquence and poetry.—It is well to say, thus early, that this is a just distribution; but only with the proviso, that the two provinces be distinguished from each other according to a sound principle. Literary works should be disposed, primarily, according to their several purposes; since it is the character of the purpose that determines for a process its paramount laws. Eloquence and poetry, then, are separated by difference of purpose. All literary processes having a certain purpose are correctly comprehended under the name Poetry. To cover all literary processes having any other purpose, no apter name can be found than Eloquence; and the theorizing of all such processes is embraced correspondingly under the name of Rhetoric.—A caution, however, must here be given, and pressed very emphatically. The twofold distribution of the whole range of literature becomes utterly deceptive, and precludes the construction of a true theory for either department, when it is founded, as it has been oftener than not, on a principle which ought to yield only lower steps of classification,—namely, that of form. This is the principle which is adopted when all literary compositions are divided into two kinds, poetry and prose; for the name poetry is thus intended to cover all literary works written in verse, and to exclude all others. The just contrary of prose is not poetry, but verse: the two are merely names for forms into which words may be thrown. Whether a work is poetical or not is a question to be determined by its purpose: it may not be poetical, although its language is metrically modulated; it may be poetical, although its language, not having such modulation, must be called prose. It is the fact, no doubt, that prose is not, and cannot rightly be, adopted as the form of poetry which is designed to be either pure or elevated; and accordingly, the language is metrical in all works which are currently and universally called poetical. So, contrariwise, in all nations and times that yield works calling for criticism, prose is taken as the form of every composition aiming distinctively at any effect not poetical. Therefore the identification of prose with eloquence does, in effect, submit to examination all works which are the fruit of processes justly falling within the description of eloquence. But it takes in likewise certain kinds of works which ought to be excluded; and the mistake which lies at the root must vitiate all the broadest of the inferences to be afterwards drawn. This mistake does, in fact, pervade almost all attempts that have been made, in this country at least, to construct rhetorical systems which should be valid for all works not poetical. The design has been announced as being the laying down of rules for prose composition; and, the execution of the design rising seldom if ever above questions of

style, the consequences of the vicious assumption have not been brought into a prominence sufficient to secure their detection.

In each of the two views which are still to be described, rhetoric is treated as being specifically and properly the theory of oratory. The forms and conditions of public speaking are assumed as data; and kinds of eloquence which are addressed exclusively to the eye of the reader, either receive no notice or supply but occasional illustration. Within those limits this question is raised:—whether all oratorical processes should be analysed, or only certain of them? Oratory may aim at no further effect than the generation of belief or explicit knowledge, through assertion or argumentation, or both; and the processes available for this purpose may be said to constitute argumentative eloquence. Again, those processes being pre-supposed, oratory may aim at the generation of desire and volition, through the representation of emotive images; and the relative processes may be said to constitute persuasive eloquence. Many rhetoricians have treated processes of both kinds: many have restricted their field to the latter of the two.

Thirdly, then, there have been included, under the name of rhetoric, the theories both of argumentative and of persuasive oratory, no immediate cognizance being taken of any other processes. This was the view prevalent, with perhaps no exception, among the Greek and Roman theorists; it was especially adopted both by Aristotle and by Cicero. It is thus that the function of rhetoric is determined by Archbishop Whately.

Fourthly, rhetoric has been considered as being exclusively the theory of persuasive oratory. Argumentative eloquence has been excluded from its sphere, on one or another of several grounds. It has been alleged by some that the process is exhaustively theorized in logic; that there is no difference, practically appreciable, between a process of inference and the communication of that process. By others the communication of inference has been made the object of a special theory, to which, in scholastic times, there was sometimes given the name of *Dialectics* in one of its several meanings. Yet, again, it has been maintained, and oftenest on the north of the Tweed, that we can derive no practical advantage from subjecting either inference or the communication of it to any systematic or scientific analysis whatever.

2. The questions thus raised, with others not yet hinted at, will be answered in the explanations now to be offered of the views which have dictated the plan of the following summary. The design of this treatise.

The attempt to sketch a few of the outlines in a theory of eloquence is here undertaken in a spirit, which not only gives a dominant tone to the whole inquiry, but prescribes a selection, not in all respects usual, of questions to be inquired into. The spirit is that of thorough distrust in mere rules of art, accompanied by a faith not less peremptory in those principles on which the rules, if sound, must be founded. If a theory of literature, or of any of its departments, deserves the name it assumes, it is not the road-book of a country perfectly known, through which all men who will submit to guidance may travel with equal safety and equal ease. It is but the code of instructions issued to persons who are arming themselves for an exploring expedition: it indicates distant points to be aimed at, and warns against deviations which would lead utterly astray; but it does most of all towards preparing the adventurer for his task, if it can mark out with clearness the boundaries of unknown tracts, where he must place his sole reliance on his native genius, and skill, and vigour. Such a theory is valuable in proportion to the power with which it prompts thinking, and to the comprehensiveness

Introduc-
tion.

with which it embraces and methodizes the problems that ought to be reflected on.

Now, not only does every department of literature inosculate with every other; but, besides this, literature as a whole is no hermit-cell, filling a sequestered nook in the world of thought. Parallel with the processes which it must adopt are certain other processes, aiming at similar ends by the use of different methods. Literature, again, in common with all those kindred developments of human energy, obeys laws which are really the very same laws that govern common life.

Considerations like these suggest some preliminary inquiries, the result of which will lay, or ought to lay, for all doctrines properly rhetorical, the only foundation that is broad and firm enough to bear them.

I. In the first of the two introductory divisions, the design is that of fixing the place of Eloquence as a member in a group of processes, which will be spoken of as Arts of Communication. The only Literary processes of this system are Eloquence and Poetry; to those which are not literary is usually confined the name of Fine Arts. Some correctness of apprehension in regard to the generic character of the group, is indispensable for the formation of a true creed as to the specific character of any one of the members. All of them obey certain laws in common, and therefore are most instructively studied together, down even to a point far beyond that which can here be reached: they illustrate each other not less aptly by the differences imposed on them by differences either in their purposes or in their instruments.

Further, the two literary arts of communication resemble a two-stemmed tree, whose trunks spring from the same root, and whose branches appear, when seen from a distance, to make up but one magnificent mass of foliage. The comparison between them is instructive through innumerable features both of similarity and of difference. The truth is, that the theory of literature is one organic whole, and should be studied as one system. Not only, however, is such treatment here forbidden, alike by the large space that would be required, and by regard to the reasonable meaning of the title prescribed for the present article; but, likewise, the theory of the nobler art of the two has already, in this work, been sketched by a masterly pencil. (See POETRY.) Nevertheless, many of the facts which it is here sought to subject to law, receive elucidations so pertinent from facts developed in the other great province of literature, that our speculations in Rhetoric will be found, especially in their later stages, to make not infrequent incursions into the domain of Poetics.

II. The second of the introductory divisions is a Psychological Outline.

The maxim must again be urged, that rules of art are worse than futile, unless they prompt reflection on their reasons. All the laws of literature, except those (few and obvious) which depend on physical conditions, are, in common with all others that directly govern any department of man's conscious activity, laws of the human mind or corollaries drawn from these. Rhetoric reposes on Psychology.

Now, though we look no deeper than nomenclature, preliminary explanations are seen to be advisable if not necessary. The use of words and phrases descriptive of mental changes is so loose and fluctuating, that exactitude of analysis cannot be reached without exact determination of the meaning in which the leading terms of this kind are to be used. Here, especially, certain processes are to be exhibited as involving the excitement of Imagination, of Emotion, of Desire: there is not one of the three names that has not several significations; which of these is here assigned technically to each? But the best or only adequate explanation of a name is the description or analysis of the thing; and the aptest explanation of a series of related

names is that which describes the denoted facts in relation to each other. The call for prefatory statement of psychological doctrines could only be superseded by something which cannot be had; that is, by the power of referring to some one system, familiarly known both to writer and to readers, and accepted at all points by the one party as well as by the other.

There is to be offered, accordingly, a sketch of some psychological doctrines, which afterwards will either be appealed to directly in proof of rhetorical rules, or will modify indirectly the aspect in which the rules are presented; or which, if any of them should not have either of these effects, may suggest speculation on questions lying beyond and above the scope of an elementary treatise. The scheme from which those doctrines are taken has been developed gradually as the basis of instruction to pupils. Well-informed readers will perceive that it borrows freely from many quarters. It has owed very much to the suggestions scattered through the *Discussions* and *Dissertations* of Sir William Hamilton, and much also to sources from which that distinguished philosopher has himself drawn. In the final elaboration of the outline, also, such advantage has been taken as the time allowed, of that systematization of psychological doctrines which is supplied by the recent publication of Hamilton's *Metaphysical Lectures*.

III. The body of the treatise is designed for throwing out hints towards the formation of a rhetorical scheme, which would assume as correct the second of the four opinions as to the province assignable to eloquence. A complete system of rhetoric ought to theorize all literary processes, all departments of literature, whose distinctive purpose is not poetical.

Nevertheless, those narrow methods of treatment, which were described as the third and fourth, are faulty only because narrow, not as being erroneous; and they may be adopted, both safely and conveniently, as the basis of any theory aiming at full comprehensiveness.

A few words may be sufficient for explaining the view thus generally stated.

All possible processes of communication through language are reducible to four, distinguishable by these names,—Exposition, Argumentation, Persuasion, Poetical Representation. The last of the four does not fall within our cognizance, unless incidentally. The other three exhaust all the possibilities of method, for language which is used for the attainment of any purpose not poetical. The complete performance of each of them is exemplified in an oration, or other discourse, which aims at exciting volition through motives which must be aroused by antecedent conviction: in such a discourse, exposition is made the groundwork of argumentation, and that again of persuasion. But all other kinds of literary composition, not poetical, are constituted by those very processes, performed in whole or in part, and combined in diversified degrees of complexity. A complete theory of these three elementary and normal processes would lay down all the laws governing the processes which are complex. If such a theory were reached, it would leave for answer, as to each of the mixed kinds of literary composition, three questions only: *first*, which of the elementary processes enter, and which wholly, which in part, into its constitution; *secondly*, which one of the constituents is the process leading towards that which is the paramount purpose of the work, and which of them are no more than ministerial; *thirdly*, what are the relations,—as of comparative efficiency, means of operation, and the like,—between those processes merely subsidiary, and that one into which, as they flow on, they successively deliver their tribute. In a word, the theory of the processes constituting oratory is the true basis of the universal theory of eloquence.

Introduc-
tion.

Accordingly, our business will be the analysis of the three normal processes, Exposition, Argumentation, and Persuasion. This procedure should yield a skeleton-theory of eloquence. Towards the clothing of the bones with flesh and blood, very little can at present be contributed. The application of the elementary laws to even the principal among the complex departments of literature, would require a fulness of illustration which is inadmissible; and the large additional demand on the patience of readers might not seem to be justified by such results as could be presented, in the execution of a design which (perhaps because thought to be erroneous or barren) does not appear to have been as yet distinctly entertained, and has certainly not yet been systematically prosecuted. It must suffice to have offered this prefatory protest against the completeness of the merely oratorical treatment of Rhetoric; and to throw out, as occasion may arise, a few hints illustrative of the opinion thus set forth as to the genuine structure of a complete theory of eloquence.

The practical issue is, that the treatment of the topic has its outline determined by the third of the opinions as to the function of rhetoric. But even the fourth opinion will in some degree affect the scheme.—The analysis of the first two of the three processes supplies disappointingly few materials towards that systematic application to complex instances, which has been asserted to be essential for completeness in the theory of eloquence. As to exposition, although one aspect of it was taken under the especial patronage of Aristotle, hardly any laws can be assigned that touch it properly as a means of communication: success in it is mainly dependent on considerations not in any way rhetorical. The fact is significant, since this is the process which is paramount in history and biography. As

to argumentation, again, the uses of its rhetorical laws are directive rather than critical, a circumstance symptomatic of artificiality; and, further, these uses hardly emerge unless in reference to cases of complicated reasoning in contingent matter, cases occurring frequently in oratory proper, but much less common in works strictly literary.—It is not till we reach the process of persuasion, that it is found possible to elicit laws entitled to claim a commanding place in the code of philosophical criticism. The laws assignable for persuasion justify this claim by their possession of three characteristics: they are resolvable, unequivocally and easily, into principles of man's mental constitution; they possess some efficiency as cautionary guides to performance, and much as suggestive canons of critical judgment; and they govern instances diversified so variously, that there is no department of literature over which they do not exercise some influence. Communication, in short, so long as it seeks to operate exclusively on the rational nature of man, obeys but few universal laws that affect it in its communicative character,—few laws except those which rule the matter communicated, and the thinking which is brought to bear on it. Communication comes under the sway of wide and imperative laws of its own, as soon as it passes onward to the endeavour to generate imagination and emotion. The quarter over which the theory of communication exerts its most active power is the very quarter in which that theory teaches, as the most imperative of its lessons, its own impotence to handle the weapons which native strength of imagination wields with ease,—its own blindness to pierce into the deepest part of those emotive relations, which animate the oratorical picture and idealize the poetic dream.

I. THE ORGANIZATION OF LITERATURE AND ART.

3. The compass of the field which lies before us, in this stage of our inquiries, may be identified when we describe it, in common phrase, as containing Literature and Art, or Literature and the Fine Arts. Our hasty survey is intended for mapping out the ground, in such a way as to indicate the character and boundaries of its several sections.

It is covered by a large system of processes, which will here be spoken of as Arts of Communication.

The name "art" being thus taken to signify processes, not their theories, a group of cognate processes may be called an Art, when they are found to possess two characteristics. First, they must be performable voluntarily, for the attainment of a preformed purpose; secondly, this condition being purified, they will still not come up to the idea of art, until their laws have been more or less thoroughly determined and systematized. If, on this footing, we still wish to retain the use of the current antithesis between the terms art and science, there is only one way of consistently doing so.

The theory of an art, its system of laws, will be called a Science. If, indeed, the name of science is to be bestowed only on systems of knowledge that are in all points both exact and complete, the roll of sciences must always be very short. But imperfection ought not to be a bar; and there may be convenience in sometimes giving the name of sciences to the theories now in question.

If the terms art and science are accepted in the meanings thus explained, the distinction most commonly taken between art and science may, if we will, be recognised as separating science into two sections. The theory of an art is a Practical Science so far as it lays down rules of art, whether directive or critical; the theory of an art is a Speculative Science, so far as it assigns the reasons of the rules. This secondary distinction is narrow and slippery. But it

may sometimes be useful as reminding us, that a rule of art which cannot be philosophically justified is merely empirical and therefore unsafe; and that, both in the study and in the practice of the higher arts, like those with which we are now concerned, a rule has no value whatever, unless for those who have apprehended firmly the principle on which it is founded.

Every art, indeed, must draw its principles from without: it must gather its data, not from one but always from more than one, of those systems of knowledge which serve other uses also, and each of which, indeed, has been or ought to have been constructed, in the first instance, with exclusive regard to the speculative point of view.

All arts are processes of change. Every step is the working of a change: the result, also, is a change, the effecting of which was the purpose towards which the steps were adopted as a means. If all the objects on which an art works its changes are corporeal, or if its result, though mental, rises no higher than sensation (physical comfort, for example), the theory of the art will receive all its data from the physical or mathematico-physical sciences. Similarly, if all the changes worked by an art are mental, the art will derive the basis of its theory from the philosophy of mind,—that is, from psychology, the central and original science of that great cycle. If an art works changes on objects of both kinds, it must borrow data both from the philosophy of body and from that of mind. But, in such a case, the character of the result will decisively direct all the leading steps towards the one side or the other: the rules which properly constitute the theory of the art will be developments, either wholly of laws physical, or wholly of laws mental; and the subordinate laws, whose operation is merely a condition of the possibility of the art, may be silently assumed.

In all processes describable as arts of communication,

man attempts to work on the mind of man, either individually or collectively. Each of them is constituted by steps, in which, mental states having arisen in one mind, it is attempted to communicate these to some other mind or minds; and the purpose of all is the effecting, in that other mind or minds, of changes of one kind or another. Many processes falling within this description (for example, the process of education) are complex in the extreme: the communicative process has to be repeated indefinitely often; and it has to be engrafted on antecedent processes, requiring to be separately theorized.

As normal specimens of the arts of communication, there may be taken those processes which are embraced under the name of Literature, and those others to which (too narrowly) is usually confined the name of the Fine Arts. All processes of the first class fall within two arts,—Eloquence and Poetry. Among processes of the second class there are only three arts which can be considered as being at once pure and complete,—Music, Painting, Sculpture. If the theories of those five arts can be established, the ground is laid broadly enough for the theorization of all other arts of communication, so far as they are merely communicative.

4. The character of an art is primarily and most widely determined by the character of its purpose. All the arts of communication have this in common; that the effects they aim at producing are mental changes, and changes rising higher than sensation. Consequently the paramount laws of all of them are laws of mind.

The consideration of purpose yields, further, a primary distribution of those arts into *two classes*. Their primary and paramount differences are founded on differences in the mental states, the modes of mind, which they severally aim at communicating. It is only secondarily, for the formation of genera within each of those two classes, that account can be taken of those differences which arise out of differences in the means or instruments.

Having regard to purpose, then, we have first to set aside, as constituting the first of the two classes, all those of our five arts which have for their distinctive and paramount purpose the excitement of feelings (specifically emotions) having a certain character. These are oftenest called feelings of Beauty. At the cost of a little anticipation, they may be described as feelings of imaginative pleasure, or as pleasing emotions consequent on imagination. All arts entertaining this purpose have a claim equally strong to be called Fine Arts; and all of them will here receive that name. Indeed this phrase is merely an indistinct translation of terms common to all the continental tongues, and more correctly rendered, "the beautiful arts," or "the arts of beauty." The fine arts of our roll, then, are four of the five: poetry is a fine art, as properly as music, painting, and sculpture.

The universal theory of the fine arts, the system of laws which is obeyed by all of them, and by the study of which the way ought to be prepared for the study of each of the special theories, has received the name of *Æsthetics*. The word is but indistinctly descriptive, and has likewise been used philosophically in other meanings. But it suggests significantly the working of all the processes towards feeling; and no substitute that has been proposed is free from faults of other kinds.

Overagainst those arts stands the second class of our arts of communication, into which must be admitted all processes aiming distinctively at the communication of any mental state different from imaginative pleasure. For processes of this class we cannot gain a name, till we have descended to the consideration of the means or instruments. Then, also, the true rank of poetry will appear.

Plain it is, that instruments may be fully available for the end entertained by the fine arts, and yet quite inade-

quate for the attainment of all the purposes aimed at by the processes constituting the second class. The truth goes even farther: while several instruments are adequate for the first purpose, there is only one instrument fully adequate for any of the others. All these other purposes are, for the uses of theory, reducible to two (the purposes of communication being thus, in all, no more than three). First, the design may be to generate cognition or thought, in the form of Belief, Judgment, Explicit Knowledge; secondly, the design may be to generate Volition (an act of will), through Imagination and consequent Desire or Aver-sion. It is conceivable (rather than likely) that in communication the modes of mind aimed at shall not be either of the two here named. But if so, they must be modes which are steps towards the one or the other of the two; and a complete theory of the processes leading to the two must have accounted for each of the steps.

For the generation of Belief and Volition through communication, no instrument is fully available except Language, Articulate Speech, spoken or recorded. Belief consists in, volition presupposes, clear thinking of the character and relations of objects; and such thinking cannot be conveyed from mind to mind,—cannot, indeed, take place even in one mind,—through any machinery less powerful and flexible than words.

Accordingly, the only processes of communication admissible into our second class are those which may, in a just sense of the word, be held to be contained in and constitute the Art of Eloquence. To the theory of that art there has been allowed, ever since the Greeks bestowed it, the name of Rhetoric.

Further, processes which communicate through language, and those which communicate otherwise, may conveniently be distinguished as Literary and Non-literary. Eloquence is, among the communicative arts which are not fine arts, the only one that is literary. Among processes of the other class, Poetry is the one fine art which is literary; the others are not discriminated exactly enough till they are described as being Fine Arts Non-literary.

If we were to enter on a particular consideration of the several theories of all those arts, the differences of instrument would come decisively forward, and dictate a distribution guiding our course of study.

On the one hand would stand the Theory of Literature; or, as it has aptly been called, the Philosophy of (literary) Criticism,—a name hinting, significantly and instructively, that the use of theory here is critical rather than directive. This theory is constituted and exhausted by two special theories, or sciences, if that word be allowed: by the theory of Eloquence, which is Rhetoric; by the theory of Poetry, which likewise may retain its old name Poetics or Poetic.

The psychological præcognita, the instrumental presuppositions, required by the theory of literature, are derived from the science of Grammar; that word being understood in the wide meaning it ought to have, as including both the universal theory of language, and the special theory of the tongue on whose literature the doctrines are designed to bear. The frontier, indeed, which fences off rhetoric on its lowest side from grammar is as loosely drawn as most of those other lines of demarcation, forced on us by the necessity of apportioning human labour. All laws of Style might be said to be, in strictness, grammatical, not rhetorical; but by the total exclusion of these the practical uses of rhetorical study would be injuriously cramped. On its higher side, again, rhetoric finds itself to be often brought into direct and useful contact with poetics; and it may learn much, by contrast, from the general doctrines of æsthetics, with something now and then from the special theories of the several fine arts. Poetics, while standing in intimate relations with rhetoric, is necessarily in close alliance both with æsthetics, on which its own uni-

versal laws are founded, and with those special developments of æsthetical laws which rule music and the arts of design.

The physical præcognita of the theory of literature are so narrow, and so patent, as scarcely to require being alluded to. The case stands very differently with the non-literary fine arts. On all of them, though not with equal breadth of application, their nature imposes it, as a condition prerequisite, that those objects of perception which are their instruments shall be on the whole sensuously agreeable. With the harmony of colours, which is thus a condition imposed on painting, and weighing, though lightly, on sculpture, we are not concerned. But we are interested in the harmony of sounds, which penetrates so deeply into the essence of music as to threaten continually an ignoring of the higher capabilities of the art. Poetry, being a fine art, and operating through sounds, has to accept audible harmony, in a certain modification, as one of its precedent conditions; and the melody of language gives a fine and attractive charm to the higher and more imaginative efforts of eloquence.

Among the differences in procedure, necessarily modifying the results likewise, which are imposed on the several arts of communication by the differing character of their instruments, there may here be indicated, in brief, one or two which will soon supply us with instructive points of comparison. On the rhetorical side, these affect exclusively processes in which the excitement of imagination is a step.

The difference which pierces deepest is that which separates the literary arts and the non-literary.—The latter excite imagination directly: the excitative power is in the work of art itself, constituted by the group of visible forms and colours, or the series of audible sounds. We see the work or we hear it; and, if the perception ceases, our image might supposably be a mere representation of that which we had perceived. Indeed the object actually perceived plays so prominent a part, as to incline towards misleading both theory and practice. The cardinal doctrine, that all the fine arts work their genuine effect only by exciting the imagination of the recipient, is hardly questioned in its application to poetry. But it is not so obvious, nor yet so readily admitted, that the same law rules the arts of design. For here the force and clearness of the perception tend not only to tempt away from the imaginative effort, but also to hamper its freedom when it is instituted; and, beyond all doubt, the mere sight of a picture or a statue imparts a certain kind of pleasure to many minds, whose sluggishness of imagination incapacitates them almost utterly from profiting by the higher suggestiveness of the work. In regard to music there occur similar doubts, traceable, however, to other causes. The organic gratification derivable from harmony of sound is so intense and so fine, that it is apt to monopolize the attention of one who is keenly susceptible to it; and, further, the images directly suggested by music are vague and indistinct, not rising into clearness and precision unless in minds which exercise an independent force of fantasy, closely allied to that which generates the poetic mood.—In imaginative eloquence, exactly as in poetry, the instrument through which the effect is produced, that which is communicated and excitative, is not really the words, but the thoughts which the words signify. Notice will be particularly invited hereafter to some of the interesting consequences flowing from the merely mediative function of language, and from the symbolic and conventional character of the words by which it is constituted.

Another difference, secondary but yet very important, subsists between the arts of design on the one hand, and the other arts of our list on the other. The former represent in space; the latter represent in time. It will be shown that this contrariety, which is oftenest put to use in the theory of poetry, is also fruitful for eloquence both in

restrictions and in licences, both of which are not infrequently ignored.

5. When it has been thought worth while to characterise thus systematically the theories of arts, some explanation may be proposed as to the practical bearing which the theory is likely to have on the relative art.

No defence is needed for the dignity and value of speculation as speculation. Equally needless is it to say, that every practical science has speculative relations, which might justify its claim to attention though its practical usefulness should be very small. The theory of every art has a general speculative value, as being (if rightly founded and constructed) an organised system of truths: the theory of all the arts now in question has also a specific speculative value, as being the product of systematic thinking, applied worthily to the monuments of literature and refined art. The thoughts, and images, and feelings which are poured out by the hand of genius, cannot be imbibed by us without the rise of an earnest longing to discover some at least of the laws, in virtue of which it has become possible so to elevate, and inspire, and move us. Inquisition into the laws of literature, and its kindred arts, would be alike inevitable and praiseworthy; although it should be certain, as it never can be in regard to any speculative truth whatever, that the attainment of even a complete system of laws for the kind of processes examined must remain practically barren.

The theory of an art can have but either or both of two practical uses. It is Directive, so far as it is efficient for guidance in the construction of new works: it is Critical, so far as it assists in the just estimation of works already constructed. Of no art whatever can the best possible theory serve either use in any but a most imperfect degree. The higher and wider an art is in the results it aims at, the weaker does its theory become in both aspects; and, when we reach arts having the elevated and far-reaching character of those we have here to do with, the directive use of theoretic laws has nearly vanished, while even the critical use has shrunk within narrow bounds. In the lowest arts that are conceivable, successful performance has individual aptitude as a condition precedent: in arts of high compass this aptitude assumes, more and more as we rise, the character of that which is called genius. Such laws as can be assigned come then to have a direct value that is only negative. They are warnings that disobedience will, though the native power be present, impair or destroy the effect aimed at.—The discovery of the assignable laws rests primarily on the study of works already in existence; the laws cannot confidently be pronounced to be sound, unless the possibility of mistake is excluded by a wide range of antecedent experience. Even such laws are obeyed by genius, rather in accordance with its own imaginative instincts, than in consequence of distinct and generalised thought. Nor do such laws as are assignable serve any higher office than that of being guards about the doorways of the temple: genius sits alone and unapproachable in the sanctuary which is within. But theory has given us something well worth having, if it has only taught us how far law, consciously generalized and intelligibly promulgated, can penetrate into the heart of those mysteries, in the midst of which the poet, the orator, and the artist live and work through feeling rather than thought. It is much if there can be drawn, though it should be but dimly and waveringly, the line beyond and above which rules cease to have so much as critical force.

In a way generally and distantly suggestive, however, rules have a positive efficiency; an efficiency which, even in the arts of communication and in the most ambitious phases of these, may be made to manifest itself vigorously in criticism, and to affect beneficially performance likewise.

Data for
Theories of
Literature
and Art.

It is said that in the history of the arts practice precedes theory; and the assertion is correct in a sense which the foregoing hints imply. It is not true, even of the arts of communication, that any of them, or any department of any, is ever practised in the absence of all intelligent apprehension of its governing laws. But it is true that all of these arts are practised, and attain eminent success, before the attempt is deliberately made to discover all the discoverable laws, and to digest these into a theoretical code. A theory, however, being once attained, cannot but exercise and deserve to exercise influence on the subsequent history of its art, so far as it is sound and limited to its legitimate duties. Such influence belongs rightfully to those wide theorems, in which it is possible to exhibit the character of literature and art as an organic system, and the characteristics, generic and specific, of each of the members by which the system is formed; and it belongs with equal right to many particular laws, or cautions, or hints, which are validly deduced from the ruling principles of communicative art as a whole, and of each of its constituent sections. Violation of the particular laws will involve error proportional to the width of the law disobeyed; error which, though no exposure of it should be made by reference to reasons, will be discovered to be error by the native instincts of those to whom the work is addressed. Violation of the wider laws will work still more hurtfully: and this, like the other, will be punished and betrayed by failure in result; by failure which, sooner or later, is certain to be suffered, and which will be speedy or immediate if public taste and judgment be refined and correct.

Not to be overlooked is a class of facts, which is interesting in itself, while it often embarrasses attempts at applying the laws of art to individual works, especially in literature. The theory of an art must be founded on an exact determination of its purpose and procedure, as these are exhibited in the purest instances that are possible. Now, in the actual uses of the non-literary arts there is some scope, in communication through language there is large scope and almost continual occasion, for combination of purposes and consequent complication of processes.

In respect of literature, it has already been asserted, that those genuine departments of it which are not poetical in aim, are really combinations of three normal processes, or of certain of their steps; and, if our business had led us to close scrutiny of poetry, we should have found reason for believing that its genuine kinds likewise are to be regarded as similarly products of a very few elementary forms. The difficulties which are thus raised, even when eloquence and poetry remain faithful, each to its own distinctive vocation, must make literature chaotic and criticism feeble and incoherent, unless the paramount principles of communication, and at least some of their nearest corollaries, be steadily kept in sight. Powerful effect cannot be worked by any literary work without unity of purpose; and the character of the purpose will determine that of the processes,—both of the process which leads to the main result, and of those which are grouped round it as leading to the attainment of aims that are subsidiary.

II. THE DATA FOR THEORIES OF LITERATURE AND ART.

The principles of
psychological
method.

6. All the actual phenomena of mind are complex. This ought to be the first and fundamental article in every psychological creed. We must not take it for granted, that factors or elements which we can think of separately are always possible in isolation. But it is through different combinations and modifications of a very few elementary factors, that actual phenomena of mind gain their indefinite diversity of character; and therefore the abstractive and ideal separation must be carried up to the very highest point which analytic thinking will allow.

Data for
Theories of
Literature
and Art.

There may be combined in one work, however, processes which ought not to have been so, because leading towards or up to purposes which are irreconcilable and mutually destructive. Therefore, in all those complications which are so common, the question of legitimacy or illegitimacy must be firmly dealt with. Every art of communication is tempted to struggle for the enlargement of its sphere; mutual borrowings take place between processes the most hard to be harmonized: and, while this dangerous ambition often paralyzes instantly the work in which it is indulged, it imparts still oftener nothing better than the momentary vigour of a feverish paroxysm succeeded by utter exhaustion.

In one sort of cases, the purpose of the art is neither lost sight of nor mixed up with the purpose of others; but the means appropriate to it are enlarged by the addition of means which are foreign. There arises no risk of throwing the process out of the class it should belong to; and, the laws thus retaining firm hold, the error, when gross, is easily discoverable, and almost always exposed. In this way the arts of design borrow from each other; and each of them sometimes, but most unwisely, borrows objects or aspects from poetry. It is a fact coming closer to our inquiries, that poetry often seeks to represent objects and aspects of objects, not representable unless through the means available to painting and sculpture. Eloquence imitates the error; and it will be dealt with hereafter.

Cases of another sort are much more dangerous and troublesome. They consist in complications, interferences, or uncertainties of purpose. Out of these spring works of art, which, when their divergence carries them so far that they do not acknowledge as paramount the laws of any one art, really constitute composite classes, in which theory is set fairly at defiance. Literature is especially open to formations of this cast, on account of the precision of language and its indomitable elasticity; and accordingly few generations have wanted occasion for paying just admiration to the fine thinking, or imagination, or feeling exhibited in works which, still veering doubtfully, like a ship under shifting breezes, between the aim of poetry and aims not poetical, are only dazzling effusions of genius, not thoughtful and enduring monuments of literary art. In the early and spontaneous development of literature and the arts of design, an approach is made to this treacherous ground; but the simple old poets and artists are protected against its dangers by their own strong simplicity as well as by the comparative poverty of their means. It is not till the literature of a nation has passed through its summer-glories, and is descending into the coolness of its autumn, that the boundaries separating the provinces are wilfully overstepped: they are so by men of high literary powers, ambitious of gaining originality of effect through forms unlike the old, and through aims in which the old ones are perplexingly intermingled. An instance, for which no good defence can be offered, is the didactic poem: in the prose novel and romance there is an instance which might be defended by a thousand plausible reasons, and by a few that are strong enough to vindicate for it its place as a somewhat rebellious dependence of the poetical empire.

The arrangement of mental facts in named classes is equivalent to an assertion, that each class obeys laws, for which the name is an abridged expression; and the compass and mutual bearing of those laws is indicable through the ordination of the classes, as exclusive of each other, or as descending in regular order of specification.

Every mental fact is doubly related. It is related primarily to the mind, which is its subject; and out of this subjective relation arise its widest and overruling laws,—the characteristics which appear to belong to it when it is con-

Data for
Theories of
Literature
and Art.

sidered as a function of mind,—those which would suffer no change through any change of object. It is related, secondarily, to the object or objects with which it brings the mind into communication; and out of this objective relation arise subordinate and modifying laws,—laws in virtue of which every subjective law puts on different characters according to the different objects with which, in a given case, it connects the mind. When this principle is applied to the framing of a synthetic psychological scheme, it yields a distribution of all mental laws into orders, which become narrower and narrower. In the study of those orders, we take our departure from subjective laws which are universal, as governing all mental facts: we pass thence to subjective laws which are particular, each governing only certain kinds of facts; and thence we travel downwards still, in several degrees, through narrower and narrower groups of objective laws, which are closer and closer particularizations of the subjective laws that are particular.

The uni-
versal laws
of mind—
conscious-
ness and
retention.

7. All mental laws which are both subjective and universal, are virtually covered by this assertion: that all mental facts are facts either of Consciousness or of Retention.

(1.) Consciousness is the mind's knowledge of its own phenomena; a knowledge necessarily including a knowledge of the objects. All mental *phenomena*, that is, all mental facts of which we have direct cognisance, are facts of consciousness. All the kinds of mental phenomena, all forms of mental manifestation, are modes or varieties of consciousness. Thus also, in the last analysis, all modes of consciousness are facts of knowledge or cognition.

Consciousness, considered more closely, is the mind's knowledge of all that is Present to it in time and in space. But we can and do and must think of objects, which are not present in either of those relations. Especially it is true, that we do and must think of the Past; and it is through the past that we think of the Distant. We remember what we seemed to have forgotten: that which has once been known does not lose its relation to the mind through our ceasing to think of it. Through the past and the distant also, we are able to think of the Possible.

(2.) Facts of Consciousness are Retained by the mind; but the retention occurs unconsciously, out of consciousness. That a fact of consciousness which a mind has once had, continues, when it is past, to stand related to that mind,—to be an attribute of it, a step in its history by which subsequent steps may be consciously influenced,—is a truth which we cannot prove directly, since we have no immediate knowledge of such a relation; but it is a truth demonstrable *ex impossibili*, through that conscious revival of the old fact, which could not take place but for the unconscious retention of it.

Thus there is one class of cases, indisputably real and immensely wide, in which mental facts are not phenomena, that is, facts directly observable; cases in which they are facts latent, detectible only through their consequences. Therefore it requires only another step (but that a wide one) to carry us into Leibnitz's hypothesis of modifications of mind, which, instead of merely becoming latent, are latent from the beginning.—It happens very frequently that a thought now in the mind cannot be accounted for, unless we suppose it to be the result of an antecedent mental process, of none of whose steps are we now conscious. It is commonly maintained that those steps must have taken place in consciousness, but have been forgotten through a want of attention. It has been alleged, however, as a less strained supposition, that the missing steps, though actually occurring, have never been in consciousness at all. The hypothesis might yield a plausible solution of some difficult cases in which the rhetorical student is interested.

(3.) The Past, then, having been retained unconsciously, comes again into consciousness, indirectly, in a kind of fact

which, regarded from different points of view, may be called either Reproduction or Representation. The object of this new fact is a thought constituted, in whole or in part, by factors or elements similar to those which constituted either a past fact of consciousness, or more than one such fact. The new fact may thus be said to reproduce the old, or to represent it,—in respect that the former makes present to us, and thus brings within the sphere of consciousness, something which we can think of as equivalent to the latter.

In this way consciousness yields us two kinds of knowledge. We have an Immediate or Presentative Knowledge of that which is present, but of that only; and, through and in such knowledge, we have a Mediate or Representative Knowledge of that which is not present, but once was so. The distinction affects all modes of consciousness to this effect; that past phenomena belonging to all of them may be reproduced, and thus known mediately. But so much as we require here to learn, in regard to the specific laws of both kinds of knowledge, will be considered more aptly at a later stage.

8. All possible modes of consciousness are primarily distributable into *Two* great *Classes*, distinguished by a difference very deeply marked, and related by a law which is for our purpose extremely valuable. But the characteristics of those two classes will become clearer when, by taking a second step of specification, we have got possession of names to which precise ideas are attachable.

Examined more closely, but still with a reference as purely subjective as the nature of mind will allow, the two classes are found to be constituted by *Four* several and distinguishable *Modes of Consciousness*, which may be described as *Elementary*. These, in some or other of their objectively determined varieties, are the factors of all complex mental phenomena.

All mental phenomena, then, must be facts either of Feeling, of Knowing, of Wishing, or of Willing.—Under the name of Feeling come all facts which, by a further reduction still subjective, are describable as being facts either of Pleasure or of Pain. It is convenient, also, to lay down at once the broadest of the objective distinctions separating the kinds of feeling. A Sensation is a feeling whose excitant is a phenomenon of the body of the subject: an Emotion (the "sentiment" of Hamilton and others) is a feeling whose excitant is a phenomenon of the consciousness of the subject.—Under the name of Knowing or Cognition come all facts which could rightly be said, in the current terminology, to be operations of intellectual powers or of powers or faculties of the understanding.—The term Wishing is here used to denote operations referable to the "active powers" or "active principles" of Reid and Stewart; being extended, however, so as to embrace both of their alternative forms. A positive wish is a Desire; a negative wish is an Aversion.—The term Willing or Volition is used in its universally-received sense, and is equivalent to such words as Resolution or Determination.

Let us now fall back on the primary distinction of all those modes into *Two Classes*. The first class contains Feeling alone; the other three modes constitute the second class.

The classification arises out of the antithetical correlation between subject and object. The relation of the phenomenon to the mind of which it is an attribute is constant and unalterable; the relation of the phenomenon to that with which it connects the mind is occasional and variable. The differences between all modes of consciousness, down to their narrowest objective varieties, consist simply in varieties of the objective relation, modifying by reaction the relation which is subjective. Feeling stands alone, as being, through its objective relations, the one mode in which consciousness is imperfect, merely rudimental, and yields a knowledge that is confused. The other three modes stand

Data for
Theories of
Literature
and Art.

Primary
distribu-
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Data for
Theories of
Literature
and Art.

together, in respect that in them, through their objective relations, consciousness is perfect, fully developed, and yields a knowledge that is clear.

Alike in Knowing, in Wishing, and in Willing, the mind has consciousness of an object, which either is actually, or is thinkable as being, different from the mind itself. In Cognition pure, the mind has such consciousness, but it has nothing more: it rests in contemplation of the object; the balance of the two counter-relations is in equilibrium. In neither of the other two perfect modes is that consciousness lost or even obscured: they differ from cognition, and rise above it, because in each of them a new element is added. But the addition made in Wishing throws the fact towards the subjective side; the further addition made in Willing throws it towards the objective. In Desire or Aversion, the mind is bent backward or downward towards the thought of itself. The object is thought of as standing towards the mind in a relation which is imperfect and unsatisfactory: the idea of change has come up; and the mental state is one of transition. In Willing there are all the elements of Wishing; but there is also something which is new and higher. On the idea of change there is engrafted the idea of power to effect change: the mind, through the exercise of its own energies, thinks itself into the closest possible relation to its object: the equipoise of relations, disturbed by wishing, is restored; but while in cognition the equipoise was determined *for* the mind, it is now determined *by* it. Thus, wishing is indeed more than pure cognition, and willing is more than wishing; but in neither does there disappear that thinking of an object, which is the characteristic mark of cognition proper.

The want of this characteristic mark is the distinctive feature of Feeling; and the want sets this mode in contradictory opposition to the other three. In feeling pure and proper, in being conscious of pleasure or of pain, the mind knows merely a state or modification of its own: it cannot know anything else, without rising into a higher mode. Some object or other must have been the excitant; but, so long as the mind merely feels, that object is hidden from it. Pure feeling has no object beyond itself, no object either actual or even thinkable. The objective relation is the slightest that allows consciousness to be possible. If we are to suppose that any one mode of consciousness can, at a given time, possess the mind to the entire exclusion of all others, we must admit that the mind, in being conscious merely of pleasure or of pain, is conscious only in the very lowest degree.

Here, if anywhere, is to be found the root of that plurality of conflicting elements, out of which the mind strives incessantly to rise into the unity of clear consciousness. The germ cannot be detected through any working out of the concrete and complex antithesis between understanding and will, knowledge and endeavour. It is to be sought in the recognition of consciousness as being itself knowledge; and in the subsequent acknowledgment of the distinction between that one phase, in which the mind falls back on the mere knowledge of its own states, and those higher and successively ascending phases, in which it knows and desires and strives after an object real or thinkable. There is a plain contrariety of character between the one imperfect mode of consciousness on the one side, and the three perfect modes on the other.

But there is likewise between the two kinds a close and indissoluble connection; and it is for the sake of this connection that the relations of feeling to other mental modes are here important.

9. The doctrine to be maintained is this.—In the first place, whatever other complexities may be discoverable, every actual phenomenon of consciousness is at least complex to this extent, that it contains two simultaneous fac-

tors: the one referable to one of the perfect modes, a cognition, a wish, or a volition; the other belonging to the imperfect mode, that is, a feeling.—Secondly, the phenomenon derives its unity from the necessary predominance of the one factor over the other. The subjective factor (feeling), and the objecto-subjective factor (cognition, wish, or will), co-exist in an inverse ratio; and the factor which is the more intense obscures the other, or may by possibility conceal it. The complex phenomenon is named and thought of by us, and may often be treated safely even for philosophical ends, by reference to the factor which is predominant over the other.—Thirdly, in any continuous mental process or series of successive steps, those steps in which the perfect factors are predominant are the most obviously important, and therefore attract notice most readily. Thus we might be tempted to describe the necessary antecedents of action proper as being three only,—cognition, wish, volition. But the feelings which those overruling elements have kept under while themselves present, tend continually to rise into prominence in their turn; so that a mental state which we should describe as being distinctively an emotion, may consciously occur between any two of the three leading steps.—Fourthly, these intervening emotions, so called, which are properly complex states having emotion as the ruling factor, must be of very short duration: the mind spontaneously tends to rise into some of the higher modes, or into a state in which one of the higher modes is predominant. Yet in every energetic process of mind, such flashes of emotion, such sinkings back from intellection or the modes still higher into intervals in which the predominating consciousness is only of pleasure or pain, are incessant and unmistakeable. It may even be alleged, that the vigour of a mental process is proportional to the degree in which feeling thus wells upwards: indeed it is only so that we obtain the full consciousness of that pleasure or pain, of that effect worked or workable on our own being by the objects we contemplate, out of which springs the very life equally of thought and desire and will. Thus, for instance, a vivid image obscures for a moment the concomitant pleasure; but immediately the emotion recurs with an intensity proportional to that of the image which had at first overpowered it.

That feeling is, very frequently indeed, consciously co-existent in time with the higher modes of consciousness, is an assertion which is not contradicted either by ordinary thinking or by any sound philosophical doctrine. Most men would admit that a thought or desire or act of will is, usually at least, either pleasant or painful in one degree or another. Hints or direct assertions to the same effect are common in psychological systems, though left unworked by reason of the little attention that has been given to feeling; and doubts as to the simultaneity would hardly be prompted, unless by misunderstanding of the doctrine (true in one sense, and false in many others), that the mind cannot be in more than one state at the same time. The one real difficulty is, the accounting for cases of seeming exception; and this difficulty is removed by the law of the inverse ratio. Without seeking for any solution more abstruse, such as that of latent modifications, we can easily conceive how either element of the complex fact, being known but obscurely at the time of its occurrence, and being therefore unattended to, may gain no hold of consciousness strong enough to make it be retained and reproduced.

The law of the *inverse ratio*, propounded by Hamilton, and by him elaborately illustrated in its specific application to the counter-relations between Sensation and Perception, is by him also extended to the relations between Feeling of all kinds and Cognition of all kinds. If the law be admitted at all, it is not easy to see how it can be arrested at this point of development. Wishing and willing, having

Data for
Theories of
Literature
and Art.

The relations of
feeling to
the higher
modes of
conscious-
ness.

Data for
Theories of
Literature
and Art.

cognitions as their necessary antecedents, and being themselves not less than cognitions, but more, must carry through with them all the conditions of cognition. And the extension of the doctrine over the whole sphere of consciousness, to the completion of the antithesis between feeling and the perfect modes, seems to be imperatively required, for placing in full light the wide function of feeling, exercised so incessantly, yet so apt to be overlooked.

The doctrine has thus been pressed to its complete development, in order that the processes afterwards to be explained may be open to receive the deepest grounding of which they are capable. But the use which must necessarily be made of the doctrine in the present inquiry is limited in two directions.

These psychological data are chiefly required for our analysis of the mental process which issues in action. In that process, let it take the very simplest form of which it is susceptible, there are three governing and predominatingly objective steps, distinct and successive. There is, first, a fact of Cognition, and specifically of Imagination, a fact in which an object is imagined: there is, secondly, a fact of Wishing, in which (the positive form being at present adequate as an example) the object is Desired: there is, thirdly, a fact of Volition, in which there is resolved on an action, judged likely to produce the attainment of the object. Now, the character of this process is most insufficiently understood, unless due account is taken also of the repeated emergence of Emotion, the subjective concomitant or condition of those objective changes. The character of the emotion, the manner in which it is modified by the character of the excitant, cannot be thoroughly accounted for, unless on the supposition of the original simultaneity. But, as it has already been asserted, if the objective step has been energetic,—if the cognition has been distinct, the desire intense, the volition vigorous,—the concomitant emotion, subdued at the time, will come back with a rebound, and present itself as the determining feature in a succeeding mental fact. In this way emotion may intervene consciously and energetically between any two of the objective steps, and cannot fail to do so if consciousness is in due activity. The rise of the mind from the image to the desire, and thence to the volition, will take place, not with the uninterrupted swell of an inundation, but with an alternation like that of the flowing tide of the sea. Ascending waves of thought carry us steadily upward; yet, after each of these, there is a reflux into emotion: we fall back for a moment on self-contemplation, with no loss of ground, and with a resulting increase in the power of the impulse. Feeling exercises, as if by a repetition of quick electric shocks, its characteristic function, of mediating between mind and its objects, of keeping awake and heightening the mind's interest in the persons and things with which it deals, by incessantly recalling to it their effects on its own internal state.

Now, in the first place, the appeal to the primary doctrine being kept open, in order that difficulties may be explainable and rules philosophically justifiable, it will usually be alike safe and convenient, that we accommodate both our treatment and our names to such cases as those which were last described; to cases in which, the objective steps taking place vigorously, the concomitant emotions recur as intermediate steps. It must be asserted emphatically, that the mental process which Persuasion aims at exciting is not rightly excited unless it has this character; unless, through the energy of each cognitive or higher step, the emotion does recur as the prominent and distinctive factor of a step succeeding. Thus, the first step, in which the emotion is decisively in the back-ground, may be described as consisting essentially in the formation of the Image: a second step, which should intervene between the image and the desire, may correspondingly be described as an Emotion.

VOL. XIX.

Data for
Theories of
Literature
and Art.

Secondly, though we are interested in the whole process down to its consummation in action, all rhetorical rules that can confidently be prescribed bear only on the two steps last noted, the first two in the series: the originating objective step,—that is, the fact of Imagination; the subjective step which next interrupts the objective series,—that is, the fact of Emotion.

Explanations are now called for as to each of the four elementary modes of consciousness separately.

10. The doctrine of Feeling has necessarily been in great part anticipated.

It has been asserted that, primarily and subjectively, Feeling must be either Pleasure or Pain. Every state receiving either of those names is distinctively a feeling; and the actuality and importance of such states ought to secure for feeling, in every psychological scheme, a place very unlike the obscure corner which, in our country at least, has usually been allotted to it. Contrariwise, a feeling which is neither pleasant nor painful is a thing inconceivable. But pleasure or pain *absolute* should be distinguished from pleasure or pain *relative*, which is consequent on the diminished intensity of a feeling of the opposite kind. So, further, there are certainly *mixed* states of feeling in which, however, either pleasure or pain must predominate. Moderate degrees of pleasure or of pain are designable by such names as the Agreeable or Disagreeable; and in the complex ideas signified by such names as Happiness or Misery, continuity of pain or of pleasure seems to be the element indicated most prominently.

There has been stated, also, the objective distribution of feelings into Sensations and Emotions, distinguishable by the character of their antecedents or excitants, these being respectively phenomena of the bodily organism of the subject or of his consciousness. This principle of distinction is quite reconcileable with the doctrine of the simultaneity of feeling with the higher modes of mind.

Of the many specific distributions both of Sensations and of Emotions, which emerge through relations to the diversified kinds of excitants, there are but few which here concern us.

It is of some interest to us, and would be of much if we aimed at a universal theory of the fine arts, to note the difference between two varieties of Sensation, both of which place the subject (all sensations do not) in relation to bodies external to his own.—The first contains those sensations which are the subjective concomitants of ordinary perception.—The second is peculiar to two of the senses, those which are most decidedly objective it contains those peculiar sensations of sight and hearing, which are excited by colours and sounds related harmonically. Sensations of this group have great æsthetical value, as being preliminary conditions of the operation of the non-literary fine arts; while a modified pleasure from melody of sounds has a corresponding though less prominent place in literature likewise, operating more widely in poetry, less widely in eloquence.

Of the indefinitely numerous classifications of emotion which emerge when it is regarded from different points of view, there are two which claim our notice.—We are interested, though but indirectly, in the distinction which separates emotions excited by cognition of objects placed in moral relations to us, from those excited by objects contemplated as in relations of any other kind. Emotions of the former group are the moving power in mental processes ruled by conscience, the moral faculty.—The other objective distinction tells more closely on our inquiries. Emotions, whether pleasant or painful, excited by our cognition of objects placed in certain relations to us, tend to rise directly into wishes,—into desire in certain cases, into aversion in others. Emotions excited by our cognition of objects

The laws
of feeling
—sensa-
tion and
emotion.

P

Data for
Theories of
Literature
and Art.

placed in certain other relations to us have not that tendency, but tend to fall back into cognition; and such emotions are always pleasant, or have pleasure as their overruling characteristic. This Emotive Pleasure, not excitative of desire or aversion, but purely Contemplative, is, as we shall soon have occasion to observe more exactly, concomitant in the first instance, and consequent in its recurrence, on a cognition specifically describable as a fact of Imagination. If, looking back to the view we have already obtained of the process issuing in action, we re-consider the first two steps, the image and the emotion, we shall understand the circumstances in which this contemplative pleasure arises, by supposing that process to be arrested at the second step: the emotion, instead of passing on to desire, reverts into imagination or some other phase of intellection. A state of pleasing emotion, having such an origin and such an effect, is the mental state towards the generation of which poetry and the other fine arts characteristically strive: poetry is, then and then only, purely and exclusively poetical, when the pleasure which it excites fulfils those conditions; and the broadest distinction between persuasive eloquence and poetry is before us, when we regard the former as generative of the complete process which is consummated in action, the latter as generating the earlier steps of that process, but these only. The name of Beauty, originally and strictly applicable to visible objects, in reference to certain of the feelings which the cognition of them awakens, has been currently extended in our philosophical and critical literature, so as to embrace all varieties of this contemplative pleasure immediately consequent on an act of imagination.

If we were to attempt accounting fully for the rise of such imaginative pleasures, we should be thrown back gradually on the question as to the origin of pleasure generally; and this inquiry would issue in the theory, which determines all pleasure to arise out of the consciousness of mental activity, exerted on objects which neither confine nor overstrain it. Among the many specific modifications, however, which this law receives, and which must be brought to light before the theory can be applied to any given case, there is one which, as being operative widely and incessantly both in persuasion and in poetical representation, has for us great value.

The modification alluded to is yielded by the great Law of Sympathy, expressible, with small alteration, in the words of Adam Smith: The mind has a tendency to experience feelings which it perceives to be manifested by others. It is not here needed to propose the problem, whether this strong and beneficent tendency be an ultimate law of mind, or whether it may be resolved into laws still simpler and deeper. The law must be accepted in the shape in which we know it to be operative; and in the later stages of our inquiry it will seldom be far out of our view.

The laws
of cognition—
judgment—
—imagination
and
conception.

11. The theory of Cognition, supplying the data for inferences in ontology or metaphysics proper, is the favourite battle-field of philosophical controversy. With the more profound of the analytic problems raised in it we are not here directly concerned. The theory of comparative judgment, again, though we require to use it in some degree, is supplied by any reasonably correct system of logic. What we cannot command so readily, while we need it especially, is a clear and consistent theory of Imagination; and even of the kind of cognitive facts so named, the character cannot be fully elucidated without some consideration of its relations to other phases of intellection.

The widest of all distinctions within the sphere of cognition, is that which the logicians mark by the two names, Apprehension and Judgment. Every fact of knowledge must have the one or the other of the forms so called; no

such fact can have both, or neither. Judgment, that is, cognition expressible by a proposition, is knowledge explicit, evolved, complete: in the proposition something is affirmed or denied of something. Apprehension, that is, cognition expressible by a term, is knowledge implied, unevolved, incomplete: in the term there is neither affirmation nor denial. Yet the idea denoted by the term implies or involves judgment antecedent, while it may also be a step towards judgment consequent. When the names Apprehension and Judgment are used in these logical meanings, it might seem at first sight as if the difference between the mental facts which they denote were purely subjective: we might believe that our knowledge of any object whatever may take indifferently either the one form or the other. Closer scrutiny removes this impression. Mental affirmations, guarded by the relative denials, lie at the root of all cognition; and this is saying, in other words, that all knowledge takes its rise in the form of Judgment.

Accordingly, this formal distinction affects the next widest of the distinctions between modes of cognition, that which separates Knowledge Immediate from Knowledge Mediate. The former is the root of all our knowledge; the latter grows out of it. In the former, the only object known is something which is present, and which is the immediate object of our consciousness; in the latter, this immediate object represents another object, which is remote, not present, but which is known through the medium of the first. Between those two kinds of knowledge there is a formal difference. Every fact of Knowledge Immediate—every fact in which consciousness gives us knowledge of a present object, and does not rest in that confused state which is really no more than feeling,—must have the form of Judgment; neither the complex fact as a whole, nor any of its constitutive elements, can be thought otherwise than as a mental affirmation or denial. Knowledge Mediate, on the contrary, may have either form; the alternative, however, being determined by the circumstances. Judgment, as being knowledge complete and explicit, is the form which mediate knowledge takes when it is contemplated as being a *result*, as that for the sake of which antecedent processes were instituted; while Apprehension, as being knowledge implied, and therefore more quickly thinkable, is the natural form of knowledge which is contemplated as only a *step* towards something beyond it, whether that be a further cognition or a fact belonging to some other mode. These considerations dictate, as convenient if not perfectly exact, a distribution of cognitions; in which knowledge immediate may be considered exclusively under the form of judgment, while knowledge mediate must be considered under both forms.

I. Our Immediate Cognitions, those intuitive beliefs on which the whole structure of human knowledge is built up, are of Individual objects only. This cardinal doctrine being premised, all those deeper questions that lie under it are for us unimportant. Nevertheless some of them must be answered in outline, if it were only that we may be put in possession of names for mental laws which must afterwards be referred to.

Our immediate knowledge, then, is constituted, in every possible instance, by elements of two kinds. We know objects, not absolutely, but under conditions or relations. We have knowledge *à posteriori*,—that is, gained through experience, a knowledge vast and always becoming wider; but this knowledge is limited by a few fixed cognitions *à priori*, necessary, as being independent of experience, and constituting the laws or conditions of all *à posteriori* knowledge, whether immediate or mediate. The individual objects of our immediate knowledge must be either corporeal objects, or internal phenomena of the subject-mind; but our knowledge of objects of either kind is not possible without the concurrence of cognitive elements be-

Data for
Theories of
Literature
and Art.

longing to both classes, *à priori* and *à posteriori*. The individual object is given to us by experience; that is, in a cognition *à posteriori*: the laws under which only we can know it are indeed incapable of operating unless in relation to an object so given; but they are native, mental, *à priori* laws. The frequent necessity for considering separately the two several kinds of elements, gives rise to a division of names. Accordingly, our Immediate *à posteriori* knowledge of corporeal objects has been called Perception, External Perception, or Perceptive Consciousness; our Immediate *à posteriori* knowledge of internal objects, phenomena purely subjective to the ego, has been called Internal Perception, or Self-Consciousness: and Hamilton has generalized the two kinds by referring both to his Presentative Faculty. Our latent but inevitably evolvable cognition of the *à priori* conditions of consciousness, whether internal or perceptive, has been denoted by being referred to an original power receiving different names; as Reason from Kant and most others; Common Sense (awkwardly) from Reid; the Regulative Faculty from Hamilton.—But this abstractive separation of the two correlative elements must not blind us to the essential indivisibility of the fact. Every individual fact, which we could cite as an instance either of Perception or Self-Consciousness, is really a fact of perception or of self-consciousness conditioned by the regulative laws of reason.

II. All the limitations of both kinds, which are imposed on our immediate knowledge, necessarily continue to hem in that knowledge, when, by becoming Mediate, it is developed and made practically useful.

Its capability of becoming mediate is founded on two mental laws.—*First*, The mind has that power of Retention or Conservation, which was noticed as standing in relation to consciousness at large. It can retain, out of consciousness, all mental phenomena which it has experienced, to whatever mental mode these may belong; it can retain alike a feeling, a cognition, a wish, a volition. *Secondly*, The mind has, within certain limits, the power of Reproduction. Past facts of consciousness, retained out of consciousness, may come into consciousness again; and, on being thus reproduced or represented, the past facts become objects of new facts of consciousness. These new facts must be specifically facts of cognition; wherefore their specific laws are here most aptly in place.

(I.) A new cognition, if it is thought of as the *result* of a process of mediate knowledge, must take the form of Judgment,—of knowledge explicit, mental affirmation or denial. The process is one of comparison; the judgments may be distinguished from judgments intuitive, by being called Comparative; and the theory of them, while for most of our practical uses it is grounded firmly enough on common sense, is systematically evolved in the science of Logic. The formation of comparative judgments is the result which we shall have to consider as aimed at in the processes to be theoretically described as Exposition and Persuasion.

In regard to the objective varieties of comparative judgments, we are interested only in marking the progress by which, beginning with application to individual objects, they rise to embrace classes of objects.—All the compared objects may be Individuals, each of which was formerly known by us in a fact of immediate consciousness, and is now represented: This is the only case in which the resulting judgment can be the first comparative judgment which the process contains. All other cases presuppose other comparative judgments, and therefore require a more severe exertion of mind. The presuppositions become more numerous, and the mental strain grows more intense, with every new introduction of a compared object which is not an individual but a Class. For a common term, which is the name of a class, and is necessary for our compendious thinking of

that class, is merely an abbreviated definition of the class, which is itself a proposition, the expression of a judgment. Such a judgment has been gained through the process called Generalization; that is, a judgment, or series of judgments, in which given individual objects are compared, and formed into a class in respect of similar attributes; or in which, after the same manner, given classes are combined into classes more extensive. In the process of Specification this procedure is exactly reversed.

(II.) The last assertions in this cursory review of comparative judgments have already led us into one section of the doctrine previously propounded, that Apprehension is the natural form of mediate cognitions, which are only *steps* in processes leading to something beyond.

A term, which is the expression of a fact of Apprehension, must belong to the one or the other of two kinds. It may be a Singular Term, the name of an Individual; the name of an object, which may or may not be actually divisible into several component objects, but which is thought of from a point of view in which it is one object only. A term, again, may be a Common Term, the name of a Class; and, as above hinted, this class may be constituted either by individual objects, or by narrower classes. Now, the name Apprehension being conveniently confined to knowledge that is mediate, as being of objects not present, the distribution of apprehension into kinds runs parallel to the distinction between terms singular and terms common. The name Imagination belongs rightfully to all apprehension of objects individual: the name Conception is fitly restricted to the apprehension of universals; that is, of the ideas denoted by common terms. The words Image and Concept signify severally the two kinds of facts as regarded from the objective side.

1. Imagination is always Reproduction. It gives, as objects of immediate cognition, mental states identical in constitution with, and therefore accepted as representing, facts of past consciousness, or factors or elements of such facts. But it has two phases, differing directly in respect of their antecedents, and hence deriving a difference in respect of the remote objects which they represent. In the first of these the remote object may be said to be the Past; in the second, it may be said to be the Possible.

(1.) In the first case, the mind represents only one individual fact of past consciousness; and, it may be noted, the representation is probably never complete. Here Imagination is Simply Reproductive.

This phase of imagination is governed, and the second through it, by the great mental law usually called the Law of Suggestion, or the Association of Ideas. The most authoritative systematization of this law is Hamilton's. All phenomena of the same subject-mind are capable of suggesting each other; a mental fact given in present consciousness may suggest any other, which was formerly in consciousness and has been retained. The suggestive power is primarily given to mental facts either by their identity of constitution, or by their original coexistence or coadjacency in time. On the one hand, a present mental fact may suggest any past fact constituted wholly or partly by the same factors; on the other hand, a present mental fact may suggest any fact which was formerly present with it in consciousness at the same time, or as a step in the same mental process. The suggestive power is modified, or secondarily determined, by this law: that mental facts are suggestible in proportion to their "interest" for the subject-mind; that is, in proportion to their tendency to excite emotion. Out of these widest laws, primary and secondary, arise others more specific and complex: and all of these might, for use, be combined into the one doctrine; that the phenomena of the same mind suggest each other through Resemblance, Contrariety (which implies resemblance) or Contiguity.

Data for
Theories of
Literature
and Art.

Again, reproduction may be influenced by Will, though not directly yet powerfully. A complex thought or a group of thoughts being present, we can will to concentrate consciousness on some one factor or member of it. The case exemplifies the process called Attention (or Abstractive Attention), which will be examined immediately; and the thought thus attended to may and will suggest others, which, though related to it either by constitution or in time, had been overlooked when it was contemplated only with others.

Lastly, a past thought or other fact may be reproduced, without our knowing that we had it before. We may even believe that it is a new combination, produced by a process issuing in imagination of the second and higher phase. But this step may be followed by another, in which we recognise the past fact, that is, know that the new fact represents a certain past fact. There is thus performed a process which, beginning with Retention out of consciousness, proceeds in consciousness to the successive steps of Reproduction and Recognition. When the process has thus been completed, we say, not that we have imagined the past fact, but that we have remembered it; and it would be convenient if the name Memory could be applied, for technical uses, to such a process as a whole. It is, however, very frequently used to designate only one or another of the constitutive steps. It is particularly to be observed, that the reproduced thought is truly and essentially an Image; that, indeed, this reproduction of some one past fact, in whole or in part, is the normal and radical instance of Imagination. But till recognition has taken place, the reproduction is virtually for us equivalent to imagination not of the past, but of the possible. Therefore, and because it is on our thinking of the possible that the laws of imagination have the closest practical hold, the name imagination comes to be seldom applied to simple reproduction.

(2.) In short, the name is very usually, and with little of immediate harm, limited to that higher phase of imagination, whose remote object is something which we can think as possible, something whose individual existence we can suppose without violation of any law of thought. Imagination of this character has been called Productive, and (less safely) Creative. The antecedent process to which its peculiarities are owing, would be indicated if we were to call it Synthetic. It does not represent merely one past fact or part of such: it represents two or more past facts, or factors of such, combined under some relation which gives to the combination an individual totality or unity. Consequently it is the result of an antecedent process, which never can have been very simple, and may have been overwhelmingly complex. It must have embraced, besides modifying and colouring flashes of emotion, two or more distinguishable stages of cognition. First, more images than one must have arisen in the mind, through acts, more than one, of simple reproduction. Secondly, There must have taken place judgments, in which there are compared together, in respect of their mutual relations, either those images as wholes, or factors or features of each, or the wholes of some and parts of others. On these antecedents follows the synthetic formation of the new image, an image of something which as a whole had not been known or thought of before. In short, imagination simply reproductive gains its image from one retained fact of past consciousness; imagination productive or synthetic,—imagination in the common meaning,—sometimes and aptly called Fantasy,—gains its image from two or more facts of simple reproduction followed by a series of comparisons.

The function of synthetic imagination cannot be examined too closely by the student either of eloquence or of poetry.

2. The remote object of Conception may be said to be

the Universal. A concept, the idea of a class, denotable by a common term, is really, as already asserted, an abbreviated and implied judgment, which would have been explicitly denoted by a definition of the class. Further, this implication, so necessary for rapid and easy thinking, cannot be reached otherwise than indirectly; the concept can be thought only symbolically, as through words, arbitrary symbols. These are adequate reasons, both for the greater mental exertion required in the fact of conception, and for the difficulty of harmonising conception with imagination. A common term does not directly suggest an image. It does, indeed, tend to fall back into the image, through the desire of the mind, in thinking of classes, to make its intellection clearer through thought of the constitutive individuals. But the thought which it directly suggests is the implied judgment; it raises the question of truth or falsehood, which the thought suggested by an image does not. The mood of mind excited by concepts,—that is, specially, the tone of feeling,—tends to weaken or destroy the mood excited by images: and both this tendency, and the comparative inefficacy of concepts to excite images even indirectly, increase with the distance of the concept from immediate cognition; or, in other words, with the increasing width of the classes which the concepts represent. All these considerations are rhetorically very important.

12. The reason for adopting the term *Wishing*, to denote the "Active Principles" or "Powers" of Stewart and other standard writers, was virtually assigned in the hint, that wishes are of two kinds, *Desire* and *Aversion*. The received theories confine attention to the former, the positive form, neglecting the latter, the negative. Each implies the other; and, though it is desire that is by far most frequently the direct prompter of volition and consequent action, yet it is a question of circumstances whether it may not be by aversion that this function shall be discharged. The theory is not complete unless both forms be taken account of.

All wishes, as developed in the positive form, are referable to one or another of the three kinds described by Stewart as *Appetites*, *Desires* (in a narrow sense of that word), and *Affections*. It is only with the latter two of those classes that rhetorical inquiries are concerned; and, for these or all the three, Stewart's doctrine might serve our present uses reasonably well, if there were worked into it the few points that bear directly on aversions. But, even for studies such as ours, increased clearness of apprehension may perhaps be won through an analysis somewhat closer.

In the first place, all wishes are distinguishable objectively into Two Orders. The first order contains Stewart's *Appetites* and *Desires*, with the relative *Aversions*. These may be described as *Wishes Simple* or *Direct*; and there lies on the surface a reason for calling them *Self-Regarding*. The second and higher order contains Stewart's *Affections*. These may similarly be called *Wishes Complex* or *Indirect*; and they may be spoken of also as *Not-Self-Regarding* or as *Sympathetic*.

The analysis of wishes belonging to the first order will open the way for the analysis of those belonging to the second. But there may be prefixed a notice, that exception is to be taken to the answer most commonly given to the question, what is the object of a wish? According to Stewart, the objects of appetites and desires are things, and things of different kinds; the objects (proper) of his affections are persons. More exact inspection, it is thought, entitles us to say, that all the objects of wishing are primarily of one and the same kind, the differences between them going no further than modification.

I. The true object of a wish must be something, by the existence of which the wish would be exhausted.—First, then, the object of a Simple or Direct wish is in every conceivable case a state of the subject-mind, the mind that

Data for
Theories of
Literature
and Art.

The laws of
wishing—
desire and
aversion.

Data for
Theories of
Literature
and Art.

wishes. Secondly, that state is a feeling, either emotion or sensation; or it is a state in which, if it be thought of as complex or continuous, feeling is thought of as the predominating element. The object of a desire is a state of pleasure; the object of an aversion is a state of pain. Thirdly, this state is thought of as future; futurity is implied even in the desire of, or aversion to, the continuance of a mental state which has already come into existence. Fourthly, this future state of pleasure or pain of the subject-mind must have been represented by the subject in an antecedent fact of imagination; and, by reason of the nature of the object, this fact must have been specifically one of Imagination Synthetic.—Through these features of the object, this order of wishes is distributable into two classes. The Appetites, and the relative aversions or loathings, are Sensuous Wishes; the feeling imagined is a state of sensation. The Desires of Stewart (Propensities of other authors) and their contraries, are wishes Non-Sensuous; the feeling imagined is a state of emotion.

The elements which have been described are all the elements which are absolutely essential to the object of a direct or simple wish. But there is yet another element which, though inessential, is seldom if ever absent, and which in our everyday thinking receives more attention than the others. We think of the object, our own future state of feeling, in relation to something which has a tendency to bring it into existence; something which is a cause or a constituent of a cause, of which the mental state we desire or are averse from is imagined as the effect. In unanalytic consciousness the idea of this cause or con-cause usually obtrudes itself so as to obscure,—and may often come up so strongly as almost quite to conceal,—all the other constitutive ideas. It has this prominence for two sufficient reasons. In the first place, it is only when the idea of a cause is incorporated into the idea of the object that a wish becomes definite, precise, clear; without that idea it remains vague, shadowy, describable perhaps as a longing—a longing for something we know not what. In the second place, and consequently, until the idea of a cause has arisen there is no outlet towards volition; not only is volition subjectively impossible, but there cannot even arise the question, whether the object of the wish is attainable.

It is a truth not to be overlooked, that, if this analysis be correct, that idea of the object, out of which a direct wish emerges, and towards which it tends, has inevitably a character, not only of complexity, but also of greater or less indistinctness and vacillation. This is in perfect harmony with the character of wishing in itself, and with the function which it discharges as a step in mental processes. Its own character inclines towards indistinctness, in proportion to the approach it makes to the subjectivity of feeling: its transitive function, as mediating between cognition and volition, compels it to vacillate, and even to relax its hold on the central point of the idea, in proportion to the closeness of its reference to action. The ultimate reference to self, and to a state of feeling of which self is the subject, can never be lost entirely in consciousness without disappearance of the character of the fact as a wish: but this reference is naturally and irresistibly forced into the background by the necessity of giving prominence to the cause, through which lies the only path to action.

These considerations go far to account for the prevalent opinion as to the objects of the facts which we commonly describe as appetite and desire. They may be said, indeed, to justify our using, in description of the object of such a wish, forms of expression implying no analysis going deeper than the datum of unreflective consciousness; and convenience and clearness concur in driving us on such expressions. But the result of the more accurate dissection must not thus be allowed to slip out of view; and opportunities may often occur for appealing to it.

Data for
Theories of
Literature
and Art.

II. In regard to the Affections (of Stewart) the first and chief doctrine to be asserted is this.—All the four characteristics of the objects of Simple wishes belong also to the objects of these wishes, the Complex: the description is correct for these as for those. It must be maintained, without qualification, that the true object of an affection, benevolent or malevolent, is a mental state of the subject, not of any other person or persons. The seeming paradox requires to be justified.—The description of the object, complete for simple wishes, is not complete for wishes that are complex. The object of a wish belonging to this order has two characteristics in addition to the four. First, the idea of cause, inessential to the object of the lower order of wishes, becomes essential here. Secondly, this cause must be a mental state, and specifically a feeling, pleasant or painful, sensation or emotion, of some conscious and sensitive being or beings different from the subject. How, then, do we account for the prominence which, in our consciousness of an affection, is unquestionably held by the idea of the person we commonly speak of as the object? It is accounted for on the same principle as the corresponding difficulty in the former case; but here the answer is even easier. The idea of cause, and of a state of the person loved or disliked as being the cause, cannot but come up in a wish of this character: the wish is not possible without it. It is, further, the state of that person, not our own state, that will be directly affected by the subsequent volition. Therefore our consciousness is ruled over, or even monopolized, by the thought of that person and of the state in which our volition will place him.—To all conceivable objections, again, there is this reply. An affection of mine would not be exhausted by the pleasure or pain, the happiness or misery, of the person to whom I wish well or ill: it could not be exhausted till I should come to know that state of his, and to experience the correspondent emotion. Yet here, as in the other case, our phraseology is conveniently modelled on the unanalytic view; the more correct doctrine being reserved for use when the other threatens to lead astray.

Nor does the doctrine really raise any ethical difficulties. The moral relations of the affections, indeed, do not come out clearly, until distinct account is thus taken of the subjective reference made in the last resort by all of them. It is only thus that we recognise precisely the functions of the two great laws, which govern affections and the consequent volitions and actions.—The law of Sympathy originates the pleasure which attends our imagination of the pleasure or pain of others, the pain which attends our imagination of their pain or misery. The law of Duty, a higher law, the highest of all laws,—the law in virtue of which we have pleasure in the thought of that which is right, and pain in the thought of that which is wrong,—discharges, in regard to the affections, a double function. It intensifies and sublimates the sympathetic pleasure which is concomitant on goodwill to our fellow-men: and, when there has been excited the pleasure incident to ill-will, it supplies the place of the sympathetic check, and opens the mind to new images suggestive of worthy emotions. Sympathy is actually pleasant; a good conscience is actually pleasant: both of these truths are laws in our nature; and woe to us if our nature were not so ruled! Nor is this a resolution of affection into selfishness. Small risk does that man incur of undue regard to self, whose unhappiness is greatest, not in remembering disappointment of his own desires, but in witnessing the miseries of others; the man who has learned to find his highest happiness, not in the nourishment or gratification of wishes which do not pass beyond himself, but in the sympathetic contemplation of the wellbeing of others, and in the conscientious wish to promote their happiness or alleviate their suffering.

It is further to be noticed that, when the object of wishes has been identified correctly, the question whether

Data for
Theories of
Literature
and Art.

an Affection is a desire or an aversion is seen to be quite different from the question, whether it is Benevolent or Malevolent. Good-will and ill-will may alike, according to circumstances, develop themselves in either form. In being conscious of a benevolent affection, I may either desire for the person thought of a state describable as pleasure or happiness; or I may be averse to his being the subject of a state of pain or misery. In being conscious of a malevolent affection my position is alternative in the opposite way.

The laws
of volition
—the ante-
cedents of
action.

13. In regard to Willing, we are here bound chiefly to keep in sight the real and radical distinctions which separate a volition from the antecedent wish.

They are different even when regarded subjectively, or as states of mind. Indeed, though a volition must be preceded by a wish, there are wishes which though they might be succeeded by volition are not so; and there are wishes which cannot be so succeeded. This is a point which will by-and-by be put to special use.

Again, wishing and willing must be both different in character, and non-concurrent in time, in respect of the difference of their objects, and the relations in which the objects stand to each other. This distinction is clear even on the common view as to the objects of wishing: it emerges with added strength of evidence on the more analytic view of the character of those objects. In a given process embracing both mental facts, the two objects are regarded by us in a light which pre-supposes both their non-identity, and the difference between the wish and the volition. While we still look forward to the consequent action as future, we consider the object of the wish as an end or purpose, the object of the volition as a means towards that end: during and after performance of the action, the object of the volition is for us a cause, the object of the wish is the relative effect. The distinction is obvious as to Simple Wishes. It holds also as to Wishes Complex: for though the idea of a cause is there necessary, it is only the idea of a cause intervening between the object of the wish and that cause which is the object of the volition.

The object of a volition, that which I will, is a fact, either of my own mind or of my own body, which I know or believe myself to have the power of bringing into existence; and I will it because I know or believe it to be a cause, or one of the elements making up a cause, either adequate to produce as its effect the state of feeling which had been the object of an antecedent desire, or adequate to avert the state which had been the object of an antecedent aversion. The object of a volition is, in one word, an Action: a fact consequent on volition is the only kind of fact to which the name of action is strictly and properly applicable.

Further, as the object of a wish must have been imagined antecedently, so must it have been with the object of a volition. We cannot but know what we will; and the nature of the case precludes cognition in any other form than that of imagination. An image of the act must intervene between the wish and the resulting volition. In the volitional stage, as in the preceding, the rapidity of the process may doubtless be so great that the two successive facts shall not at the time be distinguishable from each other: but their real consecution and difference must not be lost sight of. The circumstance produces a complication which should be noted by the student of eloquence.

The process may, and with effects not less important rhetorically, be complicated still further by the intervention of processes of Deliberation. This name indicates a series of comparative judgments: the things compared are two or more judgments inconsistent with each other; and, if the progress towards action is not broken off, the issue must be a judgment accepting one of them as true to the

rejection of the others. We may and do deliberate as to both of the objects,—as to the object of the wish and as to the object of the volition,—as to the end, and as to the means: and hence the imagining of each of the two successive objects may be preceded, delayed, and conditioned by an elaborate series of inferences.

Data for
Theories of
Literature
and Art.

14. In the psychological outline now closed, there has in effect been anticipated the theory of Persuasion; that is, the section of Rhetoric which is at once the most thorough and the most extensively available for use.

For, in performing completely the process called persuasion, what we aim at is the generation of volition in the minds of other men; and there have come up before us here, one after another, all the steps of the process which issues in volition, that is, of the process which, in persuasion, we seek to originate in the minds of others. In the simplest view that is even conceivable, that process involves the following successive steps (feeling being in the meantime overlooked): a fact of imagination synthetic, yielding an image of the object of the wish; a fact of wishing, in the form either of desire or of aversion; and lastly, the resulting fact of volition. If, however, a dissection attempted in the last section be sound, the process must always be less simple. There must first be imagination and consequent wish, referable to the object which we are desirous of or averse from for its own sake as end. There must next be imagination, referable to that action of our own which is regarded as a means towards the satisfaction of the first wish; and only out of this second image can the volition arise. Feeling, however,—and, specifically, emotion,—pleasure or pain, really (as we must hold) accompanying each of those steps, will necessarily, at some stage or other, and probably more than once, emerge into an evanescent prominence, and for a moment intervene between the facts which are distinctively objective.

Bearings of
the psycho-
logical laws
on persua-
sion—the
character
of atten-
tion.

It was hinted, however, that rhetorical rules cannot grasp closely any but the first two of the steps thus described:—the Image and the subsequently emergent Emotion. It must likewise be kept in mind that, as also hinted, these two steps are common to eloquence and to poetry. Eloquence aims at continuing the process to its consummation. Pure poetry aims at turning the process back on its first step; and it is a question to be raised hereafter, on account of its bearing on rhetorical points, what effect is produced when poetry does aim at proceeding further.

There has to be added one other doctrine, which could not be explained satisfactorily till all our materials were accumulated. The problem regards the influence of will on cognition or intellect; and it is raised by this question:—what is the real nature of that mental state, which we seem to know so familiarly under the name of Attention.

Attention might be said to be the concentration of consciousness on certain objects. It is plain that attention is often the result of volition: the knotty question is, whether it is always so? It may be that those are right, who hold that an instinctive concentration of thought, an attention not determined by will, is a necessary condition of all consciousness: but it is not easy to see one's way through the difficulties which stand between us and that conclusion. At present it is enough to make this assertion:—that Attention strictly so called, a concentration of thought determined by will, is an indispensable condition of the rise of consciousness above that confused state, of which feeling is the norm. A fact of attention, in this sense of the word, is a mental process, consequent on volition and its antecedents: it must either be constituted exclusively by cognitive facts, or have cognition as its first and determining step; and lastly, it must involve what is usually called Abstraction, or the throwing certain objects out of conscious-

Processes
constituting
Eloquence.

ness and retaining others. Attention, then, and attention which is voluntary and abstractive, is an antecedent and peremptory condition of all cognition that is "clear" (in Leibnitz's sense of the word); and such cognition must precede all further progress of thought that is available for any practical purpose whatever.

Accordingly every fact of clear cognition is properly an action: it is a voluntary exertion of mental energy, having had for its antecedent a process in which we have run up the whole gamut of mental manifestation. In the sense thus indicated, it may justly be alleged, of any mind exercising even the lowest degree of available intelligence, that

it is always active. A mind must act, that is, its phenomena must be directly consequent on its own volitions, if it is to rise above the level of a dreaming idiocy.

For our use here, this doctrine of attention supplies invaluable corollaries. If the doctrine is accepted (and it does appear to be almost a truism), the process by which volition may be excited, is perceived to have a field infinitely wider than that which at first it might seem to cover. The theory bears directly, not on persuasion only, but on the attempt to generate pure belief; and its applications, not confined to eloquence, range far and sink deep in the realm of poetry.

Processes
constituting
Eloquence.

III. ANALYSIS OF THE PROCESSES CONSTITUTING THE ART OF ELOQUENCE.

The character and
relations of
the processes of
communication
through
language.

15. When we seek to identify those normal and elementary forms, into which all literary processes must be resolvable, we might perhaps expect to find those forms naturally determined by the characteristic differences of the three purposes, with a distinctive view to one or another of which communication must always be made. But the first of those purposes, the generation of belief or judgment, is entertained in so many dissimilar shapes, and aimed at from data so exceedingly various, that absolute similarity, even in prominent features, is not to be looked for in all the processes leading towards it. In recognising two distinguishable kinds of processes, as each tending towards this end, we accept the smallest number of distinctions that can yield any clearness of doctrine.

While, therefore, the Purposes of communication by language are only Three, the Processes relative (within that sphere) to the attainment of these purposes must be set down as Four.

First, The name of Exposition will here denote all processes, in which the generation of belief or explicit knowledge is aimed at through any means other than argument.

Secondly, The name of Argumentation will suggest, at once, processes in which, the generation of belief or explicit knowledge being the purpose, the means used is argument or proof.

Thirdly, The name of Persuasion is applied by common consent to all processes, in which the end aimed at is the generation of volition.

Fourthly, The name of Poetical Representation may indicate all processes, in which language is used for the generation of pleasure through imagination.

The substance of the Theory of Eloquence consists in the analysis of the first three of those four processes; and these will next be taken in the order in which they have been named: which order, likewise, as noted before (section 2), is that in which they occur when all of them are completely incorporated into one discourse. In the same section those weaknesses were touched on, which attach to the theories of exposition and argumentation, and which leave the theory of persuasion as the strong ground of a rhetorical system.

I. THE PROCESS OF EXPOSITION.

The character and
varieties
of the process of
exposition.

16. In the cursory examination, which is all that this process requires, the first point is the setting aside of those cases where the generation of belief is dependent on the matter asserted, from those where it is dependent on the manner in which the assertion is made. Evidently it is only on cases of the latter kind that any firm hold can be caught, even by the very few rhetorical laws here obtainable.

I. Belief may be commanded, without proof, by the character of that which is asserted. It may be a truth self-evident to all men; and that either as being a universal

condition of human knowledge, or as being vouched so thoroughly by experience that it is admitted unhesitatingly as a practical rule of life. Or it may be something which, though not self-evident, is yet undoubtingly admitted by those to whom it is stated.

In neither of these varieties of the first case are rules properly rhetorical either needed or attainable. The task of the speaker or writer is, at the utmost, nothing more than that of reminding his hearers or readers of something which supposably ought to be brought distinctly to their remembrance. If anything else is requisite, it can only be explanation of the words used; and, in certain kinds of eloquence, much time is often bestowed on such explanation, involving not seldom much of argument. When the process is purely expository, the only qualifications required by the party communicating are two: clear thinking, clear and distinct apprehension of the objects treated; perspicuous language, that clearness of expression which does not necessarily attend clearness of thought, but towards which clearness of thought leads, and which, when thought is obscure, cannot be attained unless through a momentary accident.

II. Belief may be commanded, without proof, by the manner of communication. Belief may thus be commanded in either of two ways.

1. It may be generated by the aspect in which the assertion itself is made to appear. The alleged truth is so represented that the recipient wishes it to be true. This is really one of those complex cases, in which the several communicative processes are fused wholly or partially into each other. What is performed is, in fact, an incomplete process of persuasion: that process is carried on to the formation of the wish; and then the minds which are affected by it are led aside towards belief instead of being urged further onwards to volition. Things which we desire to believe are undoubtedly believed by us infinitely more readily than things to which we are averse, or about which we are indifferent; and a lively act of imagination, giving rise to an intense wish, is a step which, especially in minds untrained to the testing of evidence, stands close to positive belief, if only no circumstances are obtruded which make the fact in question to be impossible or highly improbable.

2. The belief may be generated by the aspect in which the speaker or writer is able to represent his own character and position. This variety of the process is the first of the three *πίστεως* explained in the Rhetoric of Aristotle. It is the method of generating belief which he describes as residing in the exhibited character of the speaker,—as taking effect when the discourse is so framed as to make the speaker appear worthy of credit.

In a word, the case is one in which the writer or speaker aims at taking the position of a witness; and, the discourse being assumed to supply the only means which the audience have of judging as to his character, he has to aim at exhibiting himself as possessing all the qualifications of a

Processes
constitut-
ing Elo-
quence.

witness who is trustworthy. In one who gives judicial testimony, the essential qualifications are of two kinds, intellectual and moral; and these are the quarters on which the clearest light must be thrown by the discourse, when an orator or literary man strives to give to his words the weight of testimony. Which of the two is the more important, is a question of circumstances.

Clearly, in both respects, rules of art must be all but powerless. That which the man is, will essentially determine that which he can seem to be. The only field indeed in which forethought and art may raise seeming far above being, is not literature proper, framed for being pondered over in the closet, but oratory proper, designed for oral delivery. Just as a jury forms, from the manner in which a witness gives his evidence, an impression favourable to his intelligence and honesty; so may they, or any other audience, especially a large and mixed one, be impressed similarly towards a public speaker, by features of his manner, which are really the fruit of elaborate study and practice. The small literary efficiency of this means of impressing belief has almost banished it from notice in modern works on rhetoric; although its admirable oratorical power, especially in the shape of skill in elocution, commended it naturally to Aristotle, whose precepts had their chief practical end in the instruction of public speakers. Weak, however, as rhetorical theory is here, the points deserve to be paused over for a moment.

(1.) In regard to the moral qualification, in its bearing on communication strictly literary, very little can be elicited with advantage. A literary man is presumably an honest witness, ready to report his knowledge conscientiously and correctly. He can hardly exhibit himself in any other light, unless by betraying innate moral weakness or depravity. Yet literary statements affect us strongly, both with prepossession and with prejudice, even when the moral elevation or sinking is not very decided, or when the difference extends no further than to disposition or temper. There is all the unlikeness in the world between the distrust with which we learn to treat the assertions of the savage and gloomy Swift, and the kindly confidence we repose in what is said by the cheerful and kindly Addison; nor does the sympathetic glow which is shed over us by the genial Goldsmith accompany us when our teaching is derived from the honest but arrogant Johnson.

(2.) The intellectual position of the writer must be established both as to opportunities, as to intelligence, and as to knowledge. But, first, ostentation either of intellectual power or of resulting knowledge would be a violation of the first section of the rule, as tending to excite moral distrust; and parade of ability or skill of any kind, by calling away attention from the matter to admiration of the writer, would cool the tendency to faith, even if its moral effect were not directly adverse.

In the creation of impressions favourable to the intellectual character of the writer, the cast of his style is of great importance; although here, as in regard to most points affecting language, little more can usefully be done than the calling of attention to the principle. In Bentham's posthumous essay on Language, an attempt is made to generalize this doctrine. Intellectual strength, it is said, is indicated by a character of style which may be called Dignity or Self-possession. It has the effect of indicating the writer's mastery both over himself and over his matter. It is distinguishable through its want of certain faults, especially two: *first*, laxity, a general prevalence of offences against perspicuity in the use of words; and *secondly*, a tendency to grope about among ideas without at once finding the right one, out of which arises a superfluity of ideas as well as of words.

(3.) To those two essential qualifications of the witness, Aristotle adds, for the orator, a third, Good-will towards

those whom he wishes to impress with belief. For oratory dealing with party-questions, the production of a favourable impression in this direction is clearly of great moment. In literature the circumstances give but seldom occasion for raising such questions. But in some kinds of literary compositions,—as, for instance, History,—there is continual occasion both for watching the means of fairly causing such impressions, and for guarding against the distrust which may spring up where the adverse inclination of the writer is not or ought not to be concealed. When, before canvassing proofs, we do distrust an historical statement bearing on a party-question, our want of faith in the historian as adverse to our own opinions is almost always complicated by distrust in the assertion itself, as one which we are unwilling to believe.

Perhaps it is scarcely worth while to add, that the same favourable impression, which may generate without proof a belief that otherwise would have been totally absent, must, *à fortiori*, be efficacious in facilitating belief, in cases where proof is offered but is not in itself sufficient.

II. THE PROCESS OF ARGUMENTATION.

(I.) THE CHARACTER OF ITS RHETORICAL THEORY.

17. This process must by us be studied for a purpose which may become the clearer, if we first contrast it with another purpose, for which also it is analysed by a science having a primary and preferable hold on it.

The logical
problem
and the
rhetorical.

As a process of thought, Argumentation is subject to Logical Laws: as a process of communicated thought, it is subject to Rhetorical Laws. The process which we review, being the process in which argumentative thought is communicated, is not completely theorised unless, while its rhetorical laws are directly laid down, its logical laws are presupposed. The complete theory may be said to comprehend the solutions of two several problems.

The first is the Logical problem. It may be expressed thus. Given certain propositions as premises: it is required to determine whether any conclusion, and what conclusion if any, may validly be inferred from them.—The second problem, the Rhetorical, is not enounced so easily, in a shape at once sufficiently precise and sufficiently comprehensive. The following may be taken as a fair exposition of it. Given a certain proposition as a conclusion: it is required to determine through what premises, and through what use of those premises, the truth of the given conclusion may be made evident to persons who would not otherwise believe it.

The contrariety between the two problems should be marked from several aspects.

The solution of the logical problem enables us to *test* arguments: we take our stand on the data, the first two steps in the argumentative process; and we find the conclusion, the third step, or pronounce it impossible. The solution is exact, exhaustive, and peremptory; and it bears directly on the instance given.—The solution of the rhetorical problem is designed for enabling us to perform the more difficult task of *constructing* arguments, and of constructing them so that they shall be effective on other minds than our own. We take our stand on the conclusion, the third step in the argumentative process; and we seek the premises, the first and second steps, that these may be adduced in proof of the conclusion. The solution of the problem is approximate, incomplete, and probable instead of being peremptory; and accordingly its use extends no further than this, that it suggests to us the outline of a method, by the wise use of which (besides collateral advantages), the finding of premises to prove given conclusions may be made easier than it would be if it were set about without the use of any method guided by law.

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That, accordingly, in which we are aided by this section of rhetoric, is first of all the Finding or Discovery of Premises, the other aids being consequent and dependent on this. It might be called likewise, in logical phrase, the Finding of Middle Terms, or media of proof: for what must be gained, in the first instance, is a term with which we might successively compare each of the terms of our given conclusion; and this term, the middle, being once discovered, the construction of the premises with it and the two others is a matter of course.

We express really the same analysis, but in a more familiar shape, if we say that this essential part of the rhetorical theory of argumentation aids us in the Finding of Arguments. For the word "Argument," strictly meaning the middle term, signifies very often, in common speech, the assumed facts on which a conclusion is rested, and often also the whole argumentative process.

Names of similar import described, among the classical rhetoricians, this dialectical or semi-dialectical section of rhetoric. It was the *ἔφευρος* of the Greeks, the "Inventio" of the Romans and schoolmen. What it dealt with was called the Invention of Arguments in our own older language, when the distinction was not yet taken precisely between invention and discovery.

(II.) THE CLASSIFICATION OF ARGUMENTS.

Compari-
son of
schemes.

18. In most of our modern systems of Rhetoric, the theory of argumentation is a dead blank. Either an appeal is taken to Logic as the only science which can give any aid to the process; or else we are told that both the one science and the other are useless, and that the only guides to be relied on are knowledge of the matter, and practised sagacity, and sound sense.

The elaborate and special topical systems of the old world have not been, and are not likely to be, recalled into life by any one. But of systems of universal topics, intended to cover all departments of knowledge likely to be argued about, without descending into the details of any, there are more than one that have exhibited much acuteness and ingenuity. Among those which, while they have available points, are palpably deficient in generalization, Priestley's may be cited, for the sake of some features of likeness which will come to light immediately. All arguments, says he, are founded on one or another of *nine* relations. We must argue from premises which express one or another of these things:—Definitions; Adjuncts; Antecedents; Consequents; Means; Analogy; Contrariety; Example; Authority.

It may be observed, likewise, that there is one recent scheme of relations, which, though not applied by its author to rhetorical use, might be so applied without much difficulty; while it is not only, as might be expected, highly philosophical in conception, but also much closer than Priestley's to the scheme immediately to be explained. This is the doctrine as to the Import of Propositions laid down in Mill's Logic. All propositions, says Mr Mill, must import one or another of five things:—Existence; Co-existence; Sequence; Causation; Resemblance.

We attain a simplicity yet greater, without losing any principle that appears to be essential, when we recur to that universal classification of all possible arguments, which was expounded in the oldest and most celebrated of all extant rhetorical treatises, and has been elucidated with admirable effect in the best rhetorical work of our own time.

Aristotle, in his Rhetoric, distributes all arguments into *three* classes. His third class, the argument from *παράδειγμα*, or Example, is easily identified; but much darkness has rested on the question as to the nature and difference of each of his first and second kinds—the argument from *εἰκὸς*,

or Probability, and that from *σημείον*, or Sign. The only interpretation that is rational or self-consistent is one which is assigned by some of the commentators, such as Majoragi; and this reading, adopted by Archbishop Whately, may safely be believed to yield, as he alleges, the genuine classification of Aristotle.

According to Whately's scheme, the first kind of Argument is the *εἰκὸς* of Aristotle; the argument from Antecedent Probability, which is described and analysed as leading us from cause to effect. The second kind is Aristotle's *σημείον*; the argument from Sign or Symptom, declared to lead, not strictly from effect to cause, but from a symptom to the thing indicated by it. The third kind, Aristotle's *παράδειγμα*, is the argument from Example.

What is now to be given is an explanation of the Aristotelian scheme on this interpretation of it, and with much use of suggestions supplied by the interpreter. An attempt is made, however, to trace the rhetorical rules upwards to their principles.

19. In arguing or inferring, we pass from the known to the unknown; from something which is assumed as known already, to something which is not known till it has been inferred. Our inferred truth, the conclusion of our inference, must be one only: let it, for brevity, be called X. Our known truth, the datum, is likewise one in the aspect in which at first it naturally offers itself: let it be designated as A.

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But, though the truths which are the matter of inference thus seem to be no more than two, the logical analysis, which shows them to be necessarily three (for the cases of immediate inference are reducible to the same principle which rules the syllogism), is vindicated even without the use of logical forms. From a known truth A, considered simply and by itself, an unknown truth X cannot possibly be inferred. We cannot from A infer X, unless on the assumption that there exists some *Relation* between them. This is our third truth, a second assumed truth:—that A and X are in some way or other mutually related. Even if we continue to express our reasoning in popular forms, we either make this second assumption silently, or incorporate it in the expression of our A. The assumption is made in this case as really and as thoroughly as it is made when, setting forth the inference in its developed logical shape, we exhibit the assumption explicitly as a second premise.

Taken strictly, then, the relation required is quite independent of all considerations derived from the uses to which it may be put. It is not strictly a relation even between the steps of the inference as such; still less is it a relation dependent on the forms the inference may take, or on the purposes to which it may be applied. It is a relation of matter, an objective relation: it is a relation between the objects which are the matter of the inference.

Hence comes the doctrine from which our classification of arguments must start.

I. From a known truth A we cannot infer an unknown truth X, unless in virtue of some objective Relation assumed to exist between A and X.

Accordingly, our classification of arguments ought to rest on a classification of the relations between all objects of thought. The construction of such a classification is a high and deep problem in ontology or metaphysics proper; and the experienced impossibility of reaching an exhaustive solution of it entails imperfection on our transformation of the solution into a practical shape. But it is not difficult to gain an approximate solution, which is exact enough for the application now needed.

Every thinkable relation of things must be placed by us in the one or the other of two classes.

First, it may be a relation direct, real, or purely objec-

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tive; that is, it may be a relation which we believe, rightly or wrongly, to subsist between the objects themselves individually. One of the widest of such relations is that of Causality. A may be a cause, and X the relative effect; or A may be an effect, and X the relative cause. But we have a generalization yet wider, and perhaps the very widest that is possible, in the relation of *Condition*. A condition of a thing is any thing but for which it would not be what it is: A may be the condition, X the thing conditioned, or contrariwise. Now our doctrine is this:—that all direct or purely objective relations are merely modifications of this one relation of Condition.

Secondly, the relation may be indirect, conceptual, or objecto-subjective; that is, it may be a relation which is thought, not as subsisting directly between the objects themselves, but as established between them indirectly, through our manner of thinking of them, or through the point of view from which we regard them. All these indirect relations, emergent through our own thinking, are resolvable into the one relation of *Resemblance*, which founds the process of classification. We think of A and X as being like each other; and, in respect of this likeness, we think of them as contained in one and the same class. Now, undoubtedly, in all real knowledge, the relation of Resemblance presupposes, and is no more than an imperfect evolution of, some real relation between the objects as conditioning and conditioned. But we are often able to discover a resemblance justifying classification, while we have as yet an imperfect apprehension of the real relation which is the root: and, besides this, the thinking of the relation under the form of resemblance between members of a class, gives us all the conveniences and advantages of general or universal reasoning, one especial advantage being the ability to shift our point of view. Therefore, as well as for special reasons which will immediately come to light, the relation of Resemblance actually lies at the foundation of our inferences much oftener than the more decisive relation of Condition.

Our classification of arguments, in fine, may rest on this theorem.

II. All those Relations of objects in virtue of which inference from A to X is possible, may practically be considered as resolvable into these two,—Condition and Resemblance.

Arguments, again, fall primarily into two classes, according as a relation of the one kind or of the other is that which is assumed.

III. All arguments are reducible to the one or the other of Two Classes. In arguments of the First Class, the relation between A and X is that of Condition; in arguments of the Second Class, the relation between A and X is that of Resemblance.

It cannot be noted too early, that these two classes of arguments differ signally in logical validity; not essentially, indeed, but in the uses they are practically put to. Arguments of the first class admit of being so framed as to be logically impregnable. Arguments of the second class, having data such as they always receive in practice, cannot be so framed as to escape from a logical fallacy. The point is marked by Aristotle. It rests on a principle having wide applications in philosophy; and the proof and illustration of it will appear when we reach particulars.

In the meantime, our classification must be carried down a step farther.

When the relation is that of Resemblance, the inference holds equally from A to X, and backward from X to A. Consequently arguments of the second class have no variation affecting the inferential character.

But when the relation is that of Condition, it is far from being a question indifferent, in which direction the inference is taken. An inference from a conditioning fact

to the fact which is conditioned, determined, or limited by it, is an inference very dissimilar in character to an inference the opposite way, from the conditioned fact to the fact which is its condition. Therefore arguments of the first class fall into two genera.

We have thus a final resolution of all arguments into Three Kinds, which correspond, substantially and in order, to Aristotle's three kinds as understood by Whately.

IV. The first class of arguments being distributable into two genera, the kinds of arguments which require separate analysis are three in all.—1. In arguments of the First Kind, A is a condition of X: we infer from condition to thing conditioned. The direction of the inference will be indicated if we describe these as *Arguments from Condition*. 2. In arguments of the Second Kind, A is conditioned by X: we infer from a thing conditioned to something which is a condition of it. The A being symptomatic of the X, these are aptly called *Arguments from Symptom*, or from Sign. 3. In arguments of the Third Kind, A and X resemble each other, and in respect of the point of resemblance are referred to the same class. These may be called *Arguments from Resemblance* or from *Classification*.

Each of these three kinds must now be examined more nearly.

1. The Argument from Condition.

20. The theory of this kind of argument may be drawn together in the five propositions following:—

I. If facts are known which are the sum or aggregate of all the conditions determining a fact unknown, the unknown fact may be inferred from these with positive certainty. It is possible, therefore, to gain through the argument from condition a conclusion which is demonstratively true. Cases in which the data may be said to possess this character, as embracing all the conditions which are immediate and liable to variation, are frequent in reasonings about the phenomena and events of the corporeal world.

II. If the known facts fall short, by even one, of making up the aggregate of all the conditions, the conclusion in which the unknown fact is inferred sinks to one degree or another of mere likelihood or probability. In reasonings about mental phenomena, involving human character and conduct, the data may be said to fall always short of the aggregate of conditions; and this is the kind of matter for dealing with which rhetorical rules are oftenest needed and most likely to be appealed to. Therefore, in practice, this kind of argument may be said to yield oftenest conclusions having only a higher or lower degree of probability.

III. When the aggregate of the conditions is not made up in the data, the degree of probability belonging to the conclusion depends much less on the proportional number of the conditions known, than on the character of them or some of them. The decisive question is, whether among the known conditions there be any which is describable (popularly rather than philosophically) as the cause of the fact dependent.

IV. If among the conditions of a dependent fact there be discoverable some one which seems to exert, while the others do not seem to exert, a positive power or efficiency in the production of the dependent fact, we consider this efficient condition as a cause, and the dependent fact as its effect. If the cause or efficient condition is known to exist, there arises a presumption for the existence of the effect; yielding a conclusion whose probability is proportional to the probability of concurrence of all the negative conditions, and is destroyed by evidence that any one of these negative conditions is wanting. If the cause is not known to exist, the existence of the effect is not made in the lowest degree probable, even by the known concurrence of all the negative conditions.

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V. This application of the idea of causality admits a specification referable to reasonings in regard to human character and conduct. If an act of will is one of the conditions of a fact, we hold this act of will to be the cause of the fact. If the act of will is known to have taken place, the occurrence of the consequent fact may be inferred with a probability, modifiable or destroyable by the known occurrence or non-occurrence of the other conditions. If the act of will is not known or presumed to have taken place, no probability of the occurrence of the consequent fact is raised even by the known concurrence of all the other conditions.

This kind of argument cannot be admitted to have been theorized broadly enough, till it is traced beyond the idea of cause into the higher idea of condition. The argument plainly has its root in the thought, that the concurrence of all the conditions of a fact must carry with it the fact which is dependent on them. Our specifying of certain conditions as causes is only an after-thought: it suggests itself to us as a limitation, under which we may still hold the inference together, when it falls asunder in the attempt to grasp it by the broader end.

That the thought of the causal relation is really inessential, is proved by the easy and effective use of the argument which may so often be made in reasonings about the phenomena of body, in regard to which we truly never do apprehend the causal nexus, becoming acquainted with laws only, that is, with conditions affecting classes of objects. Even in dealing with material objects, it is true, we are driven on the search after true causes, in every case where we are uncertain as to having been able to gather up all the circumstances on which depends a fact we wish to determine. But in doing so, we are beginning to tread on that boggy ground in which physical science has so often lost her footing. Our deductions begin to put on that character of uncertainty, which bedims more or less all our thinking about mental attributes and events.

When we rise fairly into this higher sphere, and endeavoured to infer what has been or will be the course of human actions, we see man's rationally determined will conflicting with other principles of his nature, and with the wills of his fellow-men, and with the obstacles interposed by things external and bodily; and we are driven from the field of demonstration, by the impossibility of knowing exactly all the secret facts out of which the complicated struggle springs. But we seize and cling to that which is our normal instance of causation, namely, the act of will. If that act can be proved, we know that the clue is in our hands; and the closer we can approach to the proof of it, the nearer is the moment when we shall walk confidently through the maze. Failing direct proof of the act of will, we seek proof of those actuating antecedents which we call motives; proof, that is, of desires or aversions which, naturally or probably or inevitably, would issue in volition.

Arguing from motives, indeed, is one of the most common instances of the uses to which this argument is put. Concomitant circumstances (the dealing with which would yield arguments of our second kind) raise the question, whether a man committed a certain act. The means of determination that will first be thought of by any of us is the discovery, whether he was or was not actuated by any wish which that act would have helped to gratify. If we cannot discover the pre-existence of some such desire or aversion, hardly any evidence short of actual observation will either induce us to believe in his commission of the act, or encourage us to hope that we should be able to convince others. But let there be given the wish, the motive: then the consequent volition, and the act in which it is exhausted, become at once facts which are more or less probable. Yet the complication and the doubt are not wiped away. The proved motive may be checked by motives

counteracting; the desire to kill or to rob may be stifled by prudence, or by fear of shame, or by awakening conscience: or, if the internal history of the actor discloses no facts throwing uncertainty on the event, the external circumstances may have made the act difficult or impossible. In a word, from the antecedent and conditioning facts, taken by themselves, we cannot infer the act with peremptory demonstrativeness, unless we have come into possession of an array of conditioning data, possessing a completeness which never perhaps was reached in any case, historical, judicial, or ordinary, exposed to such doubt as to leave an opening for argument in any shape. Therefore arguments drawn from other sources will be required in corroboration.

The analysis of this argument has thus been carried far enough to show what the kind of facts is among which materials may be sought for it; and perhaps also far enough to suggest some of its practical uses, and of the terms on which these are attainable.

Two or three hints may be subjoined:—

First, In the attempt to prove a fact, which we know to have been preceded by certain other facts, our first business should be the identification of all those precedent facts which seem to come up to the character of conditions. Antecedents which are clearly not conditions will be set aside as barren.

Secondly, Among the conditions, if clearly we do not know all of them, our task is that of discovering which (it may be one, or it may be a combination of more) appear to have an efficient causal bearing on the fact to be proved. All other conditions are often describable negatively, as constituted, in Whately's phrase, by the absence of obstacles. "If," says he, "the cause be fully sufficient, and no impediment intervene, the effect in question follows certainly; and the nearer we approach to this, the stronger the argument."

Thirdly, The individual conditions of an individual fact are often justly describable as being instances of a general or universal law. Such a law, accordingly, may be stated in its generalized form as a condition of the fact in question. This view would supply the substance of an exact deductive syllogism or syllogisms; and much is often to be gained, in ease of convincing others, by starting from such a general principle.

Fourthly, An argument of this kind may always be made impregnable against logical attack, by an exact and candid incorporation, into the premise, of the degree of probability which is assigned to the conclusion.

Lastly, and contrariwise, The fallacy most likely to be committed in the use of the argument is the over-statement, in the conclusion, of the degree of probability which was assumed in the premise.

2. The Argument from Symptom.

21. This kind of argument, the simplest of all, is sufficiently theorized in one proposition.

I. A fact being known which is conditioned by facts unknown, each or any of the conditioning facts may be inferred; and each of them, whatever be its character or its comparative importance, may alike be inferred with positive certainty.

The correlation put in question, by this kind of argument and the preceding, displayed but a cloudy prospect when we looked forward from facts conditioning to facts conditioned. If even one has failed among those facts which are truly conditions, the dependent fact has not taken place; and the possibility of such failure, so very seldom, if ever, totally excludable in questions here interesting us, alloys our conclusion with more or less of doubt.

When the correlation is viewed from the opposite quarter of the horizon, it brightens with broad and steady light.

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The character and limits of the argument from symptom—the relation of dependence.

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Evidently our position is now such as to dispel all uncertainty. If the dependent fact is known to have occurred, how much are we entitled to infer in regard to the conditions? Why, that *all* of them must have occurred. For, if it were not so, if even one of them had failed, the dependent fact would be non-existent. Therefore the dependent fact, and its relation to the others, being justifiably assumed, it is open to us to infer any one or more of the conditions at will.

It should be noticed also with emphasis, that the relation of causality is here utterly ineffective. From the effect we may of course infer the cause; but only because it is one of the conditions. We may, from the same datum, infer with equal certainty the most trifling or purely negative of the conditions by which the efficiency of the cause was limited; and a condition of this character may be involved so necessarily in the nature and origin of the dependent fact, that it may thence be inferable quite peremptorily, though the individual circumstances constituting the cause should remain undiscoverable.

Nor does it happen seldom that a dependent fact, and all questions as to its cause, derive their whole practical importance from the materials they yield for determining some one of those seemingly insignificant conditions. Suppose a man to fall suddenly dead this afternoon. The circumstances observed as attending his death, and those which are detected on dissection of his body, are symptoms from which medical men will, if required, endeavour to decide what the disease was that killed him; yet their opinions may rise no higher than conjecture, and though established, might be valuable only in the interest of science. But of his dying this afternoon it is a palpable condition, though in no sense a cause, that he must have been alive this morning; and his having been so may have opened to him and his family the succession to valuable property. There has recently been brought before the Scottish courts of law a question of this very kind, stirred by the tragical fate of Franklin's Arctic expedition.

In the use of this argument, the point to be worked most carefully is, the ascertaining that the facts sought to be inferred are truly conditions of the given fact, and of no other. They must not, on the one side, be circumstances which might or might not have been antecedents of the given fact; circumstances the non-occurrence of which would have left it possible that the given fact might still have occurred. They must not, on the other side, be circumstances which, though symptomatic of the given fact, are also symptomatic of some other fact or facts different from it. The fallacy to which the argument is exposed must consist in a violation of the one or the other, or of both, of these cautions: in the assumption that X is a condition of A when it is only an accidental and inessential antecedent; or in the assumption that X can be a condition of nothing but A, when it may be also a condition of B or of C.

In attempting to infer from any one symptomatic fact, it is very often out of our power, through the imperfection of our acquaintance with the real relations between A and X, to gain premises which shall be more than probable, or capable of justifying more than a probable conclusion. We are able to assert only this; that our X is more or less probably a genuine condition of our A, and of it only. Herein lies the weakness besetting single arguments of this kind. It is removed by the accumulation of symptoms, all of which found arguments leading to the same conclusion; while all of them converge in the closing argument, founded on the mere fact of the accumulation of probabilities, on the impossibility or high improbability of the concurrence being consistent with any conclusion but that whereto each of the separate arguments tends. Arguments from symptom, thus weak in isolation when the relations of the facts are obscure, may safely be alleged to be capable of becoming,

even in such a case, stronger by accumulation than arguments founded on any other kind of proof whatever.

Their weakness and their strength are alike instanced in that with which we are familiar in law, especially in the practice of criminal law, under the name of Circumstantial Evidence. Such evidence consists in facts founding arguments from symptom.

The doctrine of this kind of argument is not complete, until there is added to it the result of an original analysis made by Whately. This supplement is important enough to deserve being placed as a second leading proposition.

II. The Argument from Testimony is really an argument from symptom. Testimony is an assertion which would not have been made if it had not been true: so far only as the assertion and its truth bear this relation to each other, does the case possess the genuine character of testimony. The dependent fact, the A of the argument, is the fact that the testimony has been given; the condition, the X, is the fact that the testimony is true.

Faith in testimony is a rule of our conduct; distrust in testimony is only the exception. Accordingly, in trials at law, and elsewhere, also, when our knowledge of the facts comes wholly from the evidence of witnesses, we silently overlook the character of the source so long as there is no reason for suspecting that the source is tainted. We think out our conclusions from the testified circumstances, with the same confidence which we should have reposed in them if they had occurred before our own eyes. We do not think of the testimony as testimony, or probe it on that assumption, unless self-contradiction or other suspicious points raise distinctly the question, whether the witness has or has not told the truth.

3. The Argument from Resemblance.

22. This argument is easily recognisable when it is called an Argument from Example. The question raised is, whether a given law, say P, is obeyed by an object *x*, whose subjection or non-subjection to that law we have it not in our power to determine by observation. We hold ourselves entitled to assume that the law is obeyed in at least one instance,—that is, by the observed object *a*. On the strength of this known instance or example, we infer that the law is obeyed in the unknown instance also. The point on which the theory of the argument rests, is the character of the relation between the known example and the unknown. They are referred to the same class (say S).

Our datum A is the assumption that a certain thing (say P) is true of a known individual *a* (or it may be more than one, but always fewer than all of the individuals constituting its class): our conclusion X is the assertion that the same thing (P) is true of the individual *x* not known unless as related to *a*. The relation on which the inference hangs is the fact, that *a* and *x* resemble each other in some point different from that which is in question. This last step in the dissection dictates the form of the inference. Resembling individuals are referred to the same class: therefore that which is held to justify the inference from *a* to *x* is, that the two individuals, the known and the unknown, are members of one class (S). The risk of error arises from this, that the comparison between *a* and *x* is made in regard to some attribute different from that on the common possession of which the class S has been founded.

The argument takes a shape like this:—*a* is a P; but both *a* and *x* are S's; therefore *x* is a P.

It seems to be certain (though there is one high authority to the contrary) that the reasoning is elliptical. An intermediate conclusion is taken for granted, but suppressed; and there are really performed two successive acts of argumentation, both of which are explicable (though for the first the explication might often be dispensed with, even for

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The character and limits of the argument from resemblance—the logical flaw.

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logical testing) into syllogisms. The first of the two syllogisms is Inductive, being an inference from the particular or individual to the universal: the second is Deductive, being an inference from the universal to the particular or individual.

The skeleton of the inductive syllogism is laid bare in this formula:— a is a P ; a is an S ; therefore all the S 's are P 's. The conclusion gained by this induction becomes the major premise of the deductive syllogism, which may be formulized thus:—all the S 's are P 's; x is an S ; therefore x is a P .

The deductive syllogism requires but a passing glance. Formally or logically it is faultless. If its conclusion is not certainly true, this must be because of some weakness in the assumptions it rests on. The minor premise, in which the unknown instance x is asserted to belong to the class S , can hardly ever be unwarranted. But its major premise has been borrowed from the preceding syllogism; and the method by which it was there come at is open to exception.

The inductive syllogism is logically fallacious. The flaw is an illicit process of the minor, which consists in inferring of "all" where we were entitled to infer only of "some," or "fewer than all." The premises would justify the conclusion, that "some of the S 's are P 's;" they do not justify the conclusion that "all the S 's are P 's."

The laws which are here operative prevail widely, not only in processes of communication, but over the whole domain of discovery and invention. The character of the "Inductive Philosophy" has been elucidated in various sections of this Encyclopædia, especially in the Preliminary Dissertations. In one of the special articles an attempt was made to show briefly, in accordance with the same principles which are here founded on, how, on the one hand, all our practical inductions are necessarily faulty in form; and how, on the other hand, all the laws which have been laid down for inductive discovery, from Bacon to Mill and Whewell, are nothing else than expedients by the use of which the formal error may be reduced to a minimum which is practically inappreciable. (LOGIC, especially §§ 102, 103.) The Perfect Induction, in which, from the sum of all the constitutive particulars, we infer the constituted universal, is logically faultless; but it is practically useless, because our data never embrace all the particulars in any case where it is worth while to infer at all. Our actual processes of this sort are always Imperfect Inductions, in which our known particulars fall short of the sum by a larger or smaller proportion, and which therefore can logically lead only to a conclusion falling correspondingly short of universality.

The philosophical principles which rule Induction as the great method of scientific discovery pass over without restriction into the rhetorical field. The results of induction there exhibit themselves as the foundation of that which is the most popular and striking, but also the most dangerous, of all kinds of argumentation.

The Argument from Example does exercise a peculiar force of impression, especially on minds imperfectly accustomed to analysis, or allowed little time for analysing. It seems to make a direct appeal to experience. The two objects, the known and the unknown, a and x , are, if the materials are well selected, known to belong to one and the same class, to have the same name, in respect that both of them obey a certain law (the S). The a is likewise known to belong to another class, to have another name, in respect that it obeys another law (the P), which is the law whose compass is really in question. The inference attempted is, that x also obeys the law P . The principle of the inference is, that the first law implies the second. If it really does so, the conclusion will be true, though not rightly inferred: if it does not, the conclusion will be false.

Whether the first law does imply the second, is a ques-

tion dependent on the exactness and success with which both laws have previously been examined.

The efficiency, again, of this antecedent scrutiny, will have been determined chiefly by the character of the matter argued about. The leading distinction is that which was indicated lately, between phenomena of the corporeal world and phenomena of mind. The former, taken as a class, admit of scrutiny, which, if instituted with adequate means, leads, though often by a long and tangled path, to positive knowledge in regard to all practical relations. The latter, taken as a class, are wrapped up in relations so complicated and obscure, that speculations as to human character and conduct must always rest within some or other of the degrees of mere probability. Universal laws are attainable, but are too vague to yield individual applications that shall be free from doubt; and laws of narrower compass intertwine and conflict together so incessantly and perplexingly, that the very satisfactory approach to certainty which we may usually attain as to large classes of events, diminishes as we narrow our classes, and dwindles into a succession of conjectures when we seek to carry beyond the verge of actual observation our acquaintance with the individual steps of individual human actions.

It is evident, in short, that, in argumentation about questions of the kind on which rhetorical rules have the firmest bearing, the Argument from Example is much more efficient for impression than for rational conviction; and hence much more powerful when addressed to unanalytic minds than when addressed to such as are acute in the taking of distinctions.

The outline of the theory may be set forth as follows:—

I. An attribute being affirmable of one or more, but not all, of the objects constituting a given class, we hold ourselves entitled to affirm the same attribute, with greater or less probability, of another object in regard to which we know only that it is included in that class. But the inference rests on the assumption, that the attribute in question is common to all the objects of the class, or is implied in the attribute or law on which the class is founded. This assumption is always reached illogically; and the truth or probability of the conclusion to which it leads is dependent on the amount of knowledge which is attainable, and has antecedently been attained, in regard to the objects compared.

When we speak of an argument from Induction, we mean, as has been seen, an argument embracing only the first of the two syllogisms constituting this kind of argument. The name of argument from Example or Instance should belong specifically to the elliptical argument, which passes over the universal conclusion to reach the particular or individual. If we speak of an argument from Likeness or Parallelism, we refer to this kind; and Analogy is an indirect likeness, not very clearly separable from likeness that is direct. Arguments from Unlikeness or Contrariety also are referable to this kind; for unlikeness or contrariety can subsist only between objects which are comparable as belonging in some view or other to the same class. When we speak of an Argument from Experience, we really refer to the antecedents of the argument, to the manner in which the data have been gained; and the argument itself is from Induction or Example.

(III.) APPLICATION OF THE CLASSIFICATION OF ARGUMENTS.

23. The leading use derivable from a classification of Cases on arguments, and the only use of it which has been systematized thoroughly by rhetoricians or dialecticians, is theory that which it is maintained to serve by aiding in the Discovery of Premises or media of proof. bears.

That the discovery of premises may really be aided by the possession of a well-digested stock of materials, is a truism.

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It is hardly less a truism, that the digesting of materials may be facilitated immensely by the possession of a well-devised scheme of distributive principles. Now, it is doubtless true that every special department of human knowledge, every kind of matter that supplies objects to be reasoned about, has principles peculiar to itself, and affecting very extensively the distribution of the truths which constitute its system. But the rules of arrangement which are dictated by the peculiar principles, say of a science or of any other organizable collection of facts or laws, are no more than subordinate. They are over-ridden by other and wider principles,—principles which must be common to the given department with others, and which dictate higher rules of arrangement. These, again, fall similarly within the sway of certain principles which are the widest of all, and by which is prescribed the great outline of every system of knowledge.

It is scarcely rash to say that, for all those departments of knowledge whose objects are described as Contingent Truths,—for all, in short, which fall beyond the sphere of the exact sciences,—the highest principles of arrangement that can be reached are those, or something very like those, which lie at the base of the classification of arguments now expounded. In this or that department of knowledge, and in the application of arguments to this or that special purpose, the classification may be found to be quite barren of suggestions; but this will occur only because, for particular reasons, the arguments which are available lie wholly within one or another of the three divisions that have been chalked out. When the arguments accessible and required are such that they belong to different kinds from among our three, it will be found that the threefold scheme supplies a framework into which they will fall naturally and easily, and within whose several compartments all subdivisions prompted by the specific character of the matter will be distributable without confusion or intermixture.

Nor, even if the threefold scheme is not directly used, will the principles on which it stands be unfruitful of suggestive hints to those who care to master them and reflect on them.—The first point to be considered, when the discovery of arguments is aimed at, is the character of the conclusion for which we wish to find premises,—the nature of the relation in virtue of which the known and the unknown are connected in our thoughts, and are likely to be connected in the thoughts of others. Is our conclusion evidently a dependent fact? Our search is guided first and chiefly towards its conditions, the facts on which it is dependent; and among these we dig for some fact which may be accepted as a cause. If our conclusion is itself a fact on which we know others to be consequent, our exertions are directed towards the finding out, among these, of some which are not only consequent but dependent on it; of some in regard to which we may be assured that, but for the fact which is our conclusion, these could not be facts at all. But we may not be able to avail ourselves of either of these relations; and our incapacity may spring from either of two sources. We may not be able to discover any known fact as to which we can peremptorily assert, that it is directly either a condition of our conclusion or conditioned by it; or, still more frequently, although we can for ourselves trace the relation of condition as connecting our conclusion with some other fact, we may be satisfied that the connection will either be hard to be understood, or unlikely to be readily admitted by those whom we wish to convince. In either of these events, we are driven on the search for facts known to be in certain points similar to that which we desire to establish: we found on that acknowledged similarity, and on the classification and nomenclature which have their birth in it; and we found as strongly as we may on the presumption, that similarity in certain features implies similarity in others more or less directly allied to them.

Still more likely is it to happen, that even in the quarter in which our strongest proofs are detected, these are found insufficient to justify any reasonable expectation of our being able to establish more than a probability in favour of our conclusion. Such a state of matters puts us on the search for concurrent proofs of other kinds. To cases of this sort are referable considerations which will next be stated.

Processes
constituting
Eloquence.

24. The several Kinds of Arguments possess different degrees of Applicability to the different kinds of matter most frequently treated in argumentative discourses. The doctrine in regard to these differences has been sketched by Whately briefly but satisfactorily; and to his exposition nothing needs to be added but a few features on the margins of the plan.

Applicability of the several kinds of arguments.

Two remarks may be premised.—First, the cases in which it is worth while to consider such questions of applicability are those in which, whether on account of the character of the proposition to be established, or on account of the position of the persons to be convinced, it is anticipated that conviction will not be reached unless through several arguments all pointing towards the desired conclusion. In the next place, though all the arguments converge towards one focus, they are likely to converge by different paths, or to discharge different functions. Certain of them, describable as Probatory, will be those on which the stress of the proof mainly rests. Others will be Preparatory, serving the use of paving the way, whether by the removal of prejudices or objections, or by the imparting of prepossessions positively favourable. Others will be properly Confirmatory, as strengthening positions which the main group of arguments has not fortified beyond attack.

Practically considered, then, all the kinds of questions on which rhetorical theory has any effective bearing may be said to be three: Matters of Opinion, or, in other words, questions of principle, or questions in which the conclusion is a general or universal proposition, not the statement of an individual fact: Questions as to Individual Facts that are Past; Questions as to Individual Facts that are Future.

1. In the endeavour to generate belief in universal propositions, the arguments chiefly available are those from Condition. The weakness incident to each argument of this kind, taken singly, may be cured by accumulation; several concurring probabilities may yield positive certainty. These arguments are often aided, sometimes in the way of preparation, sometimes in the way of corroboration, by the authority of competent judges, which founds arguments from Testimony. In both ways, likewise, aid is furnished by arguments from Example, which are most efficient when close analysis cannot be relied on.

2. In the endeavour to generate belief in individual facts or events that are past, arguments from Symptom are made attainable by the nature of the case, and are those which are chiefly available. Testimony, founding arguments referable to that class, holds a prominent place. In all difficult cases, however, there are used, as preparatory or as corroborative, or for both purposes, arguments from Condition, (oftenest from motives), and arguments from Example.

3. In the endeavour to generate belief in individual facts or events which are future, the argument from symptom is of course excluded by the nature of the case. If the process of conviction is attempted on fair and legitimate grounds, and is addressed to minds competent in respect of ability and knowledge, the body of the probation consists in arguments from Condition; and arguments from Example are introduced only in corroboration. But if the process is unfairly conducted, or if the qualifications of the minds addressed are poor, the functions of the two kinds of arguments are very often and naturally reversed.

25. It remains to be asked whether the materials that have

Processes
constituting
Eloquence.

Processes
constituting
Eloquence.

The arrangement
of arguments.

been collected, or others combinable with them, are capable of suggesting any laws for the Arrangement of Arguments.

There are just three relations of arguments which have been, or can be, alleged to determine the order in which they should be used. They might conceivably be arranged either according to their Kind, or according to their Purpose, or according to their Comparative Strength.

The third of these principles has dictated to rhetorical writers several canons, and particularly these two. It has been advised by some to arrange arguments by the rule of the climax, rising from the weakest to the strongest; and it has been advised by others to arrange them by a rule borrowed from military tactics, placing the weakest in the middle, where their shortcomings may be covered by the stronger forces that flank them on each wing. It is needless to examine or contrast either these two conflicting rules or any others derived from the same principle. For the principle itself is hollow and worthless. If an arrangement seemingly prescribed by it should be found to be effective, this can only be because there really lies under it a deeper law, either that of kind or that of purpose. In reference to strength, perhaps the only rule that could usefully be gathered is this: that arguments possessing no real force of conviction over those to whom they are addressed ought never to be used, unless they cannot possibly be dispensed with.

The only rules of real value that can be laid down for the order of arguments depend primarily on their kind, and secondarily on their purpose.

1. In reference to Kind, it should first of all be accepted as a rule, not to be violated unless for the most imperative reason prompted by special emergency of purpose, that arguments of the same kind are to be grouped together, no intrusion by arguments of another kind being permitted. A departure from this method cannot but give birth to confusion both of thinking and of expression.

As to the order of the several kinds, when all are available, required, and used, the natural and general arrangement is that in which the three kinds have now been examined. Causal arguments raise an antecedent or preliminary likelihood in favour of the conclusion; arguments from symptom support the conclusion more or less firmly by evidence derived from known facts seeming to stand in dependence on it; and arguments from example remove lingering doubts, by showing that the conclusion is at the very least not inconsistent with that which experience has shown to be true in similar or analogous cases.

2. The question of Purpose has, in effect, been raised in the last paragraph. The rule for the ordinary and normal arrangement of the three kinds of arguments is dictated by the consideration, that each of the three does ordinarily serve, better than the others, one of the three special purposes, preparation, direct probation, corroboration.

Purpose and kind, however, may and often do jar with each other.

The largest class of cases is that in which the causal relation is not likely to be distinctly apprehended, and in which therefore the argument from condition is unfit to act as preparatory. The remedy oftenest applicable is one already noted for a different purpose: the office of preparation is devolved on the argument from example.

The conflict between kind and purpose becomes yet more decided, when an argumentative discourse is addressed to persons labouring under opinions or prejudices strongly adverse to the conclusion which the debater desires them to entertain. Adverse prepossession, indeed, is always to be supposed possible where the writer or speaker has not the first word. Accordingly the question here arises, What should be the place of Refutation? The unfavourable position of an argumentator who has to make the refutation of an adversary the main part of his task,

may justify a farther deviation from rules than any other circumstances he could be placed in. The more deeply the counter-opinion may be supposed to be rooted in the minds of the recipients, the earlier should the refutatory treatment be entered on. An opinion which we wish to sow cannot make even the beginnings of germination, till opposing prejudices have been rooted out.

III. THE PROCESS OF PERSUASION.

26. To this process, as presenting the field on which are won the most dazzling triumphs of oratory, the name of Eloquence is very usually given by way of eminence; and hence the distance is short to that closer limitation, hardly less common, which refuses the name of Eloquence to all communicative processes, except such as either entertain the design of persuasion, or exhibit a preponderance of its distinctive elements. Against all such limitations a protest was taken at the beginning of this treatise.

It is true, however, that we have here that compartment in the domain of Eloquence, which is not only the most powerfully and generally interesting, but more readily susceptible than any other of being subordinated to a theory that is peculiar and independent. In imaginative and emotive eloquence, doubtless, much more thoroughly than in that which is merely argumentative, brilliant success is unattainable, unless when its foundation is laid in native genius. Yet reflective study of the discoverable laws of the process will not only guide and strengthen, for results useful and even eminent, powers of all degrees below the highest, but will teach to the highest powers themselves much that may advantageously direct and plume their flight. The ship that is bent on a dangerous voyage must indeed be ably commanded and fully manned; but her captain does not set sail till he has obtained the most accurate charts. The rhetorical laws of persuasion, though their use presupposes the possession of an ability and knowledge which they cannot impart, do yet possess extensive uses, negative and cautionary. They are the charts of a broad and stormy sea, whose currents are heady but not lawless, and whose soundings, though deep, are not beyond the reach of the plummet. Eloquence, in this its loftiest region, not less than in regions that are humbler, is decisively an art, a process whose steps are dictated by preformed design, and whose theory is discoverable and has been discovered. It stands in no way differently from other arts demanding and rewarding the exertion of elevated energies, in having, as conditions imposed on all applications of its theory, such maxims as these: That the use of all rules of art is chiefly no more than negative and prohibitory; and that, even for such purposes, the utility arises, not from the rule itself, but from intelligent and complete apprehension of its principle.

Our psychological analysis of the mental process which may issue in volition, must now be kept carefully in sight. In its normal shape, the process unfolds itself as constituted by at least two steps which are characteristically cognitive or transcend cognition: the first, a fact of Imagination; the second, a fact of Wishing, whether desire or aversion. On the latter of these the volition follows. Not less incumbent on us is it to remember, how this most prominent series of steps is modified by attendant Emotions. While it was maintained, in the psychological outline, that the emotion is really an obscure concomitant of each of those steps, it was observed, also, that the emotion may force itself into prominence as a step intervening between each two of them. Indeed, the substance of one part of the doctrine which was laid down is this: that in proportion to the force of the cognitive or higher fact will be the certainty that the Emotion (at first overpowered by that fact) will recur, and in its turn become

Processes
constituting
Eloquence.

prominent. It must now be alleged broadly that Persuasive Eloquence aims at the generation of a process in which the cognitive and higher steps shall have such force as to *bring up a consequent emotion at every step*. In the most advanced stage of our researches we may have to glance at cases proceeding far towards the completion of the process. Complication also of the cognitive and higher steps, such as those which were pointed out when we specially examined volition, would suggest considerations having much value for the dissection and treatment of complex and exceptional cases. But such questions may be ignored while we investigate the general theory of Persuasion. The main reason why they are inessential is this: that the determining steps in the process are the first two. The others are ruled by these; and, if repeated or varied, they must be so through and after repetition and variation of these their antecedents.

Let this, then, be remembered as a cardinal point:—that the theory of Persuasion is virtually complete, when it has determined the laws regulating the generation of the first two steps: that in which the prominent fact is the *Imagination of the object*, the wish for which is to be the prompter towards action; and, next, that in which the prominent fact is the *Emotion which is consequent on the Image*, and which must be excited before the wish can have birth. The process whose laws we have to seek is the generation, through language, of Images excitative of Emotions tending towards desire or aversion.

The field thus staked out may be fenced off in sections. In the first place, we cannot safely, at any stage of our survey, accept anything but the Images as our chief object of scrutiny. Everything of specific doctrine that is attainable and useful relates primarily to the images; and it relates to the one or the other of the two aspects which must be combined in a complete inspection of them. The positive and specific laws of persuasive eloquence, accordingly, fall into two sections. The first of these contains Laws of Form; and those laws fall into two sub-sections;—laws affecting the Images, and laws affecting the consequent Emotions. In both parts of this section we are absolved from all obligation to consider the further tendency of the emotions. In other words, the laws here emerging are common to Eloquence and Poetry. In the second section we retire into our own exclusive territory. The laws contained in it are Laws of Matter; and the question here arising is, what kinds of objects are, when imaginatively represented, likely to operate, through desire or aversion, towards the excitement of volition.

In the way, however, of introduction to these two groups of determinate laws, certain considerations should be suggested, which, although not perfectly digestible into a system, may yet be methodized to a certain extent; and which deserve to be classified, as forming a section of preliminary and general doctrines. Our sections of laws will thus be three.

(I.) LAWS OF PERSONAL RELATION.

The law of
adaptation
—the posi-
tions of the
two par-
ties.

27. Persuasion, like every other communicative process, is a game which must have at least two players. The parties, it is true, hold attitudes which through all changes are opposed to each other: the one is steadily aggressive, the other only defensive or receptive. Our chief attention is rightly given to the active side; but the position of the side which is comparatively passive can no more be neglected with safety, in the attempt to understand the evolutions, than it can be in the actual performance of them.

A maxim which might be called the Law of Adaptation runs through the whole theory of communication, like the heart-strand round which is twisted the cordage forming a rope. The duty of the operator is not that of making good

his own position, but that of reconciling his own position with the position of the persons operated upon. This is strictly the fact even in exposition and argumentation; and, in the performance of these processes in individual cases, the necessity of adaptation presses itself on every intelligent debater. But in the general theorizing of processes aiming at the communication of belief, the maxim is not forced into that prominence which it imperatively exacts when we begin to look into the theory of persuasion. In the attempt to generate belief, the communicator and the recipient stand rather in different postures than on different ground: in the attempt to excite imagination and emotion the ground is different as well as the posture. Here, therefore, the active party of the two is urgently called on to consider the relation of the other.

Imagination, and consequent Emotion, are to be excited by the discourse. Accordingly the images must be presented both vividly and in their emotive relations; and the communicator must possess adequately both imaginative and emotive susceptibility; while, besides these qualifications, he must also have power and skill of language sufficient for due expression both of the images and of the emotions. It is no less true, on the other hand, that the process, even if fitly performed, will fail of all effect, or be but very partially successful, unless the recipients be on their part fitly qualified. Fortunately, however, the qualifications needed on this side are lower in degree and rarely wanting. Susceptibility is quite as frequent and as keen in those who hear or read as in those who speak or write. Imagination, too, of that receptive character which can readily form a scene or a character whose features are drawn for it by a stronger hand, is a gift diffused with beneficent abundance; and therefore the field of influence is widely open for that self-dependent power, so much more rarely given, which weds its scattered experiences into unions so novel and inspires its images with a strength so life-like, that we rightly call such imagination original, and exaggerate but excusably in describing it as creative.

A further step of dissection is required, both for justifying one of the demands which are thus made on the orator, and for founding more than one corollary which will find a place hereafter.

It was asserted that one who is to excite others to feeling, must himself not only imagine but feel. The assertion is common-place and universally admitted: its reasons may reward a little scrutiny. Those to whom emotive images are imparted are acted on by them in each of two ways.

In the first place, the images operate Directly, through their own objective force. An image representing an interesting object cannot fail, even though it should be inefficiently imparted, to excite emotion in a mind which possesses activity of imagination enabling it to frame the image for itself from the hints that have been set before it. The same image, if exhibited with the fulness and brightness of oratorical genius, will excite emotion in minds which would not be excitable under less energetic prompting.

In the second place, the images operate Indirectly. They do so when they are presented in an aspect shewing their having excited, in the mind of the presenter, emotions of the character which he desires to transfuse into the minds of others. In a word, they operate through the great Law of Sympathy. Of this mighty spring of human emotion, and desire, and action, we must never allow ourselves quite to lose sight while we endeavour to trace the workings of emotive eloquence. If there were room for illustrative description of its effects, these might most wisely be given in the beautiful declamation with which Quintilian strives to enforce the law of emotion on the orator. It should be remarked particularly, however, that, in all attempts at passionate excitation, sympathy must, whether we will or not, be active either for us or against us. An image which

Processes
constituting
Eloquence.

Processes
constituting
eloquence.

we have fancied but faintly or depicted but poorly, may thence derive great emotive efficacy, if only it has evidently affected ourselves deeply. An image strongly framed and brilliantly expressed may have its moving power multiplied a thousandfold, by the evidence that it has deeply moved ourselves. But if, even when such an image has been displayed, we, the framers, are cold under its light, there is imminent risk that those who watch us will be infected with a sympathetic chill.

(II.) LAWS OF FORM.

The formal
doctrine
of emotive
imagery.

28. Inquiry into the form of the emotive images,—the manner in which they may be represented effectively,—calls our attention necessarily towards the Words in which they are expressed. All the laws of form gather some of their data from truths directly involved in the functions of language; and this is the fit place for so much as is genuine and useful in those cumbrous Rules of Style, which have been constructed as aids to imaginative and passionate eloquence. But here, as elsewhere, the reasons of the rules will occupy us more than the rules themselves.

The whole doctrine of this first and decisive step in the process of persuasion, rests on those Laws of Imagination which were outlined in our psychological introduction.

The deepest courses of the foundation are laid in that primary law, which limits imagination to objects thought of as Individuals.—Fencing the class of imaginable objects round about by this impassable barrier, we must, however, beware of shutting out certain kinds of objects, which, though very abundant within the domain of imagination, do often lie dangerously close to its frontiers. We must steadily avoid the error of supposing, that objects of sense are the only objects that can be imagined. In philosophical strictness, indeed, such objects are imaginable only as having been, or as being capable of becoming, objects of perception; that is, as having been, or being thought of as being, factors or elements in mental facts. But in imagination, as in perception, their objective characteristics monopolize the attention so thoroughly, that the subjective side vanishes altogether from spontaneous consciousness, and is recognisable only through energetic reflection. It is likewise true, that our imagining and remembering of objects perceived is beyond all comparison more clear and vivid, than our imagining and remembering of facts of consciousness in which perception has had no part. So widely does this law rule, that our imagining of facts purely mental has to be made clear and bright through analogies drawn from our ideas of corporeal phenomena; a truth which is instanced in every word or phrase by which we strive to express mental facts. This difference in ease of imaginability, between objects of the one class and objects of the other, will immediately be put to use. But it must be remembered firmly that objects of the one class are imaginable as well as objects of the other. Nor is it too early to note this truth on the other side; that, while our imagination of corporeal objects is the more vivid, our imagination of mental phenomena is in a like degree the more interesting or excitative of emotion. Indeed it is only through their relation to mind that external objects, whether perceived or imagined, are interesting or emotive at all.

Another point of doctrine having a broad applicability to the theory of persuasion is this.—Imagination, of the kind which has here been called synthetic, has a much wider sway than that which we are apt to assign to it. The listener who seems to be merely gathering in passively the sweet fancies expressed in a recited poem, or the stirring pictures painted by a fervid orator, is really, if he does form the images for himself in the faintest degree, performing an imaginative process of the very same kind,—a process constituted by facts obeying the same laws,—as that which, in

the mind of the poet or the orator, has given birth to the imagery by which his derived activity is prompted. The difference between the two processes is a world-wide one; but, great as it is, it is nothing else than a difference in degree. The recipient must synthesize as well as the communicator; although he does synthesize from materials whose exuberance makes his task easy, and is able after all to form only a picture which almost always is as dim as the last rays of twilight, in comparison with the tropical sunshine of the imagery whose hints he strives to re-compose.

By thus placing ourselves close enough to the recipient to see clearly the position he truly holds, we gain a glimpse of the relations between him and the other party, which invites us to examine more minutely the ground that lies between them.—No image formed in one mind can, by any medium of communication that is either possible or conceivable, be transfused into any other mind with either complete or exact similarity of elements. The image as it lived in the mind of the original imaginer is one thing: the image which the attempt to communicate it has evoked in any other mind is another thing. Besides the immeasurable shortcoming caused by that shortcoming in imaginative power which was pointed to in the last paragraph, there is a shortcoming (and this the only one against which any precautions can be taken) arising from this fact:—that the original image has been communicated through certain media, each of which is inadequate in its own peculiar way, but all of which have imperfection of efficacy as a common characteristic, an imperfection disappointing to the inventor and crippling to the mental mobility of those for whose excitement the invention has been framed. What is the most exquisite statue or the most masterly painting, to the vision of grandeur or of beauty which hovered in the airy dreamland of the artist's fantasy, undimmed as yet by the shadows of that common daylight in which he had to aim at giving it visibility, and undeformed by the jarring of those mechanical obstacles against which he was to contend in giving a body to its likeness!

The fact lies straight in our path, that imperfections, different both in kind and in the specific character of the result, but still great and unavoidable, impede all attempts at the communication of imagery through language. In each of the points which are exposed to danger,—in respect of completeness and in respect of exactness,—the communicated image, the image raised in the recipient mind, is made, by the imperfections specially incident to language, to be more or less, and often very far, dissimilar and inferior to the image by the expression of which it was suggested. The picture or the statue is one visible thing: an observant spectator, if he shuts his eyes and remembers what he has seen, is in possession of an image which represents with reasonable correctness the work of art, however far it may fall short of the artist's ideal. The suggestive weakness of the arts of design lies in their tendency to let us rest content with mere sight and memory, instead of attempting to soar to the imagination of the artist's creative thought. The suggestive weakness belonging to language operates in a different direction. If an image so communicated is operative at all, it cannot be so by being merely excitative of memory; for there is nothing to remember, the words being mere symbols, empty till they suggest the relative ideas. Suggestion must take place: poetry and eloquence are excitative of imagination through suggestion, association of ideas, and through that channel only: the doctrine is of great value in the theory of both arts. But, in either of two ways, the object suggested may not be of the kind it should have been. On the one hand, the words expressing the image may suggest some image widely different; or, on the other hand, they may suggest some mental process which is not imagination at all, or has not imagination for its most prominent element.

Processes
constituting
eloquence.

Processes
constitut-
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The modifications under which the several failures thus hinted at are most likely to occur, will appear in some degree if we take them as illustrations of two leading propositions, under which may be specified all that is essential to the formal doctrine of imagery designed to excite emotion.

The laws of
direct re-
presenta-
tion—ima-
ginability,
succession,
specifica-
tion.

29. (I.) The shortcomings incident to the result of attempts at communicating emotive imagery through language, are traceable to Three several Characteristics inseparable from the method of communication.—*First*, The communication takes place, not directly through perception or simple reproduction, but through suggestive relations prompting an act of synthetic imagination. *Secondly*, The suggestive ideas are communicated, not simultaneously, but successively. *Thirdly*, The symbolic character of words, while it is the foundation of their pre-eminence among all media of communication, does yet impose on them certain specific disqualifications.

(i.) Evidently, the restrictions imposed by the first of these considerations do not well admit of being formulized into specific rules. The doctrine, however, accompanies us through all more minute inquiries, and is always to be remembered as constituting a condition precedent, under which only these have truth or value. Perhaps it may be worth while to work out of it two corollaries, which, vague as they are, come in contact at more points than one with the relation between the communicator and the recipient.

First, The formation of the image by the mind recipient is the easier, in proportion as the image which the words are designed to express is the simpler, or constituted by the fewer parts or elements capable of being separately imagined.

Secondly, While the character of imaginable objects, and that of the process issuing in synthetic imagination, concur in making it impossible for any image so formed to be absolutely simple, an image expressed in words must, on account of the indirect character of the method, be even less simple, or must be constituted by a larger number of imaginable parts, than an image of the same object might have been if it were the simple reproduction of what was given in perception. Consequently, in representation of this kind, the relation between the parts and the whole demands a recognition especially emphatic. The formation of a complex image by the mind recipient is the easier, in proportion as the image which the words are designed to express possesses unity, or (to speak more accurately) systematic totality; that is, in proportion as all the constitutive ideas are evolved in subordination to one prominent and paramount idea.

The pre-requisite for the application of these principles to practice, is the successful striving, in the formation of the image in the mind from which it is to issue, after the closest possible approach to simplicity, and the utmost reduction of complexity to its central and combining law. Such success can be won only by vigour both of imagination and of judgment; and these are not the fruit of rules. Nevertheless, the aiming at a mark too distant to be hit is excellent practice for the shooter; and in intellectual as in moral aspiration, the station which we struggle to attain cannot be too high. We are helped also by every hint, which clears up our idea either of the end we are to look to or of the means which lie between us and it.

The hints thus thrown out stand in no real contradiction to a maxim which has frequently been assigned by rhetoricians from Cicero downwards. It recommends Circumstantiality as an excellence in a word-picture drawn for the purpose of aiding persuasion. That a certain complexity of features is indispensable, was broadly asserted in our second corollary. It may farther be allowed that emotive images must generally have greater fulness of parts, and

consequently of expression, than that which is either required or advantageous in the thinking and expression of argument. But when circumstantiality is advised, it is only meant that there shall not be wanting circumstances, features, incidents, sufficient both in number and in character to suggest lively images, and to present these in interesting relations. It is a question of particulars, how far the elaboration ought to go. Sometimes brevity, and a brevity that is extreme, may be dictated by the position of the auditors. Some of the most hasty of those thunder-flashes which dazzle in the orations of Demosthenes, are shot forth briefly, because they are references to facts as familiar and as exciting as their daily life to every one who heard him. Oftener account has to be taken of the powers of the poet or orator. High genius possesses strong tools, for the want of which ordinary talent must make up by the use of others that work more slowly. But, on all sides beyond and around, expatiation is hemmed in by the principle of our corollaries. Fulness of detail tempts both towards tediousness and towards confusion; and the two are equally hostile to the easy and vivid excitement of imagination in those who suffer under them.

(ii.) The law for which the ground is cleared in the second of the characteristics laid down in our theorem, owes the most valuable illustrations it has received, to Lessing, by whom it was first distinctly exhibited and put to use, and to Vischer, the latest of those who have systematically expounded it. It comes to light most readily in a comparison between the procedure of poetry and that adopted by the arts of design; and it is in aesthetics only, or specially in the theory of poetry, that it has hitherto been fully used. But it rules not less directly in the imaginative section of eloquence.

It rests on two pillars. On the one side stands the peculiar nature of the process of communication by language, as working through *succession*: over against this foundation stands the *independent activity* which must be exerted by the receptive mind, and which may and must be exerted more freely when language is its prompter than in any other case.

While the arts of design represent in space, literature represents in time. The former, therefore, barred from representing change and succession, are strong in the representation of simultaneity: visible objects of considerable complexity are representable in sculpture; and painting is limited in its accumulation of features by nothing but the bounds within which the eye can take in a scene as one whole. Language, in its picturing forth of images, is not indeed shut out from the representation of simultaneity so utterly as those arts are from the representation of succession: language, in its grasp of objects, is infinitely more elastic than visual perception; and this mainly because it hints to the mind rather than dictates to it, and is thus not so truly the instrument of art as the mover of imagination the real instrument. Still, in respect of the expressed image (which, not the image raised in the recipient mind, is here in view), language is on this side hemmed in within a very narrow territory. Its strength, its characteristic field of adventure, lies in the representation of change and succession.

Therefore, in the first place, language, as a prompter of imagination, has, as its royal appanage, the domain of mind, not that of body. The field over which it bears sway, the class of objects which its nature fits it for representing, is constituted by mental phenomena, the very essence of whose manifestation is succession and change, phenomena which are not cognisable in consciousness otherwise than as successive changes. This is what its operation in time empowers language to do. Let us ask, next, what that operation prohibits it from doing.

Language, then, as a prompter of imagination, has hardly

Processes
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any power at all in the direct representation of objects of sense. Such an object must be simple in the extreme, if words can paint it so as to excite an image at all like the original. As to the giving of expression to the physical characteristics of external things, the sciences descriptive of body (especially those dealing with bodies organic) bear testimony to the difficulty which words have in performing the task; though patient study of descriptions is there demanded and granted, and though the resultant scientific idea of the object is not required to come up to a complete reproduction of its visible appearance. But he who, treating a corporeal object, designs his language-picture of it to be at the utmost a sketch, from which a mind-picture of it shall be painted by others, does, on the one hand, desire to create in those other minds much more than a scientific skeleton; while, again, he is not entitled to expect that those minds shall work out the result through exertions of untiring industry. If the object is very complex, the features of it which were first described may be absolutely forgotten before the description arrives at the last: it will be impossible, also, to avoid raising subordinate elements into so undue a prominence as to generate confusion worse confounded; and, over and above these difficulties, the weary pain of the continuous effort which the receptive mind is commanded to make, must throw it out of the imaginative mood either into inertness or into conjectural questioning. Nor is this all. If the receptive mind possesses its needful share of imaginative activity, its own energy will speedily free it from the dominion of its task-master. From some of the earliest suggestions conveyed to it, it will begin to frame fancies for itself: it will attend to these, not to the later hints of its instructor; or it will catch up these hints as sounds are caught by a man half-asleep, and weave some of them, with its own visions, into a web to which the words it hears have lent but few threads either of warp or of woof. In fine, when a description is vaunted as "pictorial" or "graphic," it may be that the epithets are used in a sense in which they denote a real excellence. Oftener and more naturally, they signify what is not a healthy growth of art, but an excrescence symptomatic of disease.

How is the cure to be found or the distemper prevented? By the translation of simultaneity into succession; by guiding our words to the representation, not of something which is here or there, but of something which (standing in a suggestive relation to it) was in time past, and is now changing to something else, and will hereafter change into yet another thing. Suggestive language represents bodies through their changes: its sphere is action, not that which acts or is acted on; its world is a world of motion, not of rest. Yet further, it cannot represent what has been called the action of bodies, otherwise than through analogies with action proper, the activity of mind, or with some or other of those mental changes out of which action issues or in which it seeks its consummation and its end. Individual changes of body become known to us only through individual changes which they excite in our minds. Even if the bodily change is the thing which we desire to make the leading object of the image,—yet the mental effect, whether feeling, or wish, or volition, or thought, must come up and be expressed as that which will individualize the image of the corporeal excitant. If that which we desire to make the prominent feature of the image be any of the relative mental changes, the corporeal attributes sink necessarily into the background.

The corporeal class of attributes will be the prominent features if we aim chiefly at *making the image vivid*,—that is, at intensifying the *first step* in the persuasive or poetical process. The mental class of attributes will be the prominent features if we aim chiefly at *making the image emotive or interesting*,—that is, at intensifying the *second step* of the process. But neither class can ever be wanting in our own formation of the image; and neither class can

ever fail to find expression in the words by which we communicate that image.

The law, then, into which the hint thrown out in the second characteristic has effloresced, may be drawn to a point in some such shape as this.—As a process operating through succession and change, imaginative and emotive representation through language has mental changes assigned to it as constituting its distinctive sphere of objects: and, in the endeavour to represent corporeal things, the process is limited to the expression of changes loosely describable as actions, and standing related to action proper and its mental concomitants.

(iii.) The third of the characteristics calls for less explanation. It points at the power which language has, not only of exciting imagination, but of prompting thinking proper,—that is, especially, the formation of concepts, and general reasoning through these. As being symbols through which we can think, and as being the only kind of symbols through which we can think to good purpose, words are essential conditions of our ability to extend our thoughts beyond the individual to the universal, from objects taken in isolation to classes which objects constitute. We are enabled to do so through our possession of common terms, the names of classes: by seizing hold of these, we swing ourselves upward out of the clear but not elevated region filled by singular terms, the names of individuals.

But the law of compensation rules in the whole world: every good thing must have its price paid. Common terms occur continually among our words; because the idea of a class is continually springing up among our thoughts. Consequently language is constantly tempting us out of the field of mere imagination, into one which lies indeed on a higher level, but which yet, being a different field, may be one we did not wish to enter. It is absolutely impossible that an image expressed in words should stop short with exciting the imagination of those who receive it: it must excite judgment also; it must set them a-thinking; it must lead them, for a short way or a long one, into trains of reasoning. This is, in one view, a mighty and a blessed effect. Eloquence would be powerless were it not produced: poetry without it would be a mere plaything; poetry is dignified by it with its prerogative as one of the great rulers (though a ruler not sitting on the highest of the thrones) of human thought and of moral activity. In a view which is raised more directly by our present studies, the tendency even of imaginative language to prompt judgment is a weakness; and language used in persuasive representation must be strengthened against it.

The weakness is universally acknowledged; and rhetoricians, whether able or not to detect its most remote sources, have hardly ever failed either to discover the remedy or to describe it with sufficient clearness. A place is usually given to it among the rules for attaining that quality of style which is called Animation or Vivacity; by which is meant an aptness of language for exciting imagination and emotion. The common rule may be fitted into the system here under exposition, by being framed in such a shape as the following:—

Singular terms, the names of objects thought of as individuals, are the only terms which are directly suggestive of Imagination only, to the exclusion of other modes of thought. These, then, are the words fittest to excite images, and are preferable to all others when they are obtainable, and when no concurrent aim forbids their exclusive use. But common terms, the names of classes,—which do not suggest imagination (or individuality its object) otherwise than indirectly and incidentally,—must and should be of frequent occurrence. Now, that indirect suggestiveness of individuality, which is possessed by common terms, is in the inverse ratio of the extensiveness of the classes they denote, or in the direct ratio of their specification or approach to individu-

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ality. Therefore, for the excitement of imagination, when an idea may be expressed by either or any of two or more common terms, the Less Extensive Term should be preferred to the more extensive. A special method, which is both common and very effective, is the limitation of the species or characterization of the individual by Descriptive Epithets.

The laws of
indirect re-
presenta-
tion,—
tropes and
figures.

30. In the last section we have studied the nature and the partially applicable remedies of certain failures in effect, which are due to imperfections cleaving inseparably to the process of communication by words. There will now pass before us certain failures in effect, which may or may not take place, but which do take place frequently, and which are attributable, not to anything in the process, but to something in the matter it works on, or in the relation of this matter to the persons whom the communication is designed to affect.

It is desired that by these persons the object represented to them shall be imagined vividly, and shall excite consequent emotion. But the object may, while it is nevertheless one which must be impressed as strongly as possible, *be either more or less difficult to imagine, or more or less deficient in emotive interest*; and this, either because of its own nature, or (more frequently) because it is ill understood or little cared about by those on whom the thought of it is to be urged.

Against the evil issue thus threatened,—of inertness in imagining, or coldness in feeling,—provision is ministered through that broadly beneficent power of language, to denote all objects and suggest all modes of consciousness, which came in our way a little ago as one of the obstacles impeding imaginative suggestion. Words prompt us, not to imagine only, but to judge, reason, compare. Our object cannot fail, no object can, to be susceptible of becoming a term of comparison: for it must be classifiable, through resemblance, analogy, or some other relation, with innumerable other objects; and among these we shall certainly be able to discover some, which do not labour under any of the defects disqualifying the primary object. Such secondary objects will suggest the primary one; and, in virtue of the laws of suggestion, the cognitions and feelings which they have excited will be transferred to it, as elements of a new mental fact of which it becomes the object. The mental eye will now see the object in a shape to which those others have given improved distinctness; the mental eye will now see it through a light into which the warmth of their colours has been transfused.

These are questions touching the matter of images as well as their form. But they are most conveniently treated here, not later; because the expedients dictated by the answers to them issue in transformations of language. The principle of these, as just explained, is hinted at, and the kinds of expedients worth theorizing are named, in the following proposition:—

(II.) The flexibility, and the compass, of the suggestive power possessed by language, concur in bestowing on processes of suggestive representation which take language as their vehicle the capacity both of vivifying imagination and of intensifying emotion, by the use of what may be called Indirect Representation. This consists in substituting, for the image which it is desired to excite, the image of some other object, relative to the object of the first and therefore suggestive of it. The principal method of indirect representation is the use of Figurative Language; and the introduction of Illustrative Examples rests on the same principles.

Figurative language embraces two forms of expression: Figures proper, and Tropes. The best of our English books on style (Irving's) takes exception both to the correctness and to the usefulness of the distinction between

the two. But it must be said, with deference, that neither of the exceptions appears to be well founded.

Of the Trope proper the most prominent example is the Metaphor, which suggests through similarity. In the trope, a word or phrase is turned from its usual and appropriate meaning; signifying most obviously one object, it is used to denote another object, which in some way or other is like the first. The Figure proper is exemplified in the Apostrophe and the Exclamation. In the figure, the words are used in their obvious and appropriate meanings; but the form into which they are combined is prompted by emotion of the speaker. Another example, and a very instructive one, is the Interrogation. The question is not a figurative expression when it is really put with the wish of obtaining an answer: it becomes figurative when it is (and often and naturally it is) merely a passionate way of expressing an assertion. I am not speaking figuratively if I ask for information,—“What o'clock do you suppose it to be?” I am converting the question into a figure, if I intend under it an indignant remonstrance against delay in the arrival of a railway-train. There are, it must be allowed, figurative forms of speech whose place is open to controversy: the question arises, whether they are tropes or figures. But the principle of the distinction is quite broad enough for fixing the class even of these; and, it may be hinted, the fact of the doubt should teach caution in the use of such forms; since it must arise from some uncertainty or imperfection in their operation. The Simile is the most notable of these. In a very strict view, it might be denied to be a figurative expression at all. It is merely an assertion that two objects are like each other: it is the datum of a Metaphor. This relation, however, leads to a description of the simile which is more just to it: it is a metaphor in embryo, a metaphor in the first stage of its development. The Allegory (proverbially the most “headstrong” and dangerous of all figurative forms) is easily disposed of: it is just a concatenated series of metaphors.

In form, then, or as modes of expression, the Trope and the Figure differ. Do they differ correspondingly in their mode of operation on those to whom they are addressed? They do, on a principle which we have already recognised as effecting very extensive differences in the steps of persuasion. Tropes operate *directly*; but Figures operate *indirectly*.

A Trope directly excites the imagination to the formation of the image wanted. Its motive power is rooted in the character of the two correlated objects, and in the suggestive influence which that correlation exercises. The result which a spoken trope produces, in the mind of the hearer, is an image of the primary object under the change of aspect caused by its being viewed from the side of the secondary object; and the emotion which likewise is excited is consequent on this step.

A Figure excites the imagination to the formation of the image, not directly through any suggestion of an image painted by the words, but indirectly through Sympathy. The imagination does, in fact, seem to be excited by a reflexed path, being preceded by emotion. A figure of speech, as being prompted by emotion, is symptomatic of emotion on the part of the speaker; and the recognition of this fact rouses sympathetically a similar emotion in the mind of the hearer. This communicated emotion leads back to imagination of the cause which has moved the mind of the speaker; this cause is, or suggests (but in a changed and emotive aspect), the primary object, that which the speaker wishes us to imagine; and the emotion which is to lead us to desire or aversion is consequent on those antecedent steps.

If this analysis is in the main correct, it justifies more than one practical corollary, exhibiting marked differences in

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the comparative availability of the two kinds of figurative expression.

First, Deliberate selection of objects and expressions, guided by intelligent application of rules, may aid much towards the efficient use of tropes. But the use of figures will always be inefficient, or even displeasing, unless when it is prompted by genuine and spontaneous imagination and emotion.

Secondly, The prevalence of tropes on the one hand, or of figures on the other, tends, more than any other feature referable to style, to determine the character of eloquence as being more or less animated or passionate. Figures, being symptoms of emotion, are the key-note of animated communication; although plainly the abuse or over-abundance of them degrades eloquence into declamation or rant. A style which is poor in figures is not relieved, by abundance of tropes, from the risk of being deficient in the power of exciting strong emotion.

Thirdly, Tropes may be said to be equally effective in their way, whether the words expressing them be heard or only read. Figures do not reach the climax of their suggestiveness till they issue from the lips of a speaker. The most pregnant expressions of emotion, recorded for calm perusal in after-days, cannot work with a tithe of that sympathetic force and immediacy, which the spoken words possess when they are aided by the voice, and the gestures, and the countenance, and the whole living and present activity of him who utters them.

Fourthly, Besides other restrictions and distinctions which are almost self-evident, it follows that spoken oratory must owe very much of its suggestive effectiveness to the prevalence of figures; and that orations whose style is deficient in figures will fall with comparative coldness on the ear to which they are first addressed, even though richness in tropes or in other forms of imagery may make them, when recorded, singularly attractive to readers. Two of the most eloquent of all men supply illustration by contrast. The style of Burke is luxuriantly tropical; and of the few figures which he uses, almost all belong to the least lively kinds. Admirable as his speeches are, and finely and vigorously as his scenes, and personages, and feelings strike us when we study them in the closet, there is sufficient proof that his impressiveness as a parliamentary orator fell infinitely short of the fame he had and has through the publication of his addresses. The one prominent characteristic of his style goes far towards accounting for the fact. Of Demosthenes, believed to have been the most effective of all public speakers, it has been alleged that he has no tropes at all. It is true that he has very few; and these are slightly and sketchily touched. But in figures he abounds beyond any other orator, ancient or modern. It is only in his business-passages that he rests contented with a succession of calmly-stated propositions. Whenever he is himself excited, and wishes to excite his hearers, assertion rises into the figurative forms which it wins from passion; and, especially, scene after scene, and appeal after appeal, are poured forth in an uninterrupted shower of vehement interrogation.

Thus much must suffice for the contrast between Tropes and Figures. There is a little that may advantageously be remarked in regard to the various phrases emerging under each of the two kinds separately.

As to Figures, their genuine differences of form are not many; and the simplicity of the law on which their effect rests makes most of those differences inessential. One distinction at least is worth recollecting.—There are figures which make no avowed appeal to sympathy; forms of speech which might find place in a soliloquy. Such are the Exclamation and the Apostrophe. These are favourite figures in the oratory of Chatham, of a man who, proud and self-reliant, though passionate, spoke as if to unload his heart of its burden of indignation and scorn, seldom as if

caring even to awe his audience, and never with the air of condescending to conciliate them. Other figures are avowed appeals to sympathy; forms of speech implying dialogue. Here the great example is the Interrogation. This is the figure which, incalculably oftener than any other, is used by Demosthenes. By him his audience was never forgotten, never slighted: he is not satisfied with pouring out his flood of passion, leaving it to overflow where it might; he flings an image at them as if it were a boomerang, whose course is not finished till it has rebounded to the hand of the thrower.

Of Tropes, almost as provokingly as of figures, the theory has been hidden, by rhetoricians not looking deeper than the words, behind a thick curtain of nomenclature. The few names, which would have sufficed for denoting the natural kinds, they have treated as boys treat a little snow-ball, which they roll along the ground till it has grown too large to be moved farther. The winter's toy is melted by the first warm breath of spring; and the ventilation which some thinking introduces is, unluckily, enough to show that the cumbrous terminology which has been applied to tropical language contains few items useable in a rational theory of the mental character of tropes. But tropes have been treated, by not a few rhetorical writers, with great sagacity and good-sense. There is equal excellence of taste and of ability in this as in other parts of Irving's *Elements of Composition*, lately referred to; and Whately never fails to fortify his doctrines strongly against assaults from the practical side. For the tracing of tropes, however, to their mental sources, we have still nothing so instructive as the glimpses which were caught by the eye of Campbell, piercing forward with a wonderful instinctive acuteness from among the mists of a fragmentary psychology. A systematic survey of the differences among tropes, in respect both of their means and of their results, could hardly yield any classification of them more satisfactory than that which he proposed. "Tropes," says he, "are subservient to vivacity, by presenting to the mind some image, which, from the original principles of our nature, more strongly attaches the fancy than could have been done by the proper terms whose place they occupy. They produce this effect in these four cases: *First*, When they can aptly represent a species by an individual, or a genus by a species (the more general by the less general); *Secondly*, When they serve to fix the attention on the most interesting particular, or that with which the subject is most intimately connected; *Thirdly*, When they exhibit things intelligible by things sensible; *Fourthly*, When they suggest things lifeless by things animate." Let us see how this scheme may be fitted into the system of laws which it has here been sought to explain.

All tropes operate by substituting, in the first instance, the image of a secondary object for the image of the object which is primary. They become aids towards volition, as towards poetical pleasure, *either by vivifying the image or by intensifying the consequent emotion*: the secondary object either is imagined more vividly than the primary; or it is more interesting, more excitative of feeling. The choice of tropes depends on the question, whether it be to the image or to the emotion that we design to impart added strength.

Suppose it is desired to strengthen the Image. This is to be effected by raising the image of a secondary object which is more easily imaginable than the primary.—*First*, then, if we are confined in our selection to objects of the same great class,—phenomena of body or phenomena of mind,—we cannot aid the formation of the image unless by adopting the rule which directed us to substitute the less extensive term for the more extensive. When, in so doing, we descend only from one class-name or common term to another class-name which is narrower, we use one of the

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varieties of the trope which the old rhetoricians call Synecdoche. When we descend from a class-name to a singular term, the trope is an Antonomasia. In both cases the suggestive relation is coadjacence.—*Secondly*, if our primary object is a body or a corporeal phenomenon, we cannot facilitate the imagination of it by substituting a phenomenon of mind. But if our primary object is a fact of consciousness, it is in our power to facilitate the imagination of it immensely, by substituting for it an object corporeal. Our trope is one of the kinds of the Metaphor, and the prominent suggestive relation is Similarity; though undoubtedly, often or always, the chain has many intertwined links, some of which rest on coadjacence, and others on contrariety.—For Campbell's first class of tropes, and for his third, places have thus been found, as ministering to the strengthening of the image.

Again, let the design be to strengthen, not the image, but the Emotion. The method of doing so is the substitution of a secondary object which is more interesting than the primary.—*First*, accordingly, the nature of the case may shut out the possibility of exchange between mental states and things external. If so,—the primary object being always susceptible of dissection, either into parts simultaneously combined, or into changes happening in succession,—our course must be the selection of that element, factor, circumstance, which is more interesting than any other, and substituting the image of this for that of the complex object, whose complication had prevented this element from attracting exact attention. Causes and effects may thus be interchanged, things concomitant for each other, a part individually thinkable for the individual whole of which it is a constituent. Tropes of this flexible character embrace some varieties of the Synecdoche, with all the various kinds that have been clumsily ranged together under the name of Metonymy. The suggestive relation is coadjacence.—*Secondly*, A fact of consciousness would lose instead of gaining interest by having a corporeal object substituted for it. But, since a corporeal object really imbibes the whole of its emotive interest from its relation to mind, increased power of exciting emotion may and must be gained when an object of that first class is displaced in favour of an object belonging to the other. While a poet makes thought, and passion, and will more brilliantly imaginable for us, by clothing them in the shapes and colours of inanimate nature, he makes nature and externality the source of the profoundest feeling, and even the object of a fine ideal sympathy, by animating them with the life, and activity, and susceptibilities of mind. The latter is the higher and more refined process of the two: it reigns especially in our own recent poetry; the principle of it is the life-blood of fantasy to such poets as Wordsworth and Tennyson. The trope here is Metaphor; and the prominent suggestive relation is Similarity.—Campbell's second and fourth classes of tropes are thus placed together, as ministering to the strengthening of emotion.

(III.) LAWS OF MATTER.

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31. In no application of persuasive eloquence, can a choice of objects be absolutely excluded. In the properly literary uses of the process the field of selection is almost unlimited: so is it in some departments not exclusively literary; as, for instance, the oratory of the pulpit. But there is room for adoption and rejection, even in those processes of communication, which have decisively a character of actual business dictating the outline of everything that is to be said. No fact whatever is simple; every fact which comes under practical discussion is in a high degree complex: every such fact may be presented in many different aspects; that is, through the exhibition of many different features from among those by which its totality is consti-

tuted. There is always scope for choice, therefore; though we look no further than to the event or other object through the desire or dislike of which it is attempted to arouse volition.

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The boundaries of the ground are enlarged yet more, when we fall back on a distinction which has already been asserted to have a psychological basis. The completion of the process of persuasion,—the leading of others through wishing to volition,—involves consideration of other objects besides those which are to be the objects of desire or aversion. The attainment or prevention of these is the end: something else must be the means. In trying to persuade a man, we call his attention to at least two objects in succession: we invite him to desire the attainment of *a*; we invite him to believe that his doing the act *b* will be the means of the attainment; and therefore we invite him to desire (and will) *b* also. Thus even the direct (or immediate) objects are at least two: *a*, the end, the fact or event which is to be desired; *b*, the means, the act which is to be willed.

Nor is this all. If it were all, or nearly all, persuasion would be far from easy, perhaps; but it would not be the very difficult thing it often is. There will always be some other object. There may, and probably will be, many others, the exhibition of which is imperatively required for assistance in representing with due effect the desirability of the ultimate end, and the adequacy and possibility of the means.

There is, in short, a triplicity of complications. First, there is a complication of objects, as means, as ends, and as standing related to both. Next, there is a complication of processes: the imaginative representation, which is peculiar to persuasion, is mixed up with appeals to the judgment, either as exposition or as argumentation. Lastly, there is a complication of times as the sphere of the objects. Both the end and the means, the object of the desire and the object of the volition, are thought as future: the objects whose exhibition is required for setting those in their just light may range through all the modes of time; they may be future or present, but it will oftenest happen that most of them are things past.

It is well, therefore, to inquire, whether the principles which have yielded us a few subjective or formal laws of persuasion, may not, when viewed from the objective side, supply some corollaries having use as guides in the choice of matter. The questions thus arising could hardly be treated in a way better adapted for practical application, than that in which they are treated by Campbell. His classification of "the circumstances chiefly instrumental in operating on the passions," will be the groundwork of the very few doctrines that are now to be laid down.

The principles which should rule the choice of matter or objects adequate for direct persuasive representation, may be brought to a point in the following group of propositions.

The Emotive Interest, through which images presented by language prompt wish and will, must, in the *first* place, rest on the capacity of the objects to influence, favourably or unfavourably, the well-being of some conscious and sensitive being or beings. *Secondly*, the emotive interest is most intense, when the persons whom the objects are capable of affecting are the persons to whom the images are addressed, and when, therefore, the personal interest is Direct. In all other cases the personal interest is Indirect, arising through Sympathy; and sympathetic interest is strong in proportion to the closeness of the relations, between those to whom the images are addressed, and those on whom the capacity of influence bears. *Thirdly*, the objects must consequently be representable as events; and they must possess, in a higher or lower degree, two characteristics, which are conditions of the power of events to excite lively interest, whether direct or sympathetic. These character-

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istics may be signified by the two words, Probability and Importance; and their nature may most easily be explained by negations. 1. The events must not be merely imaginary, and thus destitute of all bearing on volition: they must be capable of exciting a belief (stronger or weaker, but strong in proportion to the closeness of their relation to the volition which is aimed at), in their actuality, whether past, present, or future. 2. The events must not be purely trifling or insignificant; which they may be either on account of their own character and adjuncts, or (though more rarely) on account of the persons concerned in them: from the one reason or from the other, or from both, they must derive such an importance as shall at least be sufficient to excite attention.

Campbell's seven "emotive circumstances" are readily reducible under the heads thus set forth; and his analysis is so apt and useful, as to supersede the necessity for anything beyond a few hints in the way of illustration.

Evidently, the qualifications of emotive objects rise in efficacy according to the scale which our law indicates. Probability and importance are conditions, but conditions only: they have no proper causal efficiency. It may be objected, indeed, that we shall certainly be interested keenly, to the effect of wish at least if act and volition be impossible, by a momentous occurrence, positively known as affecting men many or distinguished. The answer to the objection is, that this is a sympathetic interest, for which the truth and importance of the event do no more than supply a groundwork. Equally clear is it, with no possible exception wide enough to qualify the practical uses of the law, that the strongest interest men in general can derive from sympathy, be their hearts as warm and expansive as they may, is feeble in comparison with that which inspires them in relation to their own happiness or misery.

The two conditions may reward a little attention.

The actuality of the event may be believed to be certain, morally or physically; but it cannot be emotive if the likelihood of it does not reach, at least, the low degree which is indicable by such a word as plausibility. It seems correct, also, to say, that the amount of likelihood which is the utmost attainable for an event contemplated as future, would be incalculably less effective if its object were a fact that is past, or one that is contemporaneous. The impression of probability to the extent which an individual case is thought to require, may evidently give occasion to the introduction of arguments, and will perhaps be, oftener than any other emergency, the adequate reason for such introduction. For the same end, the insinuation of belief through plausible exposition may be, and often is, singularly effective. If we had time to turn aside, and glance at the bearings (for there are many such) of these doctrines on poetry, this question might be put:—Whether the undisguised allegory, which falls on most readers with so dead a coldness, is not stopped at the very first stage of its passage towards emotive excitement, by the initial impression it makes of an unreality which we cannot even fancy to be removed?

As to the second condition, one remark only is needed. There is frequent risk that those whom we desire to interest in an event, may think it to be, both in its own nature and in respect of its causes and consequences, so unimportant, that their attention can hardly be awakened to the imagination of it by any considerations of this sort. But, unless they are unusually low in the scale either of intelligence or of susceptibility, they can scarcely fail to take some sympathetic interest in any event which is known to be actual, and which affects any human being whatever. Towards keenness of interest, however, especially in the absence of personal relation, the importance of the persons having part in the event is a very active instrument of excitement.

The last four of Campbell's emotive circumstances are reducible to one principle, by a generalization to which he

himself shows the way; and the taking of one or two subordinate distinctions suffices to systematize completely this part of his scheme.—Sympathetic interest, while it is or ought to be experienced by us towards all men, is quickened in a geometrical ratio as its sphere of objects is narrowed, in convergence towards the circle within which our personal affections revolve. Circumstances which imply such an approach are actively suggestive to us of reflections, which give to these an indirect power of excitement. Such circumstances are, first, proximity of events in time; and, secondly, proximity of events in place. It must be a question dependent on the concomitant features of a case, which of the two shall be the more strongly emotive. But both the one and the other move us, not otherwise than by suggesting the relations on which emotion generative of desire must directly rest; and the representation of an event in which such relations are explicitly prominent, must always be more effective than any indirect method of excitation. We are moved intensely by events concerning those who stand in close relation with ourselves; and, while benevolent and sympathetic affections may, in some finely-touched natures, be even more profound than those which centre in self; so, for fiery and angry tempers, or in circumstances which keenly irritate even tempers less harsh or hasty, hatred and revenge may for a time quite overpower regard for self. But, in all ordinary instances, the objects most excitative of desire or aversion, and of volition if action be possible, are undoubtedly events with whose progress and consequences our own happiness or suffering is known by us to be connected.

(IV.) SUPPLEMENTARY QUESTIONS.

32. There come up for consideration, lastly, two questions, which, though they involve form, involve matter also, and which therefore could not aptly have been raised earlier. *In the first place*, persuasion, like argumentation, may be attempted, not on minds open to its influence, but on minds prepossessed against it. How, then, if at all, by means different from argument, may emotions be got rid of, which would prevent the rise of the desire or volition aimed at? *In the next place*, although eloquence is not poetry, nor poetry eloquence, yet each of them has in it so many of the elements of the other that their results must sometimes coincide. Poetry has not infrequently been made the spur to action: persuasive eloquence has always been held to be, in some degree or other, amenable to the laws of beauty or taste. What can be determined as to the admissibility, into persuasion, of that imaginative pleasure, not tending towards action, the excitement of which is characteristic of poetry? A question nearly allied is this other: What place is there in eloquence for appeals to the sense of the ludicrous, through wit and humour?

The answer to the first of these questions may be given in the following shape. The answer to the second will follow in the next section.

I. For the removal of Emotions Unfavourable to the excitement of the wish and volition, which in a given case persuasion aims at, the methods most widely available are three.—*First*, The allaying of the emotion may be attempted, by the representation of the object in an aspect which does not tend to excite the unfavourable emotion, and the contemplation of which, therefore, is inconsistent with the continued intensity of the emotion. *Secondly*, The diversion of the emotion may be attempted, by the representation of some other object, which tends to excite the unfavourable emotion, and on which, therefore, it may be expended harmlessly. *Thirdly*, The extinguishing of the emotion may be attempted, by the representation of the object in an aspect tending to excite some other emotion, irreconcilable with the emotion which is to be removed.

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Processes
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Eloquence.

The three methods which have thus been described rest obviously on the same principle. The mind can never be totally blank; and in those changes whose agitation is the life of consciousness, emotion in some phase or other wells up incessantly to the surface. All the methods, therefore, are designed for converting the obstructive emotion into an emotion which shall not obstruct.—The emotion may cease to obstruct, if its intensity is diminished so far that it no longer prompts any wish at all; and here will emerge scope for argumentation, as in proof of improbability, insignificance, or want of real personal relation.—Again, the emotion may cease to obstruct, if there be suggested some other object of thought, which indeed keeps the emotion awake, but the character of which is such that the emotion or consequent wish bearing on it shall not be incongruous with the emotion and wish to which the persuasive process is directed. When dislike is felt towards a person in whose behalf we intercede, a hearing may be found for our words in his favour, if he ceases, though it were but for a short while, to be thought of as the object of the grudge, some other victim being suggested who as well deserves it.—Lastly, the emotion which is obnoxious may lose its hurtfulness, if there can be conjured up some other emotion, incompatible with the continued existence of it and its volitional consequents. This declaration of open war against an impeding emotion or desire, is more frequently called for and more extensively possible than either of the other methods of attack; but in a majority of cases it cannot be brought to bear, unless through and after processes of exposition or argumentation. The most signal of its occasions are ministered by the diversity, and the frequent incompatibility, of the relations in which every man stands towards every object which he can think of as attainable through exertions of his own. Hardly anything is there that can seem desirable to us as giving free play to some strong law of our nature, but the thought will arise, that the gratification of that desire would be attended with the pain consequent on disobedience to some other law. Well is it for us when deliberation is prompt and firm, and when choice is guided by wise and worthy motives. When there is doubt, and especially when that doubt is deeply founded, either on the character of the objects or on internal weakness of our own, the door is open for the entrance of influences from without, which may determine us with momentous effect either towards good or towards evil. Among such influences, powerful eloquence may be one of the most active. We have brooded longingly over a future act, which promises to gratify avarice, or hate, or ambition: our inclination towards it may be cooled or extinguished, by a startling representation of the gnawing pain of the remorse by which one day it would surely be followed; and our imagination may then be sensitive to the image of some other act, some act of forgiveness or self-sacrifice, which, in satisfying conscience and the love owing by man to man, would bestow the purest and highest happiness that can spring from within, but which, as being adverse to our preconceived passion, we could not bear to contemplate till that passion had been made to die away. Unfortunately, likewise, the progress might be in the opposite direction: we might be made to sink from the nourishment of a wish virtuously and nobly prompted, to the displacement of it by another, derived from mean and degrading sources of enjoyment. One of the most obvious, as well as most usually employed, of the antitheses which give room for such diversions of emotion and desire, is that which subsists between the serious and the ludicrous. Put the case, that the obstacle which bars our being led towards a certain wish or the consequent act, is our fear or our hatred of a person who would be benefited by it. It could rarely be possible, by force of mere words, whether argumentative or imaginative, to convert our ill-will directly

into any benevolent affection. But even so, the ill-will might be rendered inoperative through feelings which, though still prompted by a bad opinion of the person, could not co-exist with our original desire of injuring or resisting him. If a man is simply ridiculous, if our feeling towards him is mere contempt, we cannot hate him cordially, and shall not fear him at all. This case,—the diversion of emotion and wish of a serious cast by the exhibition of the object in an aspect which is ludicrous,—introduces us to the second of the questions raised in the beginning of this section. For wit and humour rest on the emotion of the ludicrous; and they stand in relations which, though far from being clear, are very intimate, to the imaginative pleasure which is characteristic of poetry.

Processes
constituting
Eloquence.

33. II. That Imaginative Pleasure, the excitement of which is the characteristic function of poetry, is so far inconsistent with the kind of emotion which issues in volition, and the objects tending to excite these severally are in most instances so unlike each other, that emotions of the former class cannot in a process of persuasion be excited either intensely or very frequently, without difficulty, or without some risk of injury to the persuasive result. The emotion of the ludicrous, also, as excited by Wit and Humour, is indeed, oftener than purely poetical pleasure, excitable by objects available towards persuasion; but it likewise is equivocal in its effects, as not tending directly towards action. Nevertheless, both pure poetical pleasure, and the emotions excited by wit and humour, are often useable with advantage in persuasion, under the restriction always of being kept in subservience to the distinctive purpose of the process. Especially it is true, that the slight or moderate excitement of a pleasure properly poetical or contemplative, not only is often a natural consequent of the contemplation of objects tending principally towards the excitement of volition, but is even a condition towards the full effect of persuasive eloquence in a cultivated and refined state of society.

Questions
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That, even in processes aiming at the purposes which constitute the distinctive province of eloquence, there is scope for the entertainment of the purpose which distinguishes poetry,—is a proposition, the truth of which is allowed, by implication, in doctrines which have a place, and which, being important as well as true, deserve to have a place, in every intelligent code of laws ever laid down to guide the student of rhetoric. No reasonable doubt can be thrown on the assertion, that certain elements truly poetical are admissible in eloquence as subordinate adjuncts and decorations. But difficulties begin to gather about us, like thickening mists, when we strive to determine analytically the relations between the means which subserve the poetical purpose, and those which subserve the persuasive,—and when we seek to derive hence a code of exact restrictions.

Such a code would bridge over, for passage from either side, the gap on whose opposite sides poetry and eloquence stand, covering ground which exhibits dissimilar landscapes, but which hides strata illustrative of analogous formation. The piers of the bridge, however, must be two: a theory of eloquence, a theory of poetry. For the former of these, there is given here no more than a plan; and the attempt even to design the latter, is forbidden alike by the purpose of the treatise and by its limits. We can venture on nothing beyond some hasty strokes, indicating a very few features, in respect of which the two classes of processes are least likely to conflict with each other.

It is in effect acknowledged by rhetoricians, that the effectiveness of eloquence is impaired, if not destroyed, by the intrusion of anything excitative of emotions contradictory of those which it is the prerogative of poetry to excite. For so much must be meant by the maxim, that neither in

Processes
constituting
Eloquence.

persuasion, nor even in argumentation, should there be admitted any object, or any treatment of any object, which would offend against the laws of taste. The rule is sound for any discourse intended to possess a character properly literary; that is, it is sound for the highest and worthiest class of cases to which rhetorical precepts are applicable. Though, likewise, taste should be understood as meaning good taste, the rule would continue to be sound for all discourses whose hearers or readers possess a reasonable amount of æsthetic cultivation. If the proviso be interpolated, that the taste of the audience, be it good or bad, is to give the standard, the rule holds for all cases possible. Every man is in some degree susceptible of a contemplative pleasure, incident to the exercise of his imagination; however widely the objects exciting that pleasure in a rude and coarse mind may differ from those which would excite it in a mind refined by nature and by training. And no man can fail to be interrupted in his progress towards belief and desire, if the object be set before him in a light which, independently of relations to action, affects him with an unpleasant feeling. So much is admitted when the question is considered from the negative side.

A positive rhetorical value is attached to poetical pleasure, in rules commonly laid down for style. Obedience to the laws of good taste is prescribed to language: it should, we are told, possess the quality called Beauty or Elegance. The rule is good for every composition of a class worthy of being criticised, and for every writer or speaker who is likely to reflect on his task in a thoughtful spirit. It is an instructive fact, however, that no one has ever been able to describe intelligibly any specific method (beyond rules properly grammatical) of putting the maxim in practice. The student of eloquence can only be told that, rules which bear on or tend towards Perspicuity being duly attended to, he will approach towards eloquence of style in proportion to his success in making his style Animated,—that is, in fitting it for the purpose of persuasion. The study of language is often helpful towards the excitement of imagination and of some consequent emotion; but what the character of that emotion is to be, is a question dependent, not on the words, but on the matter.

We reach higher ground on the positive side,—indeed we gain a rule which is practically more useful than any other relating to this question,—when we take account of a doctrine on which great stress has been placed in several preceding stages of our survey. In no use to which language can be put, is any quality of a composition more valuable than its power of commanding attention. Now Attention is excited by everything that is emotive. It is a question not always met by one answer,—which of the two shall arouse attention most effectively; an object moving us to pain, or one moving us to pleasure. So likewise, a positive answer could not be given to this other question:—whether attention will be attracted most keenly by an object raising feelings which prompt towards action, or by one which raises feelings not having that tendency. The chances are much in favour of objects urging us towards desire and will; and, for reasons lying in the same quarter, the chance is also, that attention will be more keenly awakened by painful objects than by pleasant ones. So much the less danger is there, that objects such or so represented as to incline by both paths in the opposite direction,—that is, away from action and away from pain,—should, if they are suggested sparingly, interpose any serious check or wide diversion to the course into which persuasion aims at inviting the mind. Therefore, far from seldom, when both theme and audience are favourable to the finer influences, persuasive eloquence may warrantably seek to awaken or enliven or revive attention, through images which do not immediately lead beyond the play of fancy and the pleasure which is attendant on it. When, indeed, the use of such expedients is

Processes
constituting
Eloquence.

guided by genius and skill, the excitants of the poetic or semi-poetic vision and emotion may be gathered from among the adjuncts of the very object on which action is to be directed; the transitory change of mood, too, is not unlikely to allow the gathering of new energy of consciousness; and the check which for a moment threw the wave of feeling backward upon thought, may give even a fiercer impulse to the gush with which afterwards it plunges forward into passion.

34. The legitimacy of the poetical element as an aid to The relation between persuasion and poetical representation. eloquence, not only as a powerful means of calling up attention, but also as a direct step on the way towards the end aimed at by persuasion, will be put on a ground yet broader, and may perhaps be extended to more various applicabilities, through the answer which may correctly be given to a question now to be put.

Poetry and Persuasive Eloquence pursue for a certain distance the very same track: at what point do their routes necessarily diverge? More specially, they concur in working through the excitement of Imagination and consequent Emotion; persuasion, however, must have as its next step the excitement of a Wish, whether it be a desire or an aversion: must it be held, then, that poetry cannot take this step,—that it would be unfaithful to its function if it should excite the Wish that something were, or that something were not? The answer is this. It is not true that the excitement of desire, or even of its contrary, is excluded from the competency of poetry. Such an exclusion is quite inconsistent with all ordinary opinions; and it is very far indeed from being a necessary consequence of that exact separation between poetic and persuasive representation, which it has here been attempted to illustrate. The bearings of the question could not be set forth satisfactorily, without a full exposition of the theory of poetry which is now founded on; but a few hints, merely fitting along the edge of one section in that theory, will exhibit some of the data on which the answer must depend.

Contrast, first of all, a poet's warm description of poetry with the colder one given by a philosopher. Let us think especially of the third quality assigned to poetry, in those pregnant words of Milton, seized on admiringly by Coleridge. "Poetry," says he, "is simple, sensuous, *passionate*." Kant, on the other hand, asserts of the Beautiful, that it is "*without interest*;" and with him, as with most or all of the more recent Germans, all the emotions characteristic of poetry and the other fine arts are emotions of beauty. The two doctrines are quite reconcilable; but both require some explanation.

It must be maintained firmly, as the central doctrine of all the fine arts,—that, while their mode of operation is the excitement of imagination, their end, the result for the sake of which the operation is performed, is the excitement of Emotion, of a state of mind which is a feeling. If it is admitted that their end is pleasure, this is accepting the doctrine, only specifying it (and correctly) by saying that the emotion is pleasing. If the mental process which it excites shall travel onward even by one step further, in that normal development of consciousness which issues in action, the art has, in its result (which presumably is due to something in its procedure), trespassed on ground which it cannot continue to occupy without becoming an alien to its native domain. But if it has taken the one step only, its position is easily recoverable: the wish, the desire, the longing, may generate only a new emotion, purely contemplative; and,—such flowings and ebbings being successively prompted through successive images, whether suggested by the poem or by the fancy of the reader,—wish and emotion may float through the soul in a series of delightful alternations, each impelled and guided by some

Processes
constituting
Eloquence.

new image in the thronging train of airy fantasies. None of the emotions can be more than momentary: no emotion can be more. But it is for the sake of the emotion that the images and wishes are cherished; and, so long as the poetical mood endures, it is back into emotion that wish and image will incessantly fall. That which would most effectually annihilate the poetical mood, that which most certainly would make the mind cease to be susceptible of the visionary emotion, would be the development of the wish into a consequent volition. The calm lake which has been darkened by a passing cloud, becomes again the mirror of its woody bank as soon as the sunshine again breaks out; but when the mountain blast has swept over it, its surface, lashed into agitation, can no longer reflect the brilliant shadow. This, then, is what must not happen as the effect of poetry; the transformation of desire into will. If such a transformation should take place incidentally, the mind which is the subject of it has been thrown down into a mood which is anti-poetical, and from which it cannot easily be elevated by the purest poetry which may next be presented to it. If a work poetical in name aims at such a transformation, it is really not a poem, but something else: with the introduction of such a design, it has ceased to be poetical, and has become persuasive. Understood under these explanations, Kant's proposition may be accepted as equally true and important.

Not less important are doctrines, which may be supposed to have been intended under the proposition which was quoted as its counterpart. Towards that one among those doctrines which here concerns us, the way has been opened by the assertion, that the transition from emotion to desire is not necessarily destructive of poetical effect. This assertion is not broad enough; for, though it is true, it contains scarcely half of the truth. Not only is it true that poetry may prompt wishes without being faithless to its vocation; it is true, moreover, that poetry does and must incessantly prompt wishes in all their higher modes,—as good-will or ill-will to persons, or as inclination or dislike to states of our own, dependent on things. It is equally a truth, and is a truth still more momentous, that to its capacity as a prompter of wishes poetry owes the possession of powers, the loss of which would degrade it into a mere toy, the plaything of a few imaginative dreamers. That capacity is not what makes poetry to be poetry: it is not what makes any fine art to be a fine art. But so far as any fine art can exercise that capacity without impairing its own peculiar functions, just by so far is that art elevated above being a mere decoration of life and a mere pastime for leisure; the comparative freedom with which that capacity can be subordinated to poetical ends, is the most active of the causes which raise poetry immeasurably higher than any other of the fine arts; and the fulness of diversified suggestion with which, through that capacity, poetry can people the visionary land conjured up by its spell, is the fountain whence flow out the love and reverence with which poetical art is honoured by the universal human heart. That which confers the capacity is the symbolism of language. By the manner in which words operate, arts making them its vehicle are, as we have seen, shut out from certain modes of representation which are open to arts operating directly through perception. But, in their own manner, through symbolic suggestion, words can represent all conceivable objects. Therefore poetry embraces, in its light but vigorous grasp, all those classes of objects, to one of which separately each of the weaker fine arts has its province confined; therefore also poetry enters into sympathizing alliance with those processes of real life and action, most of which the other fine arts have neither hand to touch nor eye to see.

If we are to use the term Beauty as designative of objects which excite the pure emotion of contemplative art,

whatever be the kind of process by which the emotion is awakened, the ordinary and obvious meaning of the word must receive a very large widening. That which we should naturally speak of as beautiful is an object of sight. Pleasing colour, or combinations of colour, may indeed be disposed of rightly by being regarded as no more than precedent conditions, and described as sensuously agreeable; and, when this exclusion has been made, Beauty proper is beauty of form. The arts of design are the only fine arts whose works are beautiful in this sense. Even such a work is not high in its class, unless the form which it presents and suggests shall to Beauty add what is usually called Expression,—that is, the capacity of suggesting emotions tending towards wish. Whether beauty of form is possible in the absence of expression, is a question which, though the answer is not far to seek, cannot be touched at present. The two antithetical terms do, at least, denote the predominance of the one or the other of two diverse attributes. The law of those arts might thus be said to be, that beauty shall predominate over expression; intensity and fulness of expression enliven and elevate a picture or a statue, but expose it to the risk of overstepping its proper function. Now, poetry has doubtless the power to suggest images of beautiful forms. Not only, however, is the suggestion vague, the same words exciting different images in every two different minds; but, over and above, it subserves in no more than a very slight degree the poetical effect. If beauty is beauty of form, the law of poetry is not beauty, but expression.

It is desirable, however, that we should be able to designate by one common name all phases of the pure contemplative emotion characteristic of all the fine arts; and the word Beauty, originally given to sensuous agreeableness, and raised in the language of art to denote attributes of form, offers itself temptingly for use. Of all objects excitative of pure poetical emotion, it is convenient to say that they are Beautiful; and it may not be unsafe to call them so, if we can guarantee our steady remembrance of the fact, that their beauty is Expressive Beauty. The necessity for implication of the limiting epithet reminds us at once of the world-wide sphere of poetical objects, and of that tendency to put the objects to extraneous uses by which poetry is beset more than any other art of its class.

Terms being thus understood, Expressive Beauty might be said to be the central law of poetry. Pure poetical pleasure is generated by images which, whether they be pictures of nature or of life, or of human consciousness as it works within, are barred by their ideal character from all immediate bearing, not only on action, but even on wishes tending to action, either of our own or of others. The glittering shower of fancies, and feelings, and longings, which the fountain throws up, cannot flow outward to form a brook, but incessantly, in sunshine and music, falls back into the encircling basin. Poetry having no other elements than these, would be pure; but it would not be strong. It would be lyrical in spirit, whatever it might be in form; and much more is demanded of it. If the poet would stir up the heart from its depths, he must look abroad on life, and feel the passions of humanity: he must conjure into the circle of his art shapes expressive of the purest joy, and the deepest suffering, and the most energetic action; that, by sympathy, and hope, and fear, the atmosphere may be agitated into healthy circulation.

Thus, from the heart of its empire, where it would only be a sluggard-king dreaming on his day-bed, Poetry, justly desiring active rule, and sometimes imprudently ambitious of foreign conquest, travels outwards towards or up to the frontiers of its dominions, and that by any of many diverging paths. In every direction, as the distance increases, the operation of the central laws becomes weaker,

Processes
constituting
Eloquence.

Processes
constituting
Elo-
quence.

though spontaneous activity is developed more and more energetically; and, if the borders are fairly crossed, the laws of the poetical realm cannot be enforced, unless as an invader might impose on the conquered any laws he chooses to bring with him.

When we remember that the sway of eloquence stretches over all those contiguous territories which poetry is so often tempted to reconnoitre or to visit, it becomes plain that the two are actually connected by bonds much stronger than those which show themselves on the surface. If poetry, by drawing closer its relations with life and action, can often inspire itself with increased force and profundity of passion; so eloquence may, though seldomer and with less safety, rise to higher refinement and elevation without essential loss of strength, through idealization of imagery, and consequent softening of desire and emotion.

Poetry seeks its frontiers by two high roads, leading in directions diametrically opposite. The one of these, pointing as it were to the cold north, soon enters desert tracts, and has few by-paths worth traversing: the other ushers us into scenes where everything around is full of warm interest and overflowing with luxuriant activity. In the first of those quarters the principle of animation is the emotion of the Ludicrous. When objects capable of exciting this feeling are contemplated from those idealized points of view which exclude immediate reference to action, they yield images whose æsthetical character is describable by such names as Wit and Humour; the former of which may be said to have its objective root in incongruity of ideas, the other in the incongruities of human nature. It is so difficult to reconcile feelings of this class with loftier and more worthy aspirations, that the excitement of them is hardly admitted in any of the fine arts, except painting and poetry; while even in poetry their sphere is narrow, in comparison at least with that which belongs to serious emotion. In eloquence, they have a scope which is very much wider; and, when the character of the matter and purpose does allow either persuasion or argumentation to call in the aid of the ludicrous, the circumstances always allow, and often require for the production of full effect, that the representation be idealized or æsthetically softened in such a way as to make it rightly describable as witty or humorous. It is on this side, indeed, that eloquence, though coming in contact only with one small frontier-province of poetry, touches the poetical domain more closely than it can on the opposite or serious side.

On this other side, poetry seeks to gather materials out of all phases and all degrees of serious emotion and passion, and desire and aversion. The kinds of the objects are not more diverse than the uses to which the art strives to put them. Milton's phrase, already used, may be understood widely enough to cover all varieties of the applications, to which poetry thus seeks to put the seriously emotive relations of life and action. Let us say that poetry, when it shoots off at this pole from the sphere of the purely Beautiful, passes into that of the Passionate. We come nearer to some of the problems which the name suggests, by saying that the genera of the passionate are reducible to two: the Sublime, which tends towards development in the Epic; the Pathetic, whose characteristic development takes place in Tragedy.—In the Sublime, the predominant emotion may be said to be an idealized modification of Fear. Being so modified by being taken out of immediate relation to action, and being modified further by specific characteristics of the objects (which affect variously both its kind and the degree of its intensity), fear becomes the kernel of emotions to which perhaps all branches of the sublime may be referred—Awe, Reverence, Wonder. If the objects, as real, tend to excite emotions justly describable by such names, it must be the fault of the poet if the same

emotions are not excitable by the poetical representation of them. But genius and skill of art may purify into those phases the impressions made by objects, which, in the reality, would be merely terrific or horrible; while, contrariwise, whatever be the character of the objects, want of skill or coarseness of feeling in the poet may throw a work, or a scene or image of it, out of the true province of poetry, by giving predominance to the unidealized phases of the emotions.—To the Pathetic, as a variety of the passionate, would be referable all cases in which the emotion, whatever be its kind, is aroused, not directly, but through Sympathy. Sympathetic emotion, imaginatively reflected or thrown back, falls into modifications of poetic emotion, which, though by no means the only modifications that may be called tragic, are those on which Tragedy is dependent oftener and more widely than on any others.—If the pathetic should rise so that it seems to merge in the sublime, there is still this ground for a separation such as that which has been hinted at, that the emotion of sublimity generated through sympathy remains relative or subjective, while there is another region of the sublime in which emotion is excited directly,—that is, through thought in which the prominent idea is that of the object.

35. The applicabilities of those distinctions to rhetorical use can be but very rapidly touched on.

In the first place, the idealization of passion has an incidental and subsidiary use, which, though it cannot penetrate deeply into the matter principally treated, stretches over almost all kinds of composition that are not poetical in design. It is often an apt means of awakening or enlivening attention. Pleasure of any kind, and imaginative pleasure not least, inclines us to concentrate our thoughts on the objects that excite us; and the inclination is suggestively transferable to objects with which those others are in relation. Though the staple of a discourse should be severe abstract reasoning, the mental eye may the more promptly admit the clear and cold light of truth, if it has been strengthened and excited by semi-poetic fancies flickering on the distant horizon. On occasions not a few, likewise, ideal imagery acts in the same direction, not only in virtue of its own force, but also by raising prepossessions in favour of the mind from which it springs.

Questions more doubtful confront us when we come to consider specific adaptations, involving cases in which the poetic mood might become a prominent feature in the mental state excited.

The most delicate of all cases, is that of a discourse designed for carrying on the process of persuasion to its consummation. Such a discourse must have a practical bearing so immediate, that hazard would almost always be incurred by any aspiration rising, for more than a very brief flight, above the level of actuality. Equally practical in effect, and therefore equally intolerant of invitations towards the contemplative, are most of those discourses in which, though the persuasive process in its earlier stages holds a conspicuous place, still it is really no more than subsidiary, the purpose ultimately striven after being the generation of belief, the enforcing on an audience acquiescence in the truth of a proposition. In describing such instances, however, we are taking it for granted, not only that the occasion is in substance a matter of active business, but also that the effect on the recipients, be it what it may, is designed to be immediate. But if judicial oratory be held to fall within this description, with some applications (certainly not all) of oratory to political and other social questions, we are yet entitled to say that there are many other cases, still oratorical rather than strictly literary, in which the design is different, and the field raised more or less above that of every-day life. Especially, it happens very often, as in many discourses of a religious cast, that

Processes
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Processes
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the end looked to lies beyond any mental state that is excited at the moment. What is wished for is the excitement of such a frame of mind as shall prompt subsequent thought; so that, though volition should be the result ultimately in view, it shall only spring up hereafter, seemingly from the spontaneous action of the resolving mind, but really from germs which have been sown by the speaker. The ground is thus enlarged on all sides; and passionate poetry surrenders many a spoil to the successful forays of passionate eloquence, provided always the objects be such that each of the arts may, in its own way, handle them to advantage. It is, however, when the poetic voice is but imperfectly modulated that oratory may most freely emulate its tones. Eloquence of all kinds, indeed, speedily grows languid in the rarefied atmosphere which fans the serenely sensitive existence of the highest poetical art: if its breathing is to be free and its action energetic, it must not climb above those subalpine heights, on which the dense air of real life has been relieved but in a slight degree from the superincumbent pressure.

But, further, though the spirit of these restrictive cautions must guide us everywhere, yet the quarter on which they tell most strongly fills a space comparatively narrow in that large territory, which is here claimed for Eloquence and alleged to be subject to its laws. The mass of pure literature is made up of works which owe their literary character, not to circumstances raising them above the occasion that prompted them, but to the intention with which they were brought into existence. Those works are not intended for generating one immediate effect,—not for producing one state of mind, which both has little complexity, and is concentrated on one group of objects. They are designed for producing a series of mental states, which shall expatiate over many and diverse objects presented in succession; and they are designed for producing those states through deliberate study, in which the reader's thought works with an independent activity, marvellously unlike the receptive obedience with which the same mind would have been impelled to follow the same prompting if it had been pressed with the hurry and force of oral declamation.

All such works issue, as it was asserted in one of the prefatory sections, from a combination of more than one of the three elementary and normal processes, and most of them from a combination of all the three. It must carefully be remembered, too, that, in instances which occur continually, each of these processes is performed in part only; there is a turning off from the road after the earlier stages of the journey. In the appeal to the judgment, the end desired may be, not to establish belief, but only to prepare the way for it: thus exposition may go no further than analysis of ideas or explanation of words; and the occasion may entitle argumentation to rest in the suggestion of conjectures. Still more frequent, and more frequent in pure literature than in oratory, is the occurrence of a process, in which persuasion, used only as an aid, is satisfied with the conjuring up of emotive images, or, at furthest, stops short with the raising of vague desires. History, for instance, and its hand-maid Biography, are essentially expository. But in these kinds of composition there is no phase of eloquence that may not co-operate with the main purpose, from the passionate picturing of characters and events, to the calm inculcation of universal truth. Nor would it be either just or safe to pronounce sentence of outlawry on certain branches of prose literature, which dwell so temptingly on the very borders, that they themselves are often doubtful to which of the two kingdoms their allegiance is preferably due. The novel and romance should be dealt with on this footing; that they are works essentially poetical in design, but sacrificing purity and elevation of æsthetic effect to the interest and variety of a biographical kind of individualization, for which verse would not allow scope. Many other kinds of literary works we have,

and some of these interesting and brilliant in a high degree, to which there must be extended a tolerance still more liberal, yet not so liberal as to absolve them from all obedience to law. In such works the writer is content with his position as the man of genius, without claiming also the rank of a literary artist: he casts forth, because he chooses to do so, the products of his vigorous reason, or rich imagination, or profound sensibility, without seeming to aspire to the production of any one class of effects, and perhaps without conjecturing or caring what might be the issue.

Evidently, even in those legitimate forms of literature in which unity or totality of effect is firmly kept in view, there is thus room for such a diversifying of the means of impression as to preclude the possibility of passive subjection to any specific code of laws. But, while every literary free-man resists to the death the fetters which pedantic rules would rivet on him, no literary man can scorn with impunity the constitutional code of that realm of thought, in which, by attempting literary creation, he enrolls himself as a citizen.

Those assertions must be repeated which were our point of departure. The distinct conception of one paramount purpose is the root of everything that is really great and strong in any department of literary art. The only purposes towards which literature can intelligently work are those which have now been recognised. The processes which have been represented as leading severally to the attainment of those purposes are the norms of all literary methods. Genius can, in a certain degree, achieve success in spite of itself; it can force its way in defiance of obstacles which it has reared up in its own path: vigour of thought, of imagination, or of passion, can bear receptive minds along with it, though its procedure should be incoherent; and to kindred souls it can suggest results possessing a symmetry which it had itself inadequately conceived. But the finest or loftiest genius can give birth to no work of art which shall be either great or enduring, unless it has learned, from reflection or from instinct, the few broad principles on which the character of art depends. Laws which are rooted in the nature of things never fail to avenge themselves on those who disobey them.

APPENDIX.

THE LAWS OF PROSE STYLE.

36. Questions of Style, which are the prominent feature in many systems of rhetoric, and the whole contents of many others, have with us been made to stand far in the background. This is thought to be the place which becomes them. That characteristic manner of expression, which is what we understand by the style peculiar to a writer or speaker, may indeed have derived some of its points from the study of models or of rules; but it is determined mainly by the cast of the man's own intellect and character, and is really peculiar or forcible in proportion to the amount in which he possesses individual peculiarity or strength.

A general theory of communication can fitly consider this question only:—what qualities must not be wanting in language if the style constituted by the words is to be good,—that is, if it is to be fit for serving the uses to which language is put? Adequate knowledge both of things and names being presupposed, this answer is given:—that style cannot be good unless it obeys laws belonging to each of two several orders.—In the first place, there are laws, disobedience to which, if thorough-going, makes language unfit to be a medium of communication for any purpose whatever. These laws constitute the science of Grammar; and, in fact, a very large proportion of the rules laid down for style are grammatical, not rhetorical. These are the most workable of all rules of style; and they cannot be too

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sedulously attended to by the unpractised student of composition.—In the second place, there are laws, disobedience to which unfits language only for some one purpose, leaving it (under limitations to be marked immediately) available for purposes which are different. These are the only laws of style that are properly rhetorical; but they are nothing else than the laws of the processes of communication we have already studied, or corollaries drawn from those laws by the easiest deduction. They have been brought out already in illustration of the theory of the processes, at all points where they aptly served that use, and were not too obvious to deserve being explicitly stated.

It may be well, however, to draw together under one outline a digested sketch of the principles of both kinds, within which must fall all specific Rules of Style. Poetical composition, which commonly and most wisely adopts metrical forms, is beyond our purview; and, for the purposes entertained by eloquence, the words may be held to be always couched in the form of prose.

I. The Purposes of language being *three*, and none of the three being absolutely excluded from the competency of eloquence, Prose Language, if it is to be fit for the attainment of all the three, must have each of three specific aptitudes. It is fitted for each of the three purposes by a combination of certain qualities; and each of the combinations receives one name. It is fitted for the purpose entertained in exposition and argumentation by Perspicuity; it is fitted for the purpose entertained in persuasion by Animation or Vivacity; it is fitted for the purpose entertained in poetical representation by Beauty or Elegance.

Language is said to be Perspicuous,—or adequate for communicating cognition or thought,—when it is free from each of three faults. It must not be obscure,—that is, convey no meaning clearly; it must not be ambiguous,—that is, convey more meanings than one; it must not be unintelligible,—that is, convey no meaning at all. But language has not the degree of perspicuity it ought to have, unless it conveys its one meaning readily as well as clearly.

Language is said to be Animated, when it is adequate for the purpose of persuasion. But the only element of this adequacy for which rules of style can give any assistance, is, or arises directly out of, the special aptitude of the words for exciting Imagination, the first step in the process.

Language is said to be Elegant or Beautiful, when it gratifies the taste,—that is, excites imaginative pleasure. In respect of the words, this gratification stands yet more closely related to persuasion than it does in respect of the objects and their images.

II. Although each of these three names denotes a specific aptitude for one purpose, yet the relations which connect the purposes cause the second aptitude to be dependent on the first, and the third to be dependent both on the first and on the second. Language may be perspicuous without being more; but it cannot be animated without being perspicuous; and it cannot rightly be said to be elegant unless it be both perspicuous and animated.

Hence perspicuity is an *essential* quality of style: it can never be dispensed with. The other two are *occasional* qualities. In certain kinds of composition they would be out of place; in other kinds, they might safely be wanting; and they might be absent in certain parts of compositions which elsewhere admit or require them.

While, again, animation is dependent on perspicuity; so, contrariwise, animation increases perspicuity in certain cases, and lessens it in others. It increases perspicuity when, by aiding in the excitement of imagination, it makes attention more energetic. It lessens perspicuity when (as in philosophical or other abstract discussions), the ideas requiring very wide terms for their full expression, the desire of animation leads to the use of terms which are too narrow.

Processes
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Eloquence.

III. For the attainment of Perspicuity, Animation, and Elegance, severally, language must be brought to bear on the specific purpose in respect of three particulars: the Choice of Words or Phrases, the Number of them, the Putting Together of them.

1. (i.) So far as the Choice of words and phrases is concerned, language is made Perspicuous by its possession of two qualities: Purity and Precision. The former consists in conformity to grammatical laws, which fits the words for conveying some meaning; the latter consists in conformity to the thought of the speaker or writer, which fits the words for conveying the meaning intended. When the choice is spoken of as embracing phrases as well as single words, there is designed such a description of this one element of perspicuity as shall enable it to cover all questions purely grammatical. Purity, then, grammatical correctness, is, within certain limits (which it is never worth while to transgress), a condition of perspicuity. It is on perspicuity alone that grammatical considerations have a direct bearing. But purity is not enough: therefore perspicuity, though resting on grammar, is not wholly dependent on grammatical laws. The words must be precise also; which word, as here understood, has a wider meaning than that which it often receives from critics and teachers of style. Let us understand the term as embracing everything that makes a word or phrase to represent the desired idea, to represent it exactly, to represent it completely, and to represent no other: and its meaning will then comprehend all the special rules (such as retrenchment of superfluities), to the expression of which it is sometimes restricted.—(ii.) In respect to the Number of the words or phrases, the only universal rule which can safely be propounded does in truth merely remind us, that words are but ministers of thought, that they should be used for a purpose distinctly apprehended, and that, when not so used, they are worse than useless. The number of words having been used which is sufficient to convey the meaning perspicuously, every additional word lessens perspicuity. The words required may be few, or they may be many: no rule can touch the exigences of individual cases.—(iii.) It is through failure in the Combination of words and phrases,—that is, in the construction of sentences,—oftener than through any other fault, that persons untrained in composition fall into obscurity or ambiguity. The books lay down a few excellent rules for particular cases; and some of them are still more instructive through the collection of examples. The whole doctrine may be gathered under one principle. Clear thinking must have unity of object: a complex thought, if clear, has some one element which predominates over the rest, and in due subordination to which all the others are placed. Every sentence is designed for giving expression to one leading thought: let the sentence be so framed that the pre-eminence of that thought shall unequivocally be signified. Let the expression of subsidiary thoughts be grouped about the leading assertion in such a way as to show their dependence on it; each inferior member and clause being likewise so arranged that its own unity be not lost sight of.

2. In the analysis of persuasion, we were brought so frequently on questions as to language, that the means of attaining Animation of style can hardly now be described otherwise than by borrowing from preceding illustrations.—(i.) In the Choice of words and phrases, animation is attained through two methods: it is attained directly, by the preference of the less extensive term to the more extensive; it is attained indirectly, by the preference of figurative expressions to unfigurative.—(ii.) In regard to the Number of words, the only rule must be that which was laid down as affecting perspicuity. The caution, given some time ago, may be repeated: that animation is likely to require a fullness of expression greater than that which would be appro-

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tism.

prate to perspicuity.—(iii.) In the Construction of sentences, likewise, animation is governed by the same principle as perspicuity: its great law is the law of unity.

3. The gratification of taste depends primarily on the choice of objects; and this is a point beyond our province. So far, again, as the sense of Beauty is ministered to by style, three hints only can be given.—(i.) The words can have no direct power of exciting the emotion, unless as being representative of images. But this is the source which gives animation its power. Therefore the methods of producing animation are efficient also for producing elegance: and on this side no further rule can be assigned. (ii.) Words have, however, an indirect power of gratifying taste, in so far as they are examples of systematic obedience

to recognised laws; and in so far also as this obedience is evidence of skill and talent and knowledge, on the part of the writer or speaker. Therefore grammatical purity is an element of elegance in style. In this view, a value which is real, and far from being inconsiderable, belongs to the cautions which treatises on style give so often, against incorrectnesses of expression which do not go far enough to cause either obscurity or ambiguity. (iii.) Though melody of language finds its consummation and favourite seat in metrical compositions, yet prose also has, or may have, its looser and more flexible rhythm. Therefore, even in works not poetical, melody is an adjunct or element of elegance in style. (w.s.)

Rheuma-
tism.

RHEUMATISM is a painful affection of fibrous and muscular tissues, affecting principally the larger joints, and places covered by muscles; as the wrists, elbows, knees, hip-joint, back, and loins. The internal parts also, as the heart and diaphragm, are considered capable of being affected by rheumatism. When the joints about the back and loins are affected, the complaint is called *lumbago*; when the pain is in the hip-joint, it is called *sciatica*; and *pleurodyne*, or pain in the side, when the muscles of the chest are affected. Rheumatism may occur either with fever or without it; in the first case it is termed *acute*, and in the second *chronic rheumatism*. Not long after the application of the exciting cause, the patient feels pain and stiffness in one or more joints when he attempts to move them; this quickly increases till motion becomes almost impossible, from the excessive pain attending it. Along with this local and often very general pain there occur very strong fever, much thirst, heat, and dryness of skin, strength, fulness, and hardness of pulse. The feverish symptoms are somewhat increased towards evening; and when the patient gets warm in bed the pains are more severe. In a short time some of the affected joints swell, and the pain is a little relieved, but by no means removed. As to the *causes* of this malady, it may be remarked that rheumatism is a disease of the constitution, and is induced by a poison circulating in the blood, and probably carried from one joint to another. The tendency to rheumatism is hereditary; and in some families this predisposition is very marked, and the disease is excited by the most trifling causes. Cold and damp are the most common causes of the disease, and hence the poor suffer much from it. Persons who get their clothes wet or damp, and neglect to change them, are often seized with rheumatism. Acute rheumatism is most common between the ages of fifteen and forty. It is not a dangerous disease as long as it is confined to the joints, but there is always the risk of the heart being attacked. Dr Parr remarks regarding the *diagnosis* of this disease, that "rheumatism is often so blended with gout as to prevent our seeing which is the principal complaint. In general, rheumatism occurs in consequence of an evident cause, as cold; the gout without any such cause. Rheumatism has no preceding complaints; gout is preceded by languor, flatulency, and indigestion; rheumatism is the disease of the strong and active; gout, of those advanced in life; rheumatism attacks the larger, gout the smaller joints; rheumatic limbs, though swollen, are not red like gouty. The fever of gout remits irregularly; that of rheumatism has exacerbations in the evening, and remissions in the morning. These circumstances will contribute to the distinction; but the cases so often run into each other, and differ by shades so transient and minute, that the greatest difficulty is found in the distinction of particular complaints. Rheumatic pains in the chest resemble pleurisy, and in the abdomen resemble inflammation of the bowels. In each case, the soreness to the

touch, the pain felt at the origin or insertions of the muscles, while the more appropriate symptoms of the real inflammation of the part are absent, will sufficiently mark the nature of the disease."

Acute rheumatism is to be considered as an inflammatory and febrile disease, and, as such, to be treated in the first instance by cautious blood-letting, in quantity proportioned to the violence of the disease and the strength and constitution of the patient. In all cases the bowels must be well opened. The best medicine for this purpose is a draught containing half an ounce of Epsom salts, twenty or thirty drops of antimonial wine, thirty drops of colchicum wine, and an ounce of senna infusion. After the saline purgative it is often advisable to bring out a copious sweat, and to continue that sweat over the whole body for thirty-six or forty-eight hours. The most effectual and approved method of this is to employ the compound powder of ipecacuan and opium, commonly called Dover's powder; of this we give 10 or 12 grains, having put flannels next the patient's skin, and put him in blankets. When this dose has brought out a sweat, it is to be encouraged by drinking plentifully of warm gruel or barley-water; but if it should fail to occasion perspiration, another dose must be given at an interval of four hours, and this repeated every four hours till a copious sweat breaks out over the whole body. It is proper to abstain from drinking till the sweat breaks out, as drinking too soon after taking the powder is apt to occasion vomiting. When the perspiration has continued general and copious for a sufficient time, the load of bed-clothes is to be gradually diminished; the body is to be rubbed dry with warm flannel, and great care taken for some time not to expose it to cold. When the pain and stiffness of the joints continue after the sweating, some stimulating embrocation is proper, as turpentine ointment, or volatile liniment, or camphorated oil. If the pain still continue obstinate, it may be necessary to apply a blister to any of the joints or muscular parts that require it. The essence of mustard, which has gained some reputation as an external application in rheumatism, is composed of oil of turpentine, camphor, and a portion of rosemary, to which is added a small quantity of flour of mustard.

Chronic rheumatism is distinguished by the pained parts being cold and stiff, and not easily made to perspire; by being worse in cold weather than in warm; by the patient's being very sensible to the changes of weather; and by the general health being not very greatly impaired, at least till the disease has continued many months. The affected joints remain for a long time swollen and tender, and occasionally permanently thickened and distorted. The cure of chronic rheumatism is very difficult. Many expedients have been tried, and there is a necessity for varying the treatment in almost all instances of it. Sweating and friction are proper commencements, and these must be followed up by warm bathing, warm pumping, the use of the Bath waters, or sometimes by sea-bathing, by electricity,

Rhin. and the frequent use of the flesh-brush. The system is to be invigorated by bark, wine, iron, and other tonics. The ammoniated tincture of guaiac, in the dose of two or three drachms, has been employed with success; also the oil of turpentine, from ten to thirty drops mixed with honey, or what has been a good deal employed of late, cod-liver oil, from half an ounce to an ounce. The above doses are to be taken twice a-day, and persevered in for some time. Much attention is to be paid to the wearing of proper clothing, and not to expose the body to the vicissitudes of the weather, and especially to avoid cold and damp. Much benefit is often derived from wearing Pulvermacher's electric chains.

RHIN, BAS, a department of France, bounded on the N. by Rhenish Bavaria, E. by Baden, S. by the department of Haut-Rhin, and W. by those of Vosges, Meurthe, and Moselle: length, from S.E. to N.W., 68 miles; average breadth, 30 miles; area, 1914 square miles. It has a general slope from the Vosges Mountains, extending along the west of the department, to the Rhine, which washes its eastern border in a parallel direction. In the more elevated regions there are rugged and precipitous rocks, shaggy with forests, along with deep, romantic glens: in the lower tracts broad rich plains, with vine covered hills, and some marshes near the bank of the Rhine. In the former district the prevailing geological formations are limestone, sandstone, and gypsum; the latter is composed of tertiary deposits. The whole of the department is watered by affluents of the Rhine. The largest of these is the Ill, which flows northwards, from Haut-Rhin, nearly parallel to the main river; and after receiving from the Vosges in this department the Lieporelle, Scheer, Andlau, Eger, and Bruche, falls into the Rhine a short distance below Strasburg. The Zorn, Moder, Surbach, and Lauter flow from the mountains immediately into the Rhine. Of these rivers, besides the Rhine, the Ill and the Moder are navigable. Among the mineral resources of the country are iron, coal, alum, slate, building-stone, and potters' clay. There are mineral springs at several places. The soil of the country is generally fertile, except the marshy ground along the Rhine and the barren tracts among the Vosges; and cultivation is well and extensively carried on. The winters are long and severe; in the summer, which comes on almost without any spring, sudden changes are not unfrequent; but the autumn is in general exceedingly fine. Corn, potatoes, pulse, beet-root, and hemp are the crops chiefly raised. Tobacco has been for a long time cultivated here. The vines, though reckoned inferior to those of Haut-Rhin, produce several excellent wines. There are in the department about 123,500 acres of corn land, 74,000 occupied by potatoes, 44,400 by vineyards, 158,000 by meadows, and 365,000 by forests. The meadows are favourable for the rearing of cattle, which are numerous and of a good breed. Pigs especially are bred in great quantities, and form an important article of commerce. It is estimated that there are 50,000 horses, 140,000 horned cattle, 76,000 sheep, and 90,000 pigs. Manufactures are extensively carried on: steel and cutlery, fire-arms, swords, bayonets, surgical instruments, woollen cloth, calico, leather, beer, and chemical substances, are among the articles produced. The trade is also considerable. Both the natural and the manufactured products of the country are sent to other parts of France, and to foreign lands; much of the timber being floated down the Rhine in large rafts, and sawn up in Holland. Communication is facilitated by three canals,—that between the Rhone and the Rhine, that between the Marne and the Rhine, and that of the Bruche, as well as by two railways,—from Paris to Strasburg, and from Strasburg to Basel. Bas-Rhin contains four law courts of the first instance, a tribunal of commerce, a lyceum, normal seminary, six colleges, and 1000 elementary schools. It belongs, along with Haut-Rhin, to the diocese of

Strasburg, and to the sixth military division, containing seven fortified places. Its four arrondissements are as follows:—

	Cantons.	Communes.	Pop. (1856).
Strasburg.....	12	161	242,145
Saverne	7	165	102,119
Schélestadt	8	114	136,390
Weissembourg.....	6	102	83,201
Total	33	542	563,855

RHIN, Haut, a department of France, bounded on the E. by Baden, S. by Switzerland and the department of Doubs, W. by those of Haute-Saone and Vosges, and N. by that of Bas-Rhin: length, 64 miles; breadth, about 36; area, 1477 square miles. Like the department already described, it lies in the valley of the Rhine, between that river and the Vosges; the southern extremity being shut in by the ramifications of Mount Jura. The summits of the Vosges are all accessible, and not entirely destitute of vegetation; many of them being of a rounded form, are called *ballons*. Upon the lower slopes there are extensive forests, penetrated here and there with meadows, containing cottages and farms. Lower down, the rich corn-fields and sloping vineyards, the numerous towns and villages that stud the country, present a beautiful scene, inclosed by the silvery border of the Rhine on the east. Next to this, the largest river in the department is the Ill, which rises in the Vosges, receives most of the other streams, and carries their waters to the Rhine. A few of the rivers in the S.W. flow into the Doubs, and thus belong to the basin of the Rhone. The mountains in some parts are formed of granitic and other primitive rocks; lower down, sandstone, limestone, and marl are found; and in the plain the tertiary formation prevails. Iron, granite, porphyry, freestone, coal, and potters' clay are among the mineral productions of the department. The soil in the centre of the plain is very good, though of inferior quality near the mountains and the river. Agriculture is much attended to. The produce of grain is generally sufficient for the demand; that of wines superabundant; the best kinds of Rhine wines raised in France are those which come from this department. The same crops are generally raised here as in Bas-Rhin. The extent of arable land is about 240,000 acres, that of vineyards 29,000, of meadows 133,000, and of forests 350,000. Horses and cattle are numerous and of good breeds; there are calculated to be in the country 25,000 horses, 100,000 horned cattle, 60,000 sheep, and 62,000 pigs. The climate is like that of Bas-Rhin, only somewhat less mild. Manufactures are actively carried on. Besides iron furnaces and forges, there are manufactories of cotton and calico,—of the latter about 500,000 pieces are annually produced; hosiery, leather, ironmongery, clocks and watches, paper, and numerous other articles are also produced. Colmar, Mulhausen, and Thann are the chief manufacturing towns. Commerce is actively carried on here; wine, oil, hemp, timber, coal, iron, and manufactured articles are exported. Communication is promoted by the navigable rivers Rhine and Ill; by the Rhine and Rhone Canal, and by the railway from Strasburg to Basel. There is an imperial court at Colmar for the departments of Haut and Bas Rhin; besides which, this department has 3 subordinate tribunals, a lyceum, 4 colleges, a normal seminary, 14 superior, and 736 elementary schools. It is divided into 3 arrondissements as follows:—

	Cantons.	Communes.	Pop. (1856).
Colmar.....	13	139	208,829
Altkirch	7	159	160,588
Belfort.....	9	191	130,025
Total.....	29	489	499,442

The inhabitants, both of this department and of that of Bas-Rhin, are of German origin; and a *patois* of that lan-

Rhine.

guage is generally spoken. A large proportion of the population are Protestants, especially in the lower of the two departments; and there are many Jews, who, though universally hated, have in their hands the most of the trade. These two departments, which formed the province of Alsace, once a part of Germany, came into the possession of France by the peace of Westphalia in 1648.

RHINE (anc. *Rhenus*, Germ. *Rhein*, Fr. *Rhin*, Dutch *Rijn*), one of the largest and most celebrated rivers of Europe, has its source in Switzerland and its mouth in Holland; Germany on its right bank, and France for a part of its course on the left. Politically it separates Germany from France; but if we define the country rather by the language and character of the people than by the arbitrary divisions of states, we must say that the Rhine flows through the middle of Germany, having on both sides German inhabitants, speaking the German language. The name of the river, however, was originally Celtic, *hrén*; but when the Celts were expelled by the Germans the name also gave place to one of a similar sound, *hrin*, signifying roaring. It is formed by three brooks from the N.E. slope of Mount St Gotthart, in the canton of Grisons; the mountain dividing between the Italian and German nations, and sending almost from the same point the Rhone by the lake of Geneva to the Mediterranean; the Ticino, by lake Maggiore to the Po; the Inn, by the Danube to the Euxine; and the Rhine to the German Ocean. The Fore, Middle, and Hinder Rhine are the names of the three brooks which pour down from the glaciers over rocks and cliffs in tumultuous noisy course, and unite to form the river. Of these, the last, which is the largest, flows through a most tremendous chasm, the Via Mala. For a length of 4 miles, perpendicular, sometimes overhanging, rocks rise to the height of 1600 feet on either side of the river, which rushes through the abyss, compressed in some places to a width of 10 feet. The three streams unite above Cur; and the river thus formed flows northward through Grisons, afterwards separating the county of Vaduz, belonging to the Prince of Liechtenstein, and the Vorarlberg, belonging to Austria, on the right, from the Swiss canton of St Gall on the left. It pursues this course onwards to the Lake of Constance through a narrow valley, which below Werdenberg assumes an entirely different character, and is called the Upper Rhine valley, or *Rheingau*. Instead of the bleak inhospitable rocks of the Grisons, affording only meadows and pasture land, there is here a mild climate, luxuriant vegetation, rich vineyards and corn-fields, woods, and orchards, so as to render this one of the most beautiful valleys of Germany. The chief town in the valley is Rheineck, near the head of the Lake of Constance. Among the affluents of the Rhine above this point the principal are the Plessur, Languart, and Ill, from the right; and from the left, the Tamina, rushing violently down from Pfeffers into the still turbulent Rhine. At Cur the river becomes navigable for boats. It enters the lake of Constance sometimes with such force that its waters meet those of the Argen and Schussach, which fall into it from the opposite side. For some distance the stream can be distinguished in the lake by its motion and its clearer water among the deep green waves around. It leaves the lake at Constance to enter another, the Lower or Lake of Zell. After its exit from the latter it flows westwards, separating the grand duchy of Baden and the canton of Schaffhausen from the cantons of Thurgau, Zurich, and Aargau, and passing Schaffhausen, where it forms the finest cataract in Europe, 300 feet broad and from 45 to 60 high. From a castle in the vicinity, the inhabitants call the fall Lauffen, or Great Lauffen, to distinguish it from another not so remarkable farther down the river. Not far below Schaffhausen the Rhine receives the Thur; and at a small village called Coblenz, the Aar, a considerable river

watering a great part of Switzerland, and augmented by the Reuss and the Limmat. As this last river has its source not far from the Rhine, above Werdenberg, and is separated from it only by an elevation of 20 feet, it has been supposed that the Rhine itself anciently followed this course, and flowed through the lakes of Wallenstadt and Zurich into the Aar. Although at the confluence the Aar is the larger of the two streams, yet as the Rhine preserves its former course, carrying along with it the waters of the other which flowed northwards, it still retains the name of Rhine. By means of this affluent the Rhine receives the waters of all the Swiss lakes it has not traversed, excepting only that of Geneva; and the number of glaciers that go to form the united stream is 270; so that before leaving Switzerland the Rhine carries away almost all the waters of that country. Below the confluence of the Aar the Rhine passes the falls of Waldshut, Lauffenburg, Seckingen, and Rheinfelden, and, flowing through Basel, enters the second part of its course. At this point it turns to the north, and leaving the narrow valleys through which it had previously flowed, enters the broad and beautiful valley of the Rhine, stretching from the Black Forest (*Schwarzwald*) on the E., to the Vosges and their continuation, the Hardt Mountains, on the W., a distance of 40 or 50 miles; and from Basel, 200 miles northwards, to Mainz. During this part of its course the Rhine separates Baden on the E. from Alsace, now the French departments, Haut and Bas Rhin, and the Rhenish palatinate, now a part of Bavaria, on the W.; and afterwards traverses the grand duchy of Hesse-Darmstadt. It passes by or near the towns of Strasburg, Carlsruhe, Spire, Mannheim, and Worms, and receives numerous affluents from the hills on either side, the largest being the Neckar, rising on the E. slope of the Black Forest, and flowing in a circuitous course through Wurtemberg and Baden, till, after passing Heidelberg, it joins the main river at Mannheim. With Mainz ends the broad, rich, vine-covered valley of the Rhine. Here, too, the Main enters the river, flowing in a zig-zag course through Franconia from the Fichtelgebirge on the E., its tawny waters not readily mingling with the bluish Rhine. This river, sweeping round from between the Donnersberg on the left, and the Odenwald on the right enters a narrow defile which extends as far as Cologne, including some of the finest romantic scenery in Europe. Between Mainz and Bingen the former northerly course of the stream is turned by the Taunus Mountains towards the west, and the southerly exposure and the shelter of the heights behind renders this part of the banks the best for the growth of the vine. The level country which the Rhine incloses in a semicircle from Worms to Bingen is known by the name of the Gau. At the latter place the Rhine, receiving the Nahe from the W., turns again in a N.W. direction, and forces its way through a long narrow cleft in the mountains. At Coblenz it receives the Moselle from the left, and a little way farther up the Lahn from Nassau on the right. At this point, too, it enters the Prussian dominions, which it had below Bingen separated from Nassau. Between Coblenz and Cologne the valley is sometimes narrow, sometimes wider, combining the beauties of both kinds which appear in the upper part of its course. Besides the places already mentioned, Bonn is the principal town here on the Rhine; and there are many old castles and ruins celebrated in the history or legends of the country. With Cologne begins the third and lowest portion of the Rhine. Here it emerges gradually from the mountains into a low plain, flowing still north-west through Prussia. It receives below Coblenz the Sieg, the Ruhr, and the Lippe from the E., and the Erft from the W., and passes the towns of Dusseldorf and Wesel before leaving Prussia and entering Holland. A short distance below this point the Rhine begins to separate into different chan-

Rhine.

Rhine. nels. Near the village of Pannerden it divides into two; the larger, which flows westwards, taking the name of Waal, and the other retaining the name of Rhine, flowing N.N.W. Further on, near Arnheim, a stream called the Yssel is sent off from the Rhine towards the N., falling into the Zuyder Zee. This channel was originally formed by a canal cut by Drusus between the Rhine and Old Yssel. A third division of the Rhine takes place at Wyck, where the smaller and more northerly branch retains the name Rhine, and flows past Utrecht and Leyden, while the other stream takes the name of Leck. A fourth and last division takes place at Utrecht into the Vecht, flowing northwards to the Zuyder Zee, and the old Rhine (*Oude Rijn*), which at one time lost itself in the sand, but has now found an outlet by a canal made in 1807. The Waal, after leaving the Rhine, unites with the Meuse or Maas, which farther down sends off a branch on the left, called the West Kil, and, flowing onwards, joins the Leck, passes Rotterdam, and enters the ocean at the promontory called the Hook of Holland. The West Kil expands into the estuary Hollands Diep, and discharges its waters by a channel on either side of the island of Over Flackee. Thus the Rhine enters the sea by six mouths, though the name is confined to one of the smallest. But it is probable that this was once the main branch, and that its character has been changed by various subsequent inundations. All the branches of the river are connected by smaller streams and artificial canals; and the whole country, from its lowness, is so liable to inundations of the river or sea that it has to be protected with embankments as far up as Wesel in Prussia. These are generally 25 or 30 feet above the lowest level of the river; but notwithstanding all precautions the country is occasionally laid under water, to the great loss of property and sometimes of lives. The whole length of the Rhine is nearly 700 miles, and it drains an area of more than 75,000 sq. miles. Its breadth at Basel is 750 feet, near Strasburg 1000, at Mainz 1500, and at Dusseldorf, the broadest part, 2300; its height at the source 7650 feet above the sea, at Constance 1335, at Basel 800, at Strasburg 453, at Mainz 274, and at Cologne 110. It is navigable for ships and steamers as far as Basel, about 570 miles from the sea; above that place it is interrupted by cataracts, and navigated only by small boats. From Basel to Strasburg it floats vessels from 25 to 30 tons burden; from thence to Mainz, 100 to 125; onwards to Cologne, from 125 to 250 tons; and below that town it is navigable for the largest ships. The waters of the Rhine are connected by canals with those of the Rhone, Danube, and Schelde. Although the free navigation of the river is secured by the peace of Vienna, exorbitant tolls and dues are exacted by every one of the states which it traverses or washes. The traffic is, however, very great, both on the river itself and on the railways that line its banks. The picturesque scenery and many historical and romantic associations connected with the Rhine make it also a place of resort for vast numbers of tourists from all countries, and have rendered this king of German rivers the theme of many a song and tradition among the people of Germany.

RHINE, Province of (Germ. *Rheinprovinz*), the most westerly province of the Prussian monarchy, bounded on the N. and N.E. by the province of Westphalia, E. by Nassau, Hesse-Darmstadt, and Rhenish Bavaria, S. by France, and W. by Belgium and Holland. It consists of five governments, whose areas and population are as follows:—

	Square Miles.	Circles.	Pop. (1855).
Cologne (<i>Cöln</i>).....	1,534	11	523,680
Düsseldorf.....	2,084	13	1,007,570
Coblenz.....	2,324	12	509,164
Trèves (<i>Trier</i>).....	2,779	13	506,535
Aix-la-Chapelle (<i>Aachen</i>)..	1,601	11	436,352
Total.....	10,322	60	2,983,301

VOL. XIX.

The southern and eastern parts of the province are mountainous, while in the N.W. there is an extent of level ground, forming the plain of the Lower Rhine. Furthest to the south is the rugged and woody Hunsrück, between the Rhine, Moselle, and Nahe. The loftiest point in these mountains, in that part called the Hochwald, has an elevation of 2526 feet. North of these are some branches of the Sauerland Mountains, which extend northwards on the right bank of the Rhine as far as the Ruhr. Part of the Westerwald also lies in this province; the most remarkable portion being the Siebengebirge, a basaltic group near the Rhine above Bonn. Another chain of hills here is the Eifel, a continuation of the Ardennes, extending between the Aho and Moselle, as far as Coblenz. Forests cover the loftier summits of the mountains, and vineyards their lower slopes; the plains are occupied with rich pastures and corn-fields. The chief river is the Rhine, which for 180 miles traverses the province, and receives most of the other rivers that water it. Among its affluents the Moselle is the largest, flowing from France through a deep narrow valley into the left bank of the Rhine. From the same side flow the Nahe and Erft; while the Sieg, Ruhr, and Lippe, which flow in the opposite direction, traverse the province for a part of their course. Agriculture is actively carried on here. The extent of arable land in 1852 was 2,732,558 acres; of gardens and vineyards, 154,903 acres; of meadows and pasture land, 1,256,836 acres; of wood, 2,031,773 acres; and of waste land, 605,252 acres. Live stock are reared in considerable numbers; and the province contained in 1855, 122,511 horses, 889,789 horned cattle, 492,364 sheep, 127,031 goats, and 242,283 pigs. For mineral wealth, this is the most important province of Prussia; more than 35 per cent. of the total value of mineral produce, or upwards of L.4,000,000, being derived from it alone. Silver, iron, copper, lead, marble, porphyry, freestone, basalt, coal, sulphur, alum, &c., are the productions of the country. In manufacturing industry, the province of the Rhine occupies the first rank, not only in the Prussian possessions, but in the whole of Germany. Cotton, woollen, and silken stuffs; lace, paper, hardware, machinery of all kinds, musical instruments, beer, brandy, chemical substances, sugar, and tobacco, are among the articles produced. Trade is also in a flourishing condition here, and is favoured by the Rhine steamers, and by the railways which connect the principal towns with one another, and with the centres of commerce in the adjacent countries. The country now occupied by the province belonged, after the fall of the Roman empire, to the Frankish monarchy, afterwards to that of Lorraine, and finally to Germany. The various officers appointed by Charlemagne, under the title of *Gaugrafen*, gradually became independent of the imperial power, and rose to be permanent and hereditary possessors of the land; so that in the eleventh century the country was divided among many independent states, including some of the possessions of the courts palatine, and of the archbishops of Mainz, Trèves, and Cologne,—the three spiritual electors of the empire. Prussia had previously to the present century only the principality of Mörs and the duchies of Cleve and Yeldern. At the time of the peace of Luneville in 1801, there were here 100 separate states of the empire; the Rhine was then made the frontier of France; and the Prussian possessions fell to that country. In 1814, not only these lands were restored to Prussia, but the whole of the other states were united in a mass, and added to that kingdom, of which they formed at first the two provinces of Jülich-Cleve-Berg and Lower Rhine, but were subsequently united into one.

RHINOCEROS. See MAMMALIA.

RHIO, or **RIOW**, a Dutch seaport in the East Indies, on the small island of Bintang, off the south extremity of the Malay peninsula, 50 miles S.E. of Singapore. It is a

Rhinoceros
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Rhio.

Rhode
Island.

neat place, regularly laid out, consisting of a European and a Chinese town; the former clean and handsome, the latter somewhat dirty. It has a fort, governor's house, church, and school. The harbour is large and safe, though the entrance is difficult and dangerous. Rhio is a thriving town, and has a very considerable trade. Pop. 6000.

RHODE ISLAND, the smallest of the United States of North America, lying between N. Lat. 41. 18. and 42. 3., W. Long. 71. 6. and 71. 55.; bounded on the N. and E. by Massachusetts, S. by the Atlantic, and W. by Connecticut. Its length from N. to S. is 47 miles; greatest breadth, 37; area, 1306 square miles. The surface, though undulating and broken, rises in no place to the elevation of mountains, hardly even to what may be called hills; the highest point, Mount Hope, in the E. of the state, being only 300 feet above the sea. Narraganset Bay, a fine sheet of water, stretches northwards from the Atlantic, and divides the state into two unequal portions. Its length is about 30 miles, and its breadth about 12. It has various arms stretching into the land, especially on the eastern side. Among these are Mount Hope Bay, stretching to the N. E.; Providence Bay, to the N.; and Greenwich Bay, to the N.W. The greater part of the state lies to the W. of this inlet, a small portion to the E., and some part is composed of the islands in the bay. Rhode Island, which has given its name to the state, has a length of 15 miles, an average breadth of 3, and an area of about 50 square miles. The fertility of its soil, and mildness and salubrity of its climate, have made this a favourite place of resort, and obtained for it the appellation of the Eden of America. To the W. of it lies the island of Canonicut, to the N.W. Prudence Island; while Block Island, in the Atlantic, about 10 miles off the coast, also belongs to this state. The rivers that water the state are of no great length or volume, but flow with a considerable fall and a steady supply of water, so as to afford good water-power. Providence River, flowing southwards from Massachusetts into the north arm of Narraganset Bay, with its affluents the Pawtucket and Pawtuxet, and the Pawcatuck, which waters the S.W. of the state, and falls into Stonington harbour in Connecticut, are the principal streams that flow through Rhode Island state. The mineral resources of the country are not of much importance. Iron, anthracite coal, limestone, marble, and serpentine have been obtained here; but no mines, and only a few quarries, are worked. The continental part of the state has a soil composed of gravelly loam, which is pretty fertile, though somewhat difficult of cultivation. On the islands, where the formation is in general slaty, the soil is more productive. Throughout the state the soil is more suitable for grazing and dairy farming than for the plough. Rhode Island itself is celebrated for its cattle and sheep, butter and cheese. The whole extent of cultivated land in the state amounted in 1850 to 356,487 acres, and the produce was 539,201 bushels of maize, 215,232 of oats, 651,029 of potatoes, 5036 of grass seeds, 129,692 lb. of wool, 995,670 lb. of butter, 316,508 lb. of cheese, and 74,818 tons of hay; besides more or less of rye, barley, wheat, pulse, hops, &c. The value of orchard fruits amounted to L.13,323, that of market products to L.20,475, that of live stock to L.319,293; and that of slaughtered animals to L.139,056. Oak, chestnut, walnut, and pine trees are the chief kinds of timber grown in the state; but there are no extensive forests. The climate is mild and temperate, not unlike that of Great Britain, the vicinity of the ocean tending to moderate the heat of the summer and the severity of the winter. Manufacturing industry is extensively developed in Rhode Island, and is assisted by the great amount of water-power in the country. It contained in 1850, 1144 establishments, each producing goods upwards of L.100 in value. Among these were 158 cotton factories, with an aggregate capital of L.1,335,000, employing 4959

Rhode
Island.

men and 5916 women, consuming L.755,950 worth of raw materials, and producing goods to the value of L.1,343,147; 45 woollen factories, with a capital of L.202,600, employing 987 men and 771 women, consuming L.292,780 worth of raw materials, and producing goods valued at L.496,209; 21 forges, furnaces, &c., with a capital of L.127,200, employing 1020 men, consuming L.77,085 worth of raw materials, and producing 11,208 tons of cast and wrought iron, valued at L.198,144; several breweries and distilleries; and 10 tanneries, with a capital of L.8580, consuming L.8460 worth of raw material, and producing manufactured leather to the value of L.15,632. In the manufacture of cotton this state is, in proportion to its population, the first, and in that of woollen stuffs the second among the states of the Union. Ship-building is not so much attended to now as it once was, owing to the failure of the necessary supply of timber. An active commerce is carried on, both with foreign countries and with the seaports of the United States. Cotton and woollen stuffs, along with apples, cheese, and butter, form the principal articles exported. The value of the imports in 1852 was L.42,017, and that of the exports L.37,325. The number of vessels built in the year was 14, tonnage 3205; the total tonnage of those owned in the state 41,049, of those that entered 20,350, and of those that cleared 16,929. Many of the ships are employed in the whale, cod, and mackerel fishery. Internal communication is provided for by railways, of which there were in January 1857, 65 miles in operation, connecting Providence the capital, with the chief towns in the adjacent states. There are in Rhode Island 93 banks, 38 of which are in Providence, besides 18 savings-banks, containing in May 1855 deposits to the amount of more than a million sterling. The executive power is vested in a governor, elected annually by the people, along with a lieutenant-governor, secretary of state, treasurer, and auditor, appointed in the same way. The salary of the governor is L.200. Legislative power is in the hands of a general assembly, consisting of a senate, composed of the governor, lieutenant-governor, and a member from each of the 32 towns in the state, and a house of representatives of 72 members. The right of voting, and of being elected to public office or membership of the legislature, is granted to every citizen of the United States owning real estate to the value of L.27, or L.1, 8s. a year. The judicial establishments consist of a supreme court and a court of common pleas; the former consists of one chief and three associate justices; the latter is held by one member of the supreme court in each county of the state. There is a state prison and a jail at Providence. Considerable attention is paid by the government to education. There is a university at Providence, which is in a flourishing condition. Besides this, there were, in 1850, 46 academies, with 75 teachers and 1601 scholars; and 416 primary public schools, with 518 teachers and 23,130 scholars. A normal school and a reformatory school are supported by the state; and there is a permanent school fund of L.15,391. There were in the state, according to the census of 1850, in all 221 places of worship, with 98,736 sittings; of the former, 100 belonged to Baptists, 26 to Episcopalians, 23 to Methodists, 21 to Congregationalists, 18 to Quakers, 7 each to Roman Catholics and Christians, 4 each to the Union Church, Unitarians, and Universalists, 2 each Swedenborgians and the Free Church, and 1 each to Jews, Mariners, and Second Adventists. The total amount of taxable property in Rhode Island in 1855 was L.23,161,490. The country was originally occupied by the Narraganset Indians, and was first colonized by Europeans in 1636. Roger Williams, expelled from Massachusetts on account of his religious and political opinions, descended the Pawtucket, and settled on a piece of land which he bought from the Indians, and called Providence, in acknowledgment of "God's merciful providence to him in his dis-

Rhodes. tress." He was soon joined by a number of settlers; and he not only was among the first who allowed perfect liberty of conscience to men of all religions, but did much to enlighten and elevate the natives, whom he restrained by his mild influence from many acts of violence against his former persecutors. Two years afterwards another settlement was formed at Newport, by William Coddington and seventeen others, who had also been expelled from Massachusetts. Other settlements were subsequently formed; and these were united under the title of Rhode Island and Providence Plantations, and received a charter from Charles II. in 1663. This being one of the most liberal granted in America remained in force for 180 years. For a long time after the settlement of the colony, the prosperity and happiness of its people is attested by the barrenness of its annals in events. But in the revolutionary war the state played a conspicuous part. From the beginning of the contest Rhode Island was resolutely opposed to the British claims, and sent delegates to the first Congress in 1765. In 1776 a strong British force, under Clinton and Parker, sailed from New York, and occupied Rhode Island, blockading in the harbour of Providence the squadron of Commodore Hopkins. The Americans laid siege to Newport in 1778, but without success; and during their retreat an indecisive action took place at Quaker Hill. In 1779 Newport was abandoned by the British; and in the following year a French force arrived here, and the country was not further molested by the British. Rhode Island was the last of the original states to agree to the constitution, and only did so in 1790. To the war with Britain in 1812 the majority in this state was opposed; and like the neighbouring states it gave no support to the arms of the Union. In 1840 an association was formed for the purpose of amending the state constitution, and they called a convention for this purpose. A new constitution was framed, and supported by a party in the state; but owing to the illegality with which it had been prepared, was not recognised by the government, who proceeded, by another convention, to draw up a second constitution. The general excitement that prevailed, and the attempts of the suffrage party, as they were called who supported the illegal constitution, to obtain the government, prevented the other scheme from coming into operation; but their designs were finally frustrated, and a third constitution framed, which was agreed to nearly unanimously in 1844. Rhode Island is divided into five counties as follows:—

	Pop. (1850).	Capitals.
Bristol	8,514	Bristol.
Kent	15,068	E. Greenwich.
Newport	20,007	Newport.
Providence	87,525	Providence.
Washington	16,430	Kingston.
Total.....	147,544	

RHODES, an island in the Ægean Sea, belonging to the Turkish empire, lying off the S.W. coast of Asia Minor, between N. Lat. 35. 52. and 36. 28, E. Long. 27. 40. and 28. 15.; about 10 miles S. of Cape Alepo. Its length is about 45 miles from N.E. to S.W., its greatest breadth 18 miles, and its area nearly 424 square miles.

Aspect of the country. The island is diversified in its surface, and contains in its centre an elevated mountain named Artemira (anciently *Atabyris*) which commands a view of the whole island. From this height there is a most extensive prospect of the island around its base; of the elevated coast of Asia Minor on the N.; on the N.W. the Archipelago, studded with its numerous islands; on the S.W. is seen Mount Ida in Crete, veiled in clouds; and on the S. and S.E. the vast expanse of waters which wash the African shore. Here and there on the island are seen ranges of moderately elevated hills, on which are found numbers of ancient pines, planted by the hand of nature. These forests were formerly very

thick, but they are now greatly thinned by the Turks, who cut them down, and take no care to plant others in their place. On the farther side of the nearest range of hills the surface of the island falls lower, and several hills in the form of amphitheatres extend their bases as far as the sea.

Rhodes.

Rhodes was famed in ancient times for its delightful Climate. climate, and it still maintains its former reputation. The air is pure and salubrious, and there is hardly a day throughout the year in which the sun is not visible. The winds are liable to little variation; they blow from the west often with great violence for nine months in the year, and at other times from the north; and they moderate the summer heats, which are chiefly felt during the months of July and August, when the hot winds blow from the coast of Anatolia.

Rhodes, in addition to its fine climate, is blessed with a Produce. fertile soil, and produces a variety of the finest fruits and vegetables. Numerous streams and rivulets, which take their rise from the summit of Mount Artemira, water the surrounding plains and valleys of the island. The inhabitants have a great taste for gardens; and around the villages are several cultivated fields and orchards, containing fig, pomegranate, and orange trees. On the sloping hills carob-trees, and others both useful and agreeable, still grow abundantly; the vine also holds its place, and produces a species of wine which was highly valued by the ancients, though it seems to have degenerated greatly in modern times. The valleys afford rich pastures, and the plains produce every species of grain: the wheat is of an excellent quality; and, but for the extortions of its barbarian rulers, the island might be the seat of agriculture as well as commerce, and might export large quantities of corn.

The commerce of the island has been, since 1846, in-Commerce. creasing at a rapid rate. Many British manufactures are imported by indirect routes, through Smyrna, Constantinople, Beyrout, and other places. Cotton stuffs, calicoes, and gray linen are among the goods most in demand. It is not so much, however, the peasantry of the island who use these British goods, for they prefer their own home-made stuffs; but they are exported to the neighbouring coast of Anatolia, between Boudroum and Adalia, and thence conveyed into the interior. The following table exhibits the shipping and trade of Rhodes from 1851 to 1855:—

Year.	Number of Vessels.	Tonnage.	Crews.	Value of Imports.	Value of Exports.
1851	2031	100,027	9,139	L.39,561	L.15,477
1852	2116	112,847	15,101	140,721	30,770
1853	2287	114,222	15,985	143,577	52,357
1854	2156	115,882	15,615	187,545	109,923
1855	2803	134,502	18,065	181,704	108,884

The expansion of the trade has been very much owing to the establishment of steam navigation direct to the island. As yet there are no British steamers that call here; but there are many which ply regularly on this line under the French, Austrian, and Turkish flags.

The only town of any importance in the island is the Capital. capital, Rhodes, which stands at the north-east extremity. It rises in an imposing manner from the sea, on a gentle slope in the form of an amphitheatre. It is surrounded with walls and towers, and defended by a large moated castle of great strength. These fortifications are all the work of the Knights of St John. Above them rise the domes and minarets of the mosques, and the tufted stems of the palm-trees, which adorn this like most other oriental towns. The interior of the city does not correspond to its outward appearance. Those ancient streets which were laid out with such art and on so great a scale, and that

Rhodes.

uniform series of buildings which were monuments of taste, have been succeeded by narrow winding streets, and buildings without grace, ornament, or regularity. There are still some monuments which testify that the island was once possessed by the Knights of Rhodes, namely, their arms, which still adorn the fronts of several buildings, and their tombstones in the church of St John; the walls and towers also bear marks of their heroic resistance to the Ottoman arms. But there is no longer any monument of its grandeur in times of antiquity; there is no theatre, no magnificent temple or spacious portico. The statues and paintings for which Rhodes was famed in the early ages of Greece and Rome have all been removed. Not a vestige is to be seen of the Colossus, described as 70 cubits high, and reckoned one of the wonders of the world. The streets bear everywhere marks of desolation. One half of the houses in the city are in ruins, and one half in the suburbs are uninhabited, though those occupied by the Greek inhabitants are generally good stone buildings, surrounded with gardens well stocked with all the fruits of the climate. The principal buildings which remain are the church of St John, which is become the principal mosque; the hospital, whence the charity of the knights was liberally dispensed to the faithful from all quarters of the world, and which has been transformed into public granaries; the palace of the grand-master, now the residence of the pasha; and the senate-house, which still contains some marbles and ancient columns. Of the streets, the best and widest is a long street which is still called the Street of the Knights. It is perfectly straight, and formed of old houses, on which remain the armorial bearings of the members of the order. On some of these buildings are still seen the arms of the Popes and of some of the royal and noble houses of Europe.

Rhodes has at present two harbours. The least of these lies towards the east, and its entrance is obstructed by a barrier of rocks, so as to admit the entrance of but one ship at a time. It is sufficiently sheltered, but by the negligence of the Turks the sand has been suffered to accumulate until it has been gradually almost choked up. The other harbour is larger, and also in a bad condition: here frigates of thirty guns may anchor, and are sheltered from the west winds, though they are exposed to the north and north-east winds. The two harbours are separated by a mole which runs obliquely into the sea. At the eastern entrance is the fort of St Elmo, with a light-house; but the light is very feeble, and visible only a few miles. The town contains a Turkish library and three Mohammedan colleges. Manufactures of red leather and shoes are carried on here. Pop. about 15,000. The sites of Lindus, Jalyus, and Camirus, which in ancient times were the chief towns in the island, are now marked by insignificant villages, with a few remains of antiquity.

History.

In the very earliest times the beauty and fertility of the island seem to have brought it into notice: it is said to have had several names; and the one that it has since retained signifies probably the Island of Roses, from *ῥόδον*, *a rose*, which was its symbol. After various poetical legends about its original inhabitants, we learn that it was colonized by the Dorians, who emigrated from their native land; and that its cities, Lindus, Jalyus, and Camirus, formed, along with Cos, Cnidus, and Halicarnassus, the Dorian Confederacy, or Hexapolis, worshipping at the common sanctuary of Apollo on the Triopian headland. The island was then divided among the three confederate towns, and soon attained a flourishing condition, sending out colonies to the coasts of Lycia, Cilicia, Sicily, Italy, Spain, and the Balearic Islands. It was not till a later period, however, that Rhodes became one of the great maritime and political powers in Greece. After the Persian wars it belonged to the Athenian confederacy, and remained in subjection to it for the

Rhodes.

most part of the Peloponnesian war. But in 412 the aristocratic party gained the ascendant, and the Rhodians deserted the Athenian cause. In 408 the new capital, Rhodes, was built and peopled by the other three cities. The architect was Hippodamus of Miletus, who had planned and embellished the Piræus at Athens; and the new city soon became one of the most splendid in the world, adorned with magnificent buildings and exquisite works of art. When Conon and his fleet restored the Athenian power by his victory off Cnidus, Rhodes again embraced the victorious cause; but her fidelity during the subsequent contests was not very great. Sparta afterwards received the allegiance of the island; and in the Social War (B.C. 157-5) it joined the alliance against Athens; and, with the assistance of the Carian monarch Mausolus, succeeded in achieving independence. But finding the power of that king dangerous to their liberties, the Rhodians once more sued for the Athenian protection, which they obtained through the eloquence of Demosthenes. But neither they nor the rest of Greece could resist the overwhelming power of Macedonia, though Memnon, a Rhodian, was one of the ablest generals under the last Persian king, and attempted to check the career of Alexander. Rhodes received a Macedonian garrison; but it was expelled after the death of Alexander, and a resolute resistance was begun to the Macedonian power. This formed one of the most illustrious periods in the history of the island. The capital was besieged in 303 B.C. by Demetrius Poliorcetes, with a large army and a complete train of the artillery of that age. Although a breach was effected in the walls, the desperate valour of the defenders foiled all the attempts to carry it by assault, and cost the besiegers the lives of some of their generals and a great number of their soldiers. This heroic resistance obtained for the Rhodians great renown; they enjoyed the friendship of Rome, and obtained possession of some of the adjacent islands and coasts. For arts as well as arms the island was then renowned: Æschines, who had contended in eloquence with the greatest of orators, opened a school of rhetoric here; Protogenes embellished the city with his paintings; and Chares of Lindus with the celebrated statue, in which

“the gigantic king of day
On his own Rhodes looks down;”

and the Rhodian laws, especially on maritime affairs, were reckoned the best in antiquity, and many of them adopted into the Roman code. The Colossus, not probably striding over the harbour, stood for fifty-six years, till an earthquake prostrated it in 224 B.C. Being the sovereigns of the seas, the Rhodians by their fleets rendered good service to Rome, with whom they were in alliance, and retained their independence for a long time. The severest blow they suffered was from Cassius in 42 B.C., who plundered it even to the bare temple walls in the desperate cause of liberty, for the island had embraced the side of Cæsar. Under the empire the liberty of Rhodes was permitted and withdrawn according to the caprice of the sovereign. It continued a part of the Roman empire; after its partition, of the Eastern, till 616 A.D., when Chosroes the Persian obtained possession of it for a short time. It was subsequently conquered by Moawiyah, one of Othman's generals; but, recovered by the Byzantine empire, it proved the last of their Asiatic possessions that succumbed to the infidel. In 1308 it was granted by the Emperor Emmanuel to the Knights of St John, who soon after resisted a siege by the Sultan Othman. They strengthened the natural advantages of the place by skilful fortifications; and by discipline and equipments made themselves nearly a match for the superior numbers of the Turks. Nor did the knights restrict their efforts to self-defence; they conquered Smyrna, and established an outpost there in 1344; and at a later period formed a league against the common enemy of Christendom.

Rhodo-
mann
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Rhône.

But in 1401 Smyrna was taken by Timour: in 1480 Mahomet II. besieged Rhodes with a vast train of artillery; and, though then averted by the courage of its few defenders, the downfall of the place could not long be averted. The last and most famous siege of Rhodes took place in 1522, when, after a desperate resistance for four months to the overwhelming numbers of the Ottomans, the knights, being left unassisted by all the European powers, capitulated on honourable terms, and evacuated the island. On the first day of 1523, Villiers de Lisle Adam, the grand-master, embarked, the last of the small band, carrying away all the property of the order, and leaving the ruins of their city to the enemy. The knights subsequently settled in Malta, where they also gained great renown. Rhodes has since been in the possession of the Turks, and is now the residence of the pasha of the Archipelago. Pop. 20,000, chiefly Greeks, but including 5000 Turks and about 1000 Jews.

RHODOMANN, LAURENTIUS, a German scholar, was born at Sarswerfen in 1546, and was educated at the expense of the Count of Stolberg. The great effort of his life was to revive Greek learning. He studied it closely at the university of Rostock. He then taught it with enthusiasm at Jena. His zeal in the same cause did not cease after his translation in 1601 to the chair of history at Wittenberg. He continued to write Greek verses, and to edit and translate Greek works till shortly before his death in 1606. Among the most important publications by Rhodomann are the following editions of Greek authors:—*Anonymi Poetæ Græci*, 8vo, Leipsic, 1588; *Quintus Calaber*, Hanover, 1604; and *Diodorus Siculus*, in 2 vols., Hanover, 1604.

RHOMBOLD, and RHOMBUS. See GEOMETRY; *Definitions*.

RHONE (anc. *Rhodanus*), a river of Europe, belonging principally to France, rises in Switzerland at the Furka Pass, near Mount St Gotthardt, whence also flows the Rhine in an opposite direction. It dashes down in a series of cascades, and flows south-west through the canton of Valais, receiving numerous affluents from the Bernese Alps on the right, and the Pennine on the left. At Martigny the river takes an abrupt turn to the north-west, and flows through a flat, swampy, and very unhealthy valley into the Lake of Geneva, which stretches in the form of a half-moon between the steep rocks and cliffs of Savoy on the south, and the sloping vineyards of the Pays de Vaud on the north. The pure, blue waters of the swiftly-flowing river issue from the lake at Geneva; but they do not long retain their clear colour, as they mingle with the muddy Arve descending from Mont Blanc. After traversing the canton of Geneva in a S.W. direction, the Rhone leaves Switzerland, and flows southwards along the frontier between France and Savoy, through a narrow pass between the Alps and Mount Jura. A road traverses the defile midway up the declivity, and this entrance to France is commanded by the Fort de l'Ecluse, a strong fortress, with batteries hewn out of the solid rock. A short distance below this fort is the Perte du Rhone, where the river plunges into a deep chasm, covered over with massive fragments of rock that have descended upon it. Many of these have been removed by the Sardinian government, so that the cascade is not so remarkable as it once was. At this place the Rhone receives from the right the Valserine, a picturesque stream flowing down from Mount Jura. The southerly course of the river continues as far as St Genis, near which it receives from the south the Guiers, a small stream which separates Italy from France. At this point the Rhone turns abruptly to the N.W., separating the French departments of Ain and Isère, which it continues to divide, flowing afterwards more towards the west, until it reaches Lyons; receiving during its course the Ain

Rhône.

from the north, and emerging a short distance above Lyons from the hilly region it had been previously traversing. At Lyons the sluggish, gently-flowing Saône from the north joins the Rhone, its muddy water being distinguishable for some distance from the clearer river that it joins. The united stream has a considerable breadth, and flows nearly due south, through a beautiful country studded with villages, among rows of poplar and willow trees. It separates the departments of Rhone, Loire, Ardèche, and Gard on the right, from those of Isère, Drôme, Vaucluse, and Bouches-du-Rhone on the left, and falls into the Mediterranean by two mouths in the last of these departments. The chief affluents of the Rhone from the right, flowing from the Cevennes, are the Doux, Ardèche, Cèze, and Gardon, and they are generally of small size; while on the left the river receives from the Alps the larger tributaries Isère, Drôme, Vigne, and Durance. The chief towns along this part of the Rhone are the ancient Vienne, Valence, Montelimart, Orange (which gave a title to the illustrious house of Nassau), and Avignon, once the place of exile of the Popes. At Arles the river divides into the little Rhone, flowing S.W., and the main stream pursuing a S.E. course. Neither of these channels is of much use for navigation, as their mouths are obstructed by bars; but vessels may enter by two canals, that of Martigues from the E., and that of Beaucaire from the W. From Lyons to the sea the Rhone is regularly navigated by steamers, though the rapidity of the current and the shifting sands in the bed of the river render the progress upwards difficult. Above Lyons steamers ply, but not so regularly, on the Rhone as far as Seyssel, on the Swiss frontier, and on the Saone as far as Chalons. The whole length of the Rhone is about 530 miles, of which 350 are in France: the height of its source is 5904 feet above the sea, that of the Lake of Geneva 1142 feet. The area watered by the Rhone and its affluents is estimated at 11,300 square miles.

RHONE, a department of France, next to that of Seine the smallest in the kingdom, bounded on the N. by the department of Saône-et-Loire, E. by those of Ain and Isère, S. and W. by that of Loire: length, from N. to S., 60 miles; greatest breadth, 28; area, 1042 square miles. The western part of the department is occupied by a prolongation northwards of the Cevennes, known by the names of the Lyonnais, Beaujolais, and Charolais heights. This range here forms the watershed between the Mediterranean and the Atlantic; for the rivers that descend its eastern slope flow southwards by the Saône and Rhone into the Mediterranean, and those that run down the opposite side swell the volume of water which the Loire pours into the Atlantic. One of the highest summits of this chain, near the middle of the west side of the department, is Tarare, which rises to the height of 4500 feet. The greater part of the chain has a bare, steep, and rugged character, though the mountains of Charolais to the north have more gentle slopes, and are generally well wooded. From the neighbourhood of Beaujeu, in the north of the department, two branches diverge from the principal range,—one towards the N.E., and the other to the S.E., between the valleys of the Azergue and Saône. From the southern part of the chain, another offset, the Mont d'Or, stretches N.E., and divides the Brevanne from the Saône and Rhone. The mountains are for the most part composed of granitic and other primitive rocks; the country further down belongs to the secondary, and that along the rivers to the tertiary formation. Coal and copper are the most valuable minerals of the country; both are worked to some extent. Porphyry, marble, sandstone, gypsum, and potters' clay are also found here. The department is almost entirely watered by the affluents of the Saône and Rhone, which was its eastern border, a very

Rhubarb. small part only lying to the west of the hills. The soil is for the most part not fertile; and so, notwithstanding the excellent cultivation, the produce of grain is not sufficient for home consumption. Potatoes, however, are more extensively produced. The most important of the natural productions of Rhone are its wines, many of which are highly esteemed. The climate is healthy, but from the mountainous nature of the country somewhat colder than other regions in the same latitude. The extent of arable land is estimated at 353,000 acres, of meadows 90,000, and of vineyards 75,000. The forests are of small extent, and afford comparatively little wood. Besides the crops already mentioned, pulse, madder, millet, hemp, and flax are raised. The quantity of wine produced annually is about 17,000,000 gallons. Large numbers of cattle are reared; also goats in the hilly regions, and many silk-worms. Rhone contains about 10,000 horses, 71,000 horned cattle, 66,000 sheep, 18,000 goats, and 14,000 pigs. The annual value of the coal worked is about L.8000, of the copper L.10,000, and that of the produce of all the quarries L.20,000. It is for manufactures, however, that the department is chiefly distinguished. Lyons is for silk fabrics the most celebrated city in Europe; satins, velvets, lace, shawls, ribands, hosiery, &c., are also made in great quantities. Muslin, hats, paper, glass, hardware, machinery, and other articles are among the manufactures of the country. There is an active trade in raw and manufactured articles, as well as in wines, coal, timber, &c. Communication is facilitated by the two navigable rivers, by the canal of Givors in the south of the department, and by the railways from Chalons to Lyons, and from Lyons to St Etienne. The department forms the diocese of Lyons, and contains a court of appeal at Lyons and two inferior tribunals, an academy of theology, science, and literature, a secondary school of medicine, a lyceum, normal seminary, college, 10 superior and 663 elementary schools. Its divisions are as follows:—

	Cantons.	Communes.	Pop. (1856).
Lyons.....	17	129	460,034
Villefranche	9	130	165,957
Total.....	26	259	625,971

The capital is Lyons.

RHUBARB is the root of various species of *Rheum*, Nat. Ord. *Polygonaceæ*. The rhubarb of commerce is obtained through various sources, and appears to have been known to the ancients, although much obscurity invests the history of the *Rha* or *Rheon* of the ancient Greek writers, and the *rhacoma* of the Romans. These names are supposed to have been applied to the dried roots of *Rheum rhaponticum* of Linnæus, which is a native of Thracia, and of the coasts of the Euxine and Caspian seas, and part of Siberia. The rhubarb root was first introduced into European pharmacy by the Arabians, and was highly valued by Avicenna. The finer kinds of rhubarb are received from Chinese Tartary and possibly from Thibet. It finds its way to Europe through Russia; and from the fact, that the best kind was formerly sold by the merchants of Anadoli or Anatolia, it was called *Turkey* rhubarb. This sort is now generally imported from Russia and Turkey. There is another sort, rather inferior, which is called *Canton* or *East Indian* rhubarb, imported from Canton or Singapore. Of late, much rhubarb root has been prepared in Europe, and is either used as a milder medicine or for the purpose of sophisticating the finer foreign sorts. The town of Banbury in Oxfordshire has long been famous for the cultivation and preparation of English rhubarb, which is the product of *Rheum rhaponticum*; no other species is found to be of any value medicinally. Within the last few years the petioles or leaf-stalks of the various species of rhubarb have become a most

important staple of our vegetable markets, in consequence of their agreeable subacidity and their succulence, which renders them very useful and wholesome in tarts and other forms of food. The chief species of rhubarb now known are:—*Rheum palmatum* (Linn.), supposed to yield the Turkey rhubarb root; it is also cultivated in this country as a culinary vegetable. *R. undulatum* (Linn.) is the source of the French rhubarb. *R. compactum* (Linn.) is also cultivated in France for its root, which is prepared to imitate the foreign drug. *R. Emodi* (Wallich) yields that kind of East Indian rhubarb known in trade as Himalayan; it is also a favourite garden species. *R. rhaponticum* (Linn.) is the commonest kind in cultivation in our gardens. Hundreds of tons of the leaf-stalks of this species are sent to our markets every week during the season, and form a cheap and refreshing food for all classes. The roots also are prepared as before stated. Ten or twelve other species are known, and some of them are probably as well adapted for the purposes of medicine or cookery as those above mentioned, but they have not been so well examined.

The quantity of rhubarb root imported in 1858 was 211,117 lb., the estimated value of which was L.39,300. This large quantity is entirely consumed in pharmacy, it being applied to no other use than as a mild aperient medicine. (T. C. A.)

RHUDDLAN, or **RHYDDLAN**, a parliamentary borough of N. Wales, county of Flint, on the Clwyd, which is here crossed by two bridges, 3 miles N.N.W. of St Asaph. It was once a large and important place, but is now distinguished for little except its ancient remains; it contains only a few streets, but is generally well built, and has several places of worship belonging to Wesleyan and Calvinistic Methodists, Baptists, and Independents. The castle of Rhuddlan is a square red stone edifice, with six massive round towers, and has little pretensions to architectural elegance. Its age is not certainly known, but it was in existence in the eleventh century, and was attacked and burned by King Harold in 1063. In after-times it was a place of much importance and the scene of many historical events. Of the house where Edward I. held in 1283 the Parliament which secured the Welsh rights a portion still remains, and is marked by an appropriate inscription. It was in Rhuddlan that the infant son of Edward I. was acknowledged Prince of Wales. In the civil war the castle was held by the royalists, but was taken by General Mytton in 1646, and soon after dismantled. The River Clwyd is navigable as far as Rhuddlan for vessels of 60 tons. Pop. (1851) of the borough, 1472; of the parish, 3049.

RHUMB, and **RHUMBLINE**. See **NAVIGATION**.

RHYME (Sax. *rim*; Germ. *reim*), in poetry, is the consonance of sounds in the last syllable or syllables of verses. In the former case it is called *male* rhyme, in the latter *female*. Some derive it from the Greek *ῥυθμος*, which is a palpable error. Rhyme, as an accompaniment of verse, cannot be traced farther back than to the *rymours* of Normandy, the *troubadours* of Provence, and the *minnesingers* of Germany. (See **POETRY**.)

RHYTHM, (Gr. *ῥυθμος*, *measure*) is the metrical arrangement of speech. (See **RHETORIC**.)

RHYTHMOMETER, from *ῥυθμός*, and *μέτρον*, an instrument contrived to measure equal portions of sounds in musical performance, and to mark the time, at longer or shorter intervals, according to adjustment of the mechanism. Maelzel's *metronome* is the instrument of this kind most generally in use, although one more simple and less costly might easily be made. Diderot, in the fourth memoir of his mathematical works, suggested a musical chronometer, but added, "Le seul bon chronomètre que l'on puisse avoir, c'est un habile musicien qui ait du goût, qui ait bien lui la musique qu'il doit faire exécuter, et qui sache en battre la mesure." The chief utility of a rhyth-

Ruddlan
||
Rhythmo-
meter.

Riazan. mometer consists in the power of fixing the duration of time which a composer wishes to give to the equalized portions of his composition, as indicated by the vibrations of a pendulum, and as marked by relative numerals affixed to characters of musical notation. Almost all pieces of music of classical importance are now printed with indications of the metronome measures of time; and this is a great improvement, inasmuch as before the present century we had nothing but tradition, and often no tradition at all, to guide us in the comparative slowness or quickness with which the notes of a musical composition were to be performed. (G. F. G.)

RIAZAN, or **RJAZAN**, a government of European Russia, bounded on the N. by that of Vladimir, E. and S. by that of Tambov, and W. by those of Tula and Moscow, lying between N. Lat. 53. and 55. 40., E. Long. 38. 18. and 41. 30: length, from N. to S., 180 miles; greatest breadth, 125; area, 16,454 square miles. It is in no part mountainous, but the surface is diversified by low hills, undulating champaigns, rivers flowing between elevated banks, small forests, and clumps of trees. The Don and the Oka, an affluent of the Volga, along with their respective tributaries, are the chief rivers of the government; the former traversing for a short distance its S.E. corner, the latter flowing in a curve through the central and northern parts from W. to E. Rocky heights occur on the banks of a few of the rivers, but the soil in general is composed of a thick stratum of black mould of considerable fertility. Stone, clay, marl, and lime are found in some places. North of the Oka the land is low and marshy; the climate, too, is not so healthy as that of the southern part. The summer is generally very hot, and the weather variable for a great part of the year. Cultivation is extensively carried on here. Riazan contained in 1849, 5,161,238 acres of arable land, 1,019,025 acres of meadow land, 2,508,099 acres of wood, and 1,056,088 of waste land. In the same year there were produced 51,217,538 bushels of corn, and 2,653,563 bushels of potatoes. The corn is sufficient to supply the domestic wants, and leave a surplus for exportation. Rye, wheat, oats, and barley are the kinds chiefly raised. Hemp and flax are also cultivated. There are many gardens and orchards, and culinary vegetables are much attended to. Of live stock, the government contained in 1849, 482,095 horses, 366,120 horned cattle, 603,410 sheep, 206,832 swine, and 2817 goats. A large number of bees is also kept. The most important minerals obtained here are ironstone, freestone, clay, marl, lime, and sulphur. The manufactures are neither many nor important. In 1849 the total number of factories was 122, and the number of hands employed 10,963. Among the former there were 34 of leather, 18 of tallow and candles, 14 of cloth, 11 of silk, 11 of glass and crystal, and 5 of sugar. The trade is chiefly carried on through Moscow, except for salt, which is obtained from the banks of the Volga. The inhabitants are nearly all Russians, and belong to the Greek Church, except 5133 Mohammedans, and a few Protestants, Roman Catholics, and Jews. The government is divided into twelve circles as follows:—

Pop. (1849).	Pop. (1849).
Riazan.....135,729	Jegorjewsk 103,329
Saraisk 112,490	Michailov 106,208
Kasimov.....122,652	Pronsk 87,088
Skopin 112,637	Riashsk 98,225
Ranenburg 113,480	Ssaposchok 110,303
Dankov..... 88,515	Sspassk.....117,816
Total.....1,308,472	

Riazan, the capital, stands in a broad valley at the confluence of the Lebeda with the Trubesch, an affluent of the Oka, 105 miles S.E. of Moscow. It has a cheerful appearance; the streets are broad, though but ill paved, and the houses in general well built. In the centre is a public

garden, with a handsome kiosk or pavilion. Of its twenty churches, one of which is a cathedral, none are very remarkable. There are also two convents, several schools, and various charitable institutions. The manufactures of the place include iron, glass, woollen and linen cloth, canvas, &c. Riazan is defended by a fortress, and inclosed with earthen ramparts and palisades. It is the seat of the civil governor, and of the Archbishop of Riazan and Saraïsk. The name of Riazan was conferred on this town by Catherine II. in 1777, as the former place of that name had fallen into ruins. At that time it had only 1500 inhabitants, but now the population is 21,449.

RIBALTA, **FRANCISCO**, a distinguished Spanish painter, was born at Castellon de la Plana in 1551, and studied at Valencia. His rise to eminence is connected with the following romantic anecdote:—Having succeeded in winning the heart of his master's beautiful daughter, he sought her hand from her father. The cruel reply was, that he was too great a novice in his art for such an honour. Determined to remove this objection, he set out to study in Italy, the great school of painting. Love stimulated his genius; he caught some of the finest graces of Raphael and the Carracci; and at the end of three or four years he appeared at his old master's door in Valencia, eager to show his improved artistic skill. Finding the studio empty, and seeing an unfinished picture on the easel, he quickly completed the piece, and withdrew. The old artist, on his return, was astonished to find that a master-hand had been at his painting, and still more astonished when he was told that the hand was Ribalta's; and of course was but too glad to have such a promising painter for his son-in-law. Ribalta now commenced to practise his profession with great success. His composition was tasteful and spirited, his drawing free and grand, and his colour often admirable. He combined the beauties of Domenichino and Sebastian del Piombo; and sometimes imitated Raphael so exquisitely that a picture of his was once mistaken by an Italian connoisseur for a work of the great prince of painting. The excellence of his pieces was soon recognised. Orders for religious pictures came pouring in upon him. During the rest of his life he was busily engaged in adorning the churches and convents throughout the country; and in 1628 he died, with the reputation of being one of the greatest historical painters of Spain. Many of Ribalta's works still remain to preserve his reputation. Among others, there are his masterpieces in the Collegio de Corpus at Valencia, consisting of "San Vincente de Ferrer visited on his sick-bed by our Saviour and Saints," a "Last Supper," a "Holy Family," and a "Beata." There are also "The Descent of Christ into Hades" at Segorbe, and a "Purgatory" at Castellon de la Plana. The picture of "Christ bearing the Cross," in Magdalen College, Oxford, which has been ascribed to different great artists, was identified by Mr Ford to be a Ribalta.

RIBALTA, *Juan*, the son of the preceding, was born in 1597, and studied painting under his father. His artistic powers were remarkable. He was only eighteen when he executed a "Crucifixion," which is now one of the gems of the Valencian Museum. There was no kind of subject which he did not try with success. His pictures, both of low life and of sacred story, all possessed such excellence that it was difficult to distinguish them from those of his father. In fact, he was promising to be one of the greatest of Spanish painters, when he was cut off prematurely in 1628. (See Stirling's *Artists of Spain*.)

RIBEAUVILLE (Germ. *Rappoltsweller*), a town of France, in the department of Haut-Rhin, at the foot of a beautiful valley in the Vosges, 7 miles N. of Colmar. On a hill to the west of the town stand the ruins of Ribeau-pierre or Rappoltstein, surrounded by a beautiful garden; and on the heights above is the *Heidenmauer*, or Pagan

Ribalta
||
Ribeau-
ville.

Ribera
||
Ricardo.

Wall, a fortification of unknown origin, consisting of unhewn and uncemented stones. The chief buildings in the town are a handsome church and a town-hall. It has manufactures of cotton goods of various descriptions. Pop. 6525.

RIBERA, JOSÉ DE, called by the Italians *Il Spagnoletto* ("the Little Spaniard"), was born at Xativa, in the kingdom of Valencia, in 1588. His parents were poor; but no poverty could prevent him from studying art. While he was still very young he managed to place himself in the school of Francisco Ribalta. Not long afterwards he was found in the streets of Rome, a ragged boy, copying the frescoes on the outside of the public buildings. A benevolent cardinal took him into his house, but the wayward "little Spaniard" soon returned to his vagrant habits of study. He begged his way to Parma and Modena to examine the masterpieces of Coreggio. On his return to Rome he pawned his cloak, and with the money set out to try his fortune in Naples. Ribera had not long settled in Naples before he began to achieve great success. Assuming the severely truthful manner of Caravaggio, he employed his brush on sacred subjects with striking effect. His stern prophets and apostles, with their gaunt and shrivelled faces, and his tortured martyrs, with their agonized features and mutilated limbs, soon rivetted the public attention, and procured him many patrons. An admiring picture-dealer gave him the hand of his lovely and well-dowered daughter. The viceroy Don Pedro Giron made him the court painter, with a handsome salary. There was scarcely one of his sackcloth-girt St Jeromes and his arrow-pierced St Sebastians which did not find a ready purchaser among the churchmen. He rapidly rose towards the highest rank of Neapolitan artists. Nor did he hesitate to use villainous stratagems to accelerate his promotion. Forming a conspiracy with two other unprincipled painters, he employed every malicious art to force his rivals off the field. D'Arpino, Guido, Gessi, and Domenichino were all in turn driven from the city, and not until his accomplices had died did he cease to cheat and bully for pre-eminence. The iniquitous life of Ribera is said to have come to a dismal close. In the midst of the hey-day of his opulence and fame his daughter was seduced by Don Juan of Austria. The proud painter, broken down with shame, hid his head in privacy. At length one day he disappeared from his house, and was never heard of more. Ribera's pictures are in great repute, especially among the Spaniards and Italians. In Italy his best works are to be found at Naples, and include "St Jerome startled by the Last Trump," "Silenus and the Satyrs," "The Deposition from the Cross," "The Twelve Apostles," "Moses and Elias," and "The Last Supper." In Spain he is chiefly known by the following pictures in the museum at Madrid:—"The Martyrdom of St Bartholomew," "Jacob's Ladder," "Prometheus," "Martyrdom of St Sebastian," "Ixion on the Wheel," and a "Dead Christ lamented." (See Stirling's *Artists of Spain*, and Lanzi's *History of Painting*.)

RICARDO, DAVID, the most distinguished political economist since Adam Smith, was the third of a numerous family, and was born in the city of London on the 19th of April 1772. His father, a native of Holland, and of the Jewish persuasion, settled in this country early in life. He is said to have been a man of good talents and the strictest integrity; and having become a member of the Stock Exchange, he acquired a respectable fortune, and possessed considerable influence in his circle. David was destined for the same line of business as his father; and received, partly in England and partly at a school in Holland, where he resided two years, such an education as is usually given to young men intended for the mercantile profession.

Classical learning formed no part of his early instruction. He began to be confidentially employed by his father in the business of the Stock Exchange when he was only fourteen years of age. Neither then, however, nor at any subsequent period, was he wholly engrossed by the combinations and details of his profession. From his earliest years he evinced a taste for abstract and general reasoning, and manifested that determination to probe every subject of interest to the bottom, and to form his opinion upon it according to the conviction of his mind, which was a distinguishing feature of his character.

Mr Ricardo, senior, had been accustomed to subscribe without investigation to the opinions of his ancestors on all questions connected with religion and politics, and he was desirous that his children should do the same. But this system of passive obedience and blind submission to the dictates of authority was quite repugnant to the principles of young Ricardo, who, though he did not fail to testify the sincerest affection and respect for his father, found reason to differ from him on many important points, and even to secede from the Hebrew faith.

Not long after this event, and shortly after he attained the age of majority, Ricardo formed a matrimonial union productive of much domestic happiness. But his marriage being disapproved of by his father, it occasioned, with the change in his religion, a breach between them. Being thus thrown wholly on his own resources, he commenced business for himself. At this important epoch of his history the oldest and most respectable members of the Stock Exchange gave a striking proof of the high esteem entertained by them for his talents and the integrity of his character, by voluntarily coming forward to support him in his undertakings. His success exceeded the most sanguine expectations of his friends, and in a few years he realized an ample fortune.

"The talent for obtaining wealth," says a near relation of Ricardo's, from whose interesting account of his life we have borrowed these particulars, "is not held in much estimation; but perhaps in nothing did Ricardo more evince his extraordinary powers than he did in his business. His complete knowledge of all its intricacies; his surprising quickness at figures and calculation; his capability of getting through, without any apparent exertion, the immense transactions in which he was concerned; his coolness and judgment, combined certainly with (for him) a fortunate tissue of public events, enabled him to leave all his contemporaries at the Stock Exchange far behind, and to raise himself infinitely higher, not only in fortune, but in general character and estimation, than any man had ever done before in that house. Such was the impression which these qualities had made on his competitors that several of the most discerning among them, long before he had emerged into public notoriety, prognosticated, in their admiration, that he would live to fill some of the highest stations in the state."¹

According as his solicitude about his success in life declined, Ricardo began to devote a greater portion of his time to scientific and literary pursuits. When about twenty-five years of age he began to study some branches of mathematical science, and made considerable progress in chemistry and mineralogy. He fitted up a laboratory, formed a collection of minerals, and was one of the original members of the Geological Society. It is known, however, that he never entered warmly into the investigation of these sciences. They were not adapted to the peculiar cast of his mind; and he abandoned them entirely as soon as his attention was directed to the more congenial study of political economy.

He is stated to have made his first acquaintance with the

¹ See an account of the life of Ricardo in the *Annual Obituary* for 1823, supposed to be written by one of his brothers.

Ricardo. *Wealth of Nations* in 1799, while on a visit to Bath. He was highly gratified by its perusal; and it is most probable that the inquiries about which it is conversant continued henceforth to occupy a considerable share of his attention, though it was not till a later period that his spare time became almost exclusively occupied with their study.

Ricardo commenced his career as an author in 1809. The rise in the market-price of bullion, and the fall of the exchange which had taken place that year, excited a good deal of attention. Ricardo applied himself to the consideration of the subject; and the studies in which he had been latterly engaged, combined with the experience derived from his monied transactions, enabled him not only to perceive the true cause of the phenomena in question, but to trace and exhibit its practical bearing and effect. When he began this investigation, he had no intention of laying the result of his researches before the public. But having shown his manuscript to Mr Perry, the proprietor and editor of the *Morning Chronicle*, he was prevailed upon by him, though not without considerable difficulty, to consent to its publication, in the shape of letters, in that journal. The first of these appeared on the 6th of September 1809. They made a considerable impression, and elicited various answers. This success, and the increasing interest of the subject, induced him to submit his opinions upon it to the judgment of the public, in a more enlarged and systematic form, in the celebrated tract entitled *The High Price of Bullion a Proof of the Depreciation of Bank-Notes*, which led the way in the far-famed bullion controversy. It issued from the press several months previously to the appointment of the Bullion Committee, and is believed to have had no inconsiderable effect in forwarding that important measure. In this tract Ricardo showed that redundancy and deficiency of currency are only relative terms; and that so long as the currency of a particular country consists exclusively of gold and silver coins, or of paper convertible into them, it is impossible that its value should either rise above or fall below the value of the currencies of other countries by a greater sum than will suffice to defray the expense of importing foreign coin or bullion if the currency be deficient, or of exporting a portion of the existing supply if it be redundant. But when a country issues inconvertible paper-notes, as was then the case in England, they cannot be exported to other countries in the event of their becoming relatively redundant at home; and whenever, therefore, the exchange with foreign states is depressed below, or the price of bullion rises above its mint price, more than the expense of sending coin or bullion abroad, it is a conclusive proof that too much paper has been issued, and that its value is *depreciated from excess*. The principles which pervade the report of the Bullion Committee are substantially the same with those established by Ricardo in this pamphlet. But the more comprehensive and popular manner in which they are illustrated in the report, and their being recommended by a committee composed of some of the ablest members of the House of Commons, gave them a weight and authority which they could not otherwise have obtained. And though the prejudices and ignorance of some, and the interested, and therefore determined opposition of others, prevented for a while the adoption of the measures proposed by Ricardo and the committee for restoring the currency to a sound and healthy state, they have since been carried into full effect; and afford one of the most memorable and encouraging examples in the history of the country of the triumph of principle over selfishness, sophistry, and error.

The fourth edition of this tract is the most valuable.

An appendix added to it has some acute observations on certain disputed questions in the theory of exchange; and it also contains the first germ of the original idea of making bank-notes exchangeable for bars of gold bullion.

Among those who entered the lists in opposition to the principles laid down and the practical measures suggested in this tract, and in the report of the Bullion Committee, a prominent place is due to Mr Bosanquet. This gentleman had great experience as a merchant; and as he professed that the statements in his *Practical Observations on the Bullion Report*, which are completely at variance with those in the latter, were the result of a careful examination of the theoretical opinions of the committee by the test of fact and experiment, they were well calculated to make, and did make, a very considerable impression. The triumph of Bosanquet and his friends was, however, of very short duration. Ricardo did not hesitate to attack this formidable adversary in his stronghold. His second tract, entitled *Reply to Mr Bosanquet's Practical Observations on the Report of the Bullion Committee* was published in 1811, and is perhaps the best controversial essay that has ever appeared on any disputed question of political economy. In this pamphlet Ricardo met Bosanquet on his own ground, and overthrew him with his own weapons. He examined the proofs which the latter had brought forward of the pretended discrepancy between the facts stated in his own tract, which he said were consistent with experience, and the theory laid down in the Bullion Report; and showed that Bosanquet had either mistaken the cases by which he proposed to test the theory, or that the discrepancy was apparent only, and was entirely a consequence of his inability to apply the principle, and not of any deficiency in the principle itself. The victory of Ricardo was perfect and complete; and the elaborate errors and mis-statements of Bosanquet served only, in the language of Dr Copleston, "to illustrate the abilities of the writer who stepped forward to vindicate the truth."¹

This tract affords a striking example of the ascendancy which those who possess a knowledge both of principle and practice have over those familiar only with the latter. And though the interest of the question which gave rise to it be now subsided, it will always be read with delight by such as are not insensible of the high gratification which all ingenuous minds must feel in observing the ease with which a superior intellect clears away the irrelevant matter with which a question has been designedly embarrassed, reduces false facts to their just value, and traces and exhibits the constant operation of the same general principle through all the mazy intricacies of practical detail.

The merit of these pamphlets was duly appreciated, and Ricardo's society was in consequence courted by men of the first eminence and consideration, who were not less delighted with his modesty, and the mildness and amenity of his manners, than with the reach and vigour of his understanding. It was at this period that he formed that intimacy with Mr Malthus and Mr Mill, the author of the *History of British India*, which ended only with his life. To Mill he was particularly attached; and he always felt pleasure in acknowledging how much he owed to his friendship.

Ricardo's next appearance as an author was in 1815, during the discussions on the bill afterwards passed into a law, for raising the limit at which the importation of foreign corn should be permitted to 80s. Malthus and a "Fellow of University College, Oxford" (Mr, afterwards Sir Edward, West), had in two able pamphlets, published almost at the same moment, developed the real nature,

Ricardo.

¹ First Letter to the Right Hon. Sir Robert Peel, by one of his Constituents, p. 61.

Ricardo. origin, and causes of rent.¹ But neither of them perceived the real value and importance of the principles which he had established. This was reserved for Mr Ricardo, who, in his *Essay on the Influence of a Low Price of Corn on the Profits of Stock*, showed the effect of that increase in the price of raw produce, which always takes place in the progress of society, on wages and profits; and founded a cogent argument in favour of the freedom of the corn-trade on the very principles from which Malthus had vainly endeavoured to show the propriety of subjecting it to fresh restrictions.

In 1816 Ricardo published his *Proposals for an Economical and Secure Currency, with Observations on the Profits of the Bank of England*. In this pamphlet he examined the circumstances which determine the value of money, both when all individuals have the power to supply it, and when that power is restricted and placed under a monopoly; and he showed that in the former case its value depends, like that of all freely-supplied articles, on its cost, while in the latter its value is quite unaffected by that circumstance, and depends entirely on the extent to which it may be issued compared with the demand. This is a principle of great importance; for it shows that intrinsic worth is not necessary to a currency, and that, provided the supply of paper-notes declared to be legal tender be sufficiently limited, their value may be maintained on a par with that of gold, or raised to any higher level. If, therefore, it were practicable to devise a plan for preserving the value of paper on a level with gold, without making it convertible into coin at the pleasure of the holder, the whole expense attending the use of a metallic currency would be saved. To effect this object, Ricardo proposed that bank-notes, instead of being made exchangeable for gold coins, should be made exchangeable for *bars of gold bullion of the standard weight and purity*. This device was obviously calculated to check the over-issue of paper quite as effectually as it is checked by making it convertible into coin; while, as the bars could not be used as currency, it prevented any gold from getting into circulation, and saved the expense of coinage, and of the wear and tear of the coins. Ricardo's proposal was recommended by the committees of the House of Lords and Commons appointed in 1819 to consider the expediency of the Bank of England resuming cash payments, and was adopted in the bill for their resumption introduced by Sir Robert Peel. Inasmuch, however, as it required that the place of sovereigns should be filled with L.1 notes, the forgery of the latter began to be extensively carried on; and it was judged better to incur the expense of recurring to and keeping up a mixed currency, than to continue a plan which, though productive of a large saving, held out an all but irresistible temptation to crime.

In 1817 Ricardo published his great work on the *Principles of Political Economy and Taxation*. This was a step which he did not take without much hesitation. He was not, and did not affect to be, insensible of the value of literary and philosophical reputation, but his modesty always led him to undervalue his own powers; and having already attained to a very high degree of celebrity as a writer on currency, he was unwilling to risk what he already possessed by attempting to gain more. Ultimately, however, he was prevailed upon by the entreaties of his friends to allow his work to be sent to press. Its appearance forms a new æra in the history of political science. With the exception of the *Wealth of Nations*, it is the most important, as it certainly is the most original and profound work that has appeared on political economy. But the brevity with

which he has stated some of his peculiar doctrines, the fewness of his illustrations, and the mathematical cast of his reasonings, are apt to repel ordinary readers, and give an appearance of obscurity to the work. But those who study it with the attention which it so well deserves will find that it is eminently logical. And the powers of mind displayed in its investigations, the dexterity with which the most abstruse and difficult questions are unravelled, the sagacity evinced in tracing the operation of general principles, in disentangling them from such as are of a secondary or accidental nature, and in perceiving and estimating their remotest consequences, have rarely been surpassed, and will for ever secure the name of Ricardo a conspicuous place in the list of profound thinkers, and of the discoverers of useful truths.

The reader will find in the article *POLITICAL ECONOMY* a pretty full account of the leading principles advanced by Ricardo, and of his most material conclusions. It is to be regretted that he relied too much on theoretical reasonings, without making sufficient allowance for the circumstances natural to and inherent in society, which either counteract or materially modify some of the principles on which he laid the greatest stress. But despite the errors into which he thus necessarily fell, his work is of the highest value. It is the first in which we find an analysis and generally just explanation of the circumstances which determine the distribution of wealth among the various ranks and orders of society, and which govern their apparently conflicting but really harmonious relations. Since the appearance of Ricardo's work the whole face of the science has been changed, not merely by his numerous discoveries, and the new lights which he struck out in every department, but by the closer and more analytical method of reasoning which he introduced. In this respect there is yet, no doubt, much room for improvement; but any one who compares the economical writings of the last thirty years with those current before Ricardo's work made its appearance will be satisfied that there is now much less of loose generalization, and more regard to science and principle. The practical considerations which Ricardo too much neglected have had their influence ascertained by subsequent inquirers; and his doctrines having been properly modified, and made applicable to the exigencies of society, have acquired a high practical as well as theoretical value.

Previously to the publication of his *Principles*, Ricardo had retired from business, possessed of a large fortune, acquired with the universal respect and esteem of his competitors. He afterwards spent the greater part of the summers at Gatcomb Park, an estate which he had purchased in Gloucestershire. But he did not retire from the bustle of active life to the mere enjoyment of his acres—*Non fuit consilium socordia atque desidia bonum otium contere.* He had other objects in view; and while his leisure hours, when in the country, were chiefly devoted to the prosecution of the interesting science of which he was now confessedly at the head, he determined to extend the sphere of his usefulness by entering the House of Commons. In 1819 he took his seat as member for Portarlington. His diffidence had, however, nearly deprived the country of the important services which he rendered in this situation. In a letter to one of his friends, dated the 7th of April 1819, he says:—"You will have seen that I have taken my seat in the House of Commons. I fear that I shall be of little use there. I have twice attempted to speak; but I proceeded in the most embarrassed manner, and I have no hope of conquering the alarm with which I

¹ There was little that was new in either of these pamphlets; the origin, nature, and causes of rent having been quite as well, or better, explained in a pamphlet by Dr Anderson, the editor of the *Bee*, published in 1777 (*Inquiry into the Nature of the Corn-Laws*), and in his *Agricultural Recreations*, published in 1801. But the investigations and discoveries of Anderson did not attract any attention, and were, indeed, totally forgotten; so that it was necessary the theory of rent should be re-stated (it is said to have been re-discovered), to make it be understood and appreciated by the public.

Ricardo. am assailed the moment I hear the sound of my own voice." And in a letter to the same gentleman, dated the 22d of June 1819, he says: "I thank you for your endeavours to inspire me with confidence on the occasion of my addressing the House. Their indulgent reception of me has in some degree made the task of speaking more easy to me; but there are yet so many formidable obstacles to my success, and some, I fear, of a nature nearly insurmountable, that I apprehend it will be wisdom and sound discretion in me to content myself with giving silent votes." Fortunately he did not adopt this resolution. The difficulties with which he had at first to struggle, and his diffidence in himself, gradually subsided; while the mildness of his manners, his mastery over the subjects on which he spoke, and his undoubted integrity, speedily secured him a very extensive influence both in the House and the country, and gave great weight and authority to his opinions.

Ricardo was not one of those who make speeches to suit the ephemeral circumstances and politics of the day. He spoke only from principle, and with a fixed resolution not to diverge in any degree from the path which it pointed out; he neither concealed nor modified opinions for the purpose of conciliating the favour, or of disarming the prejudices or hostility, of any man or set of men; nor did he ever make a speech or give a vote which he did not believe to be founded on just principles, and calculated to promote the lasting interests of the public. Trained to habits of profound thinking, independent in his fortune and inflexible in his principles, Ricardo had nothing in common with mere party politicians. The public good was the grand object of his parliamentary exertions; and he laboured to promote it not by engaging in party combinations, but by supporting the rights and liberties of all classes, and by unfolding the true sources of national wealth and general prosperity.

The change which has taken place in the public opinion respecting the financial and commercial policy of the country, since the period when Ricardo obtained a seat in the House of Commons, is as complete as it is gratifying. The most enlarged views are now supported by the leading members of both Houses. The protective system has no longer a single parliamentary supporter of eminence. All are now ready to admit that it is founded on vicious principles; that it has retarded the progress of those nations by whom it has been adopted; and that it is sound policy to admit the freest competition in every branch of industry, and to deal fairly and liberally with all the world. The writings and speeches of Ricardo contributed in no ordinary degree to accomplish this salutary and desirable change. As he was known to be a master of economical science, his opinion, from the moment he entered the House of Commons, was referred to on all important occasions;¹ and he acquired a constant accession of influence and consideration, according as experience served to render the House and the country better acquainted with his talents and his singleness of purpose.

In 1820 he contributed an article on the FUNDING SYSTEM for the *Encyclopædia Britannica*. He was a decided friend to the plan for raising the supplies for a war within the year, by an equivalent increase of taxation; and he was also of opinion that it would be both expedient and practicable to pay off the public debt by an assessment on capital. In this article he has endeavoured, if not with perfect success, at least with considerable ingenuity, to defend both projects from the objections commonly urged against them.

In 1822, during the parliamentary discussions on the subject of the corn laws, Ricardo published his pamphlet on *Protection to Agriculture*. This is the best of all his pamphlets, and is indeed a *chef-d'œuvre*. The questions respecting remunerating price, the influence of a low and

high value of corn on wages and profits, the effects of taxation on agriculture and manufactures, and many other topics of equal difficulty and interest, are all discussed in the short compass of eighty or ninety pages, with a precision and clearness that leaves little or nothing to be desired. Had he never written anything else, this pamphlet would have placed Ricardo in the first rank of political economists.

Though not robust, Ricardo's constitution was apparently good, and his health such as to promise a long life of usefulness. He had indeed been subject for several years to an affection in one of his ears; but as it had not given him any serious inconvenience, he paid it but little attention. When he retired to his seat in Gloucestershire, subsequently to the close of the session of 1823, he was in excellent health and spirits; and besides completing a tract, containing a plan for the establishment of a National Bank, he had engaged, with his usual ardour, in profound and elaborate inquiries in relation to the theory of value. But he was not destined to bring these inquiries to a close! In the beginning of September he was suddenly seized with a violent pain in the diseased ear; the symptoms were not, however, considered unfavourable; and the breaking of an imposthume that had formed within the ear contributed greatly to his relief. But the amendment was only transitory; within two days inflammation re-commenced; and after a period of indescribable agony, pressure on the brain ensued, which produced a stupor that continued until death terminated his sufferings on the 11th of September, in his fifty-second year.

In private life Ricardo was most amiable. He was a kind and indulgent father and husband, and an affectionate and zealous friend. No man could be more thoroughly free from every species of artifice and pretension, more sincere, plain, and unassuming. He was particularly fond of assembling intelligent men around him, and of conversing in the most unrestrained manner on all topics of interest, but more especially on those connected with his favourite science. He was always ready to give way to others, and never discovered the least impatience to speak; but when he did speak, the extent and accuracy of his knowledge, the solidity of his judgment, his perfect candour, and his peculiar talent for resolving a question into its elements, and for setting the most difficult and complicated subject in the clearest point of view, arrested the attention of every one, and delighted all who heard him. He never entered into an argument, whether in public or private, for the sake of displaying ingenuity, baffling an opponent, or gaining a victory. The discovery of truth was his exclusive object. He was ever open to conviction; and if he were satisfied that he had either advanced or supported an erroneous opinion, he was the first to acknowledge his error, and to caution others against it.

Few men have possessed in a higher degree than Ricardo the talent of speaking and conversing with clearness and facility on the abstrusest topics. In this respect his speeches were greatly superior to his publications. The latter cannot be readily understood and followed without considerable attention; but nothing could exceed the ease and felicity with which he illustrated and explained the most difficult questions of political economy, both in private conversation and in his speeches. Without being forcible, his style of speaking was easy, fluent, and agreeable. It was impossible to take him off his guard. To those who were not familiar with his speculations, some of his positions were apt to appear paradoxical; but the paradox was only in appearance. He seldom advanced an opinion on which he had not deeply reflected, and without examining it in every point of view. And the readiness with which he met and

Ricardo.

¹ Mr Ricardo made the first of his prominent appearances on the 24th of May 1819, in the debate on the resolutions proposed by Mr (Sir Robert) Peel respecting the resumption of cash payments. He did not rise until he was loudly called upon from all sides of the House.

Ricaut.

overthrew the most specious objections that the ablest men in the House could state to his doctrines, is the best proof of their correctness, and of the superiority of his understanding. That there were greater orators, and men of more varied and general acquirements, in Parliament than Ricardo, we readily allow; but we are bold to say, that in point of deep, clear, and comprehensive intellect, he had no superiors, and very few, if any equals, either in Parliament or the country.

Ricardo was not less generous than intelligent; he was never slow to come forward to the relief of the poor and the distressed; and while he contributed to almost every charitable institution in the metropolis, he supported at his own expense an alms-house for the poor, and two schools for the instruction of the young in the vicinity of his seat in the country.

Besides the publications previously enumerated, Ricardo left one or two manuscripts. Among others, a *Plan for the Establishment of a National Bank* was found in a finished state, and has since been published. He also left Notes on Malthus's *Principles of Political Economy*, containing a vindication of his own doctrines from the objections of Malthus, and showing the mistakes into which he conceived the latter had fallen.

Though not properly belonging to the Whig party, Ricardo voted almost uniformly with them. He was impressed with the conviction that many advantages would result from giving the people a greater influence over the choice of their representatives in the House of Commons than they then possessed; and he was so far a friend to the system of the radical reformers as to give his cordial support to the plan of voting by ballot, which he considered as the best if not the only means for securing the mass of the electors against improper solicitations, and for enabling them to vote in favour of the candidates whom they really approved. He did not, however, agree with the radical reformers in their plan of universal suffrage: he thought the elective franchise should be given to all who possessed a certain amount of property; but he was of opinion that, while it would be a very hazardous experiment, no practical good would result from giving the franchise indiscriminately to all.

When the circumstances under which Ricardo spent the greater part of his life are brought under view, and when it is also recollected that he died at the early age of fifty-one, it may be truly said that very few men have achieved so much. His industry was as remarkable as his sagacity and his candour.

"The history of Ricardo," to use the words of his friend Mill, "holds out a bright and inspiring example. Ricardo had everything to do for himself, and he did everything. Let not the generous youth, whose aspirations are higher than his circumstances despair of attaining either the highest intellectual excellence, or the highest influence on the welfare of his species, when he recollects in what circumstances Ricardo opened and in what he closed his memorable life. He had his fortune to make, his mind to form; he had even his education to commence and conduct. In a field of the most intense competition he realized a large fortune, with the universal esteem and affection of those who could best judge of the honour and purity of his acts. Amid this scene of active exertion and practical detail, he cultivated and he acquired habits of intense and patient and comprehensive thinking, such as have been rarely equalled and never excelled."

The works of Ricardo have been collected and published, with a notice of his life, in an 8vo volume, by the author of this article.

(J. R. M.)

RICAUT, or RYCAUT, SIR PAUL, an English traveller and diplomatist of the time of whose birth we find no account. He studied at Cambridge, where he received his bachelor's degree in 1650; and in 1661 he was appointed secretary to the Earl of Winchelsea, who was sent ambas-

sador extraordinary to Turkey. During his continuance in that station he wrote *The Present State of the Ottoman Empire*, in three books, London, 1670; and he afterwards resided eleven years as consul at Smyrna, where at the command of Charles II., he composed *The Present State of the Greek and Arminian Churches*, 1678. On his return, Lord Clarendon being appointed lord-lieutenant of Ireland in 1685, made him his principal secretary for Leinster and Connaught. King James II. knighted him, and made him one of the privy council in Ireland, and judge of the Court of Admiralty. These appointments he held till the Revolution. He was employed by King William as resident at the Hanse Towns in Lower Saxony, where he continued for ten years; but being worn out with age and infirmities, he obtained leave to return in 1700, and died in London on the 16th December of the same year. Ricaut continued Knolles's *History of the Turks*, 1680, and Platina's *Lives of the Popes*, 1685. There are likewise some other publications which bear his name.

RICCI, or RIZZI, SEBASTIANO, a famous Italian painter, was born at Civaldi di Belluno, in the Venetian state, about 1660. It was his good fortune to go through a thorough course of training. He first studied under Cervelli at Venice and Milan. He then travelled through Italy, familiarizing his hand in executing commissions. Lastly, he visited Germany, England, and Flanders, perfecting his notions of art by a close study of the different schools. The result of this excellent education was seen after Ricci had settled at Venice. While he was painting, many of the beauties of the great masters which he had seen occurred opportunely to his mind. Without servilely copying, he put them down upon his canvas. Accordingly his pictures came forth to the world exhibiting several different styles, and the excellences of several different artists. Ricci died in 1734. (See Lanzi's *History of Painting*.)

RICCIARELLI, DANIELE, an Italian artist, generally called, from the place of his birth, *Daniele di Volterra*, was born in 1509, and studied painting under Razzi and Peruzzi. The young artist, settling in Rome, strove most unweariedly to attain eminence in his profession. No efforts were spared on his pictures. He proceeded with a careful slowness, attempting to reach his ideal by a close imitation of Michael Angelo. It is even said that he sometimes in a difficulty had recourse to the more direct aid of that great master's own hand. The result of this earnest labour was, that Ricciarelli obtained abundant encouragement. His constant friend, Michael Angelo, recommended him on all possible occasions. He had the honour to beautify with works of art a chapel in the church of the Trinità, to paint in the Farnese Palace, to execute certain decorations in the Palazzo de' Medici at Navona, and to begin the stucco-work and the pictures in the Hall of the Kings. Nor was he less highly patronized when, towards the close of his life, he turned his attention to statuary. His last work was a bronze horse, intended for an equestrian statue of Henry II. of France. Ricciarelli died in 1566. The principal extant works of Ricciarelli are at Rome. These are a "St John the Baptist" in the picture gallery of the Capitol, a "Saviour bearing the Cross" in the Palazzo Rospigliosi, and a "Descent from the Cross," his masterpiece, in the church of Trinità de' Monti. There is also an "Elijah" at Volterra. (See Vasari's *Painters*, and Lanzi's *History of Painting*.)

RICCIOLI, GIOVANNI BATTISTA, an eminent astronomer, was born at Ferrara in 1598, entered the Society of the Jesuits in 1614, and died in 1671. (See DISSERTATION FOURTH, § iv.; and ASTRONOMY, *History of*.)

RICE, the seed of *Oryza sativa* (Linn.), a beautiful tropical grass (*Graminaceæ*), believed to be originally a native of some part of India. It is now extensively cultivated in the East Indies, China, parts of Africa and Southern Europe,

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Rice. and in tropical America. Rice is second in importance only to wheat as an article of human food, and forms the chief nutriment of at least a third of mankind. Marsden, in his *History of Sumatra*, says it is "the grand material of food on which a hundred millions of the inhabitants of the earth subsist." It is admirably adapted to the wants of the inhabitants of the tropics, as it is not so heating to the human system as any of the other cereals, and it is almost a cure for diarrhoea and dysentery, which are so prevalent in warm climates.

Rice was known to the ancients, and is described under the name of *Opvčov* by Theophrastus, *Opvča* by Dioscorides, and *Oryza* by Pliny. The last-mentioned author, from the description given in his *Natural History*, appears to have been quite ignorant of the plant, or else mistaken in the grain altogether, for he describes it as a bulbous-rooted plant, with thick, fleshy leaves and purple blossoms. In its native country (India), rice has most probably been cultivated from the earliest times. It is naturally a marsh plant, and consequently requires a damp soil and a moist atmosphere; it is there usually cultivated in low lands, which are either naturally liable to be flooded, or which admit of easy and copious irrigation. There are, however, varieties cultivated which endure a much drier soil, and are adapted for hill culture. The upland or hill rice is smaller in grain and less valuable; but it is nevertheless cultivated in great quantities, the manure employed being chiefly the dung of animals mixed with wood-ashes. In India the varieties of rice are very numerous. No less than one hundred and sixty-one are enumerated in Moon's *Catalogue of Ceylon Plants* as being known in that island.

The finest rice in the world is that raised in North and South Carolina, in the United States, where the prevalence of swampy lands and a rich vegetable soil render its cultivation easy and very profitable. The rice of Carolina is remarkable for its pure white colour and large size; and as it contains a considerable proportion of gluten, it is most valued as an article of food. Rice in the husk is generally called *paddy*. In this state it is largely imported into Great Britain and husked at the rice-cleaning mills, which are now established in all our large ports: when kept in the husk, it is said to retain its vitality for many years.

The cultivation of this cereal is very much varied by the circumstances of the locality in which it is grown: in many places it is scattered over the land whilst still flooded, and as it sinks and settles in the mud it speedily germinates, and springs up as soon as the land is uncovered: in other places buffaloes are driven over the muddy surface as soon as the floods have retired, and a few grains are placed in each foot-mark, the rice often being made to germinate before being placed in the holes. Two crops of flooded rice are obtained annually in India; the first is cut in February and March, the second is reaped in October. The earlier one is by far the most valuable.

The quantity of rice consumed in this country, and in Europe generally, is very large; our imports in 1858 were, —of husked rice, 206,000 tons; and of unhusked rice, or paddy, 33,601 quarters.

Canadian Rice is the seed of *Zizania aquatica*, Hort. Kew (Nat. Ord. *Graminaceae*). It grows on the margins of shallow streams and running waters, and produces an abundance of wholesome farinaceous grain. It is called in Canada *lake rice*, *tuscarora*, or *mahnomonee*; and is found in shallow waters from Florida to the Canadian lakes. It is regularly harvested by the Indians, this work being chiefly performed by their squaws; but it is not gathered in any quantity by the white population, although it is esteemed a great delicacy. It has been tried in this country, and it is likely that it would succeed if it should become an object of demand; and as it is aquatic, it can be cheaply cultivated.

(T. C. A.)

RICH, CLAUDIUS JAMES, a distinguished traveller and scholar, was born in 1787 near Dijon in Burgundy, and having been removed to England, was brought up at Bristol. His youth was characterised by an extraordinary aptitude for languages. When a mere child he picked up a knowledge of several modern tongues. At the age of nine he sat down to decipher some Arabic manuscripts, with no other aid than a grammar and dictionary. Not long afterwards he was reading Hebrew, Syriac, Persian, and Turkish. The boy, in fact, became such a remarkable orientalist that in 1804 the East India Directors despatched him to a writership in Bombay, and at the same time gave him permission to make any delays on the road for the purpose of increasing his knowledge. Rich took care to avail himself of this privilege to the utmost. As he sailed along the Mediterranean he formed the resolution of imbuing himself thoroughly with eastern manners and attainments. Placing himself in a school at Smyrna, he soon became metamorphosed into a young Turk. Then repairing to Alexandria, he began to acquire the language and martial accomplishments of a wild Arab. At the end of a year or two he had become so complete an orientalist that he set out in the disguise of a Mameluke to travel over land to the Persian Gulf. Nor was this difficult impersonation unsuccessful. He wandered over a great part of Palestine and Syria, entered the grand mosque at Damascus along with the Mohammedan pilgrims, and arrived at Bussora without ever having been challenged for a Christian. Rich's good fortune attended him to Bombay. On his arrival there in 1807, Sir James Mackintosh welcomed him to his house. A few months afterwards the eldest daughter of that philosopher bestowed upon him her hand. His abilities continued to attract interest, until in 1808 he was appointed resident at Bagdad. A wide field of investigation was now opened up to the ever-active and all-observant mind of Rich. He set himself, with characteristic enthusiasm, to make a sweeping survey of the district. Every research that could increase human knowledge was undertaken. The geography, history, manners, and statistics of the country were studied. Oriental manuscripts were collected from all quarters. Ancient medals, coins, and gems were picked up from among the remains of Nineveh and Ctesiphon. The ruins of Babylon were repeatedly explored, and his discoveries published in the form of two memoirs. Even astronomical observations were taken with all the enthusiasm and success of a professed mathematician. He had in fact amassed a most wonderful amount of multifarious knowledge, when he was cut off by the cholera at Shiraz on the 5th of October 1821. Rich's *Narrative of a Residence in Koordistan*, accompanied by a short memoir, was published by his widow, in 2 vols., London, 1836. His valuable collection of oriental MSS., coins, and antiquities, is now in the British Museum.

RICHARD, the name of three English kings. Richard I., surnamed *Cœur de Lion* (the "Lion-hearted"), was born in 1157, succeeded his father Henry II. in 1189, and was killed by an arrow at the siege of the castle of Chaluz in 1199. Richard II., the son of the Black Prince, was born in 1366, succeeded his grandfather Edward III. in 1377, was deposed by Bolingbroke in 1399, and is said to have been put to death in Pontefract Castle in 1400. Richard III., the son of Richard, Duke of York, was born in 1452, usurped the crown from his nephew Edward V. in 1483, and was slain on Bosworth field in 1485. (See ENGLAND.)

RICHARD DE BURY, a learned English statesman, was born at Bury St Edmunds in 1287, and was educated at Oxford. A bright career of preferment was early opened up before him. Scarcely had he finished his studies before he was appointed tutor to the Prince of Wales (afterwards Edward III.) The devoted manner in which this office was discharged was the means of accelerating his rise. No

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sooner had his pupil succeeded to the throne than a shower of dignities, both civil and ecclesiastical, began to fall upon his head. He was made treasurer of the wardrobe and clerk of the privy seal. The revenues of many rich benefices were placed at his disposal. He was twice despatched to Rome with a splendid retinue as legate to Pope John XXII. At length he reached the climax of his good fortune by being appointed bishop of Durham in 1333, and treasurer and high chancellor of England in 1334. Richard adorned this high station by appearing as an enthusiastic and enlightened lover of books. In the course of his travels he had devoted both his time and his money to the collecting of literary works. It now became the congenial task of his declining years to complete his collection. Every library in the kingdom was examined in quest of new treatises. Those that could be bought he purchased. Those that could only be borrowed he caused to be copied by men who were kept in his palace expressly for that purpose. Thus did he procure a splendid assortment of books, which, at his death in 1345, he bequeathed to that hall at Oxford which is now called Trinity College. Richard de Bury left a treatise upon his own book-collecting labours, entitled *Philobiblon*. It was published at Cologne in 1473, at Spire in 1483, at Paris in 1500, and at Oxford in 1599. An English translation by Mr J. B. Inglis was published in 1832. (See *English Cyclopædia of Biography*.)

RICHARD OF CIRENCESTER, an old monkish historian, was born in the beginning of the fourteenth century at Cirencester in Gloucestershire, and entered the Benedictine monastery of St Peter, Westminster, in 1350. During his leisure hours in the cloister he addressed himself to the study of British history and antiquities. To perfect his information, he is said to have explored all the different libraries in England. The chief result of his labour and investigation began to appear in the form of a treatise, *De Situ Britanniae*. The body of the matter was compiled from Cæsar and other classical authors. The Itinerary he professed to have taken chiefly from certain fragments left by a Roman general. The work was proceeding successfully when the author met with an interruption. His ecclesiastical superior the abbot found fault with him for wasting his consecrated time upon such secular pursuits. He indeed vindicated his conduct in an enlightened and spirited manner; but he felt himself obliged to bow to authority, and to bring his book to a premature close. The death of Richard is supposed to have taken place about 1401. The above-mentioned work was discovered in 1747, and published in 1757 by Charles Julius Bertram, professor of English in the Royal Marine Academy at Copenhagen. An English translation appeared in 1848, forming, along with five other old English chronicles, a volume of Bohn's "Antiquarian Library." Richard of Cirencester is also the author of the following unpublished works:—*Historia ab Hengisto ad Ann.* 1348, the former part of which is in the public library of the university of Cambridge; and *Tractatus super Symbolum Majus et Minus*; and *Liber de Officiis Ecclesiasticis*, both in the Peterborough library.

RICHARDSON, JONATHAN, a portrait-painter of some note, was born about the year 1665, and against his inclination was placed by his father-in-law apprentice to a scrivener, with whom he lived six years. Having obtained his freedom by the death of his master, he followed the bent of his disposition, and at the age of twenty became the disciple of Riley, with whom he lived four years, whose niece he married, and of whose manner he acquired enough to maintain a solid and lasting reputation, even during the lives of Kneller and Dahl, and to remain at the head of the profession when they no longer continued to exercise it. The following characterisation of Richardson is by the author of the *Anecdotes*.

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"There is strength, roundness, and boldness in his colouring; but his men want dignity, and his women grace. The good sense of the nation is characterised in his portraits. We perceive that he lived in an age when neither enthusiasm nor servility was predominant. Yet with a pencil so firm, possessed of a numerous and excellent collection of drawings, full of the theory and profound in reflection of his art, he drew nothing well below the head, and was void of imagination. His attitudes, draperies, and backgrounds are totally insipid and unmeaning; so ill did he apply to his own practice the sagacious rules and hints which he bestowed on others. Though he wrote with fire and judgment, his paintings owed little to either. No man dived deeper into the inexhaustible stores of Raphael, or was more smitten with the native lustre of Vandyck. Yet though capable of relishing the elevation of the one and the elegance of the other, he could never contrive to see with their eyes when he was to copy nature himself. One wonders that he could comment on their works so well, and imitate them so little." He quitted business some years before his death; but his temperance and virtue contributed to protract his life to a great length in the full enjoyment of his understanding, and in the felicity of domestic friendship. He died suddenly at his house in Queen's Square, on the 28th of May 1745, in his eighty-first year. In 1719 Richardson published two discourses: *An Essay on the whole Art of Criticism as it relates to Painting*; *An Argument in behalf of the Science of a Connoisseur*. In 1722 there appeared *An Account of some of the Statues, Bas-reliefs, Drawings, and Paintings in Italy, &c.*, with Remarks by Messrs Richardson, senior and junior. His son made the journey; and from his notes, letters, and observations, they both at his return compiled this valuable work.

RICHARDSON, *Samuel*, a distinguished novelist, was born in the year 1689, in Derbyshire. His father, the descendant of a reputable family in the county of Surrey, followed the occupation of a joiner. The son was at first intended for the church; but after his father had sustained some heavy losses he was left, at the age of fifteen or sixteen, to make choice of some employment which did not require so expensive a preparation. He only appears to have received the most ordinary training of a country school. He was a bashful boy, and gave an early preference to the society of the other sex. From his childhood he delighted in letter-writing; and to this early taste we may trace the germ of his principal works. "I was not more than thirteen," he informs us, "when three of these young women, unknown to each other, having an high opinion of my taciturnity, revealed to me their love secrets, in order to induce me to give them copies to write, alter, or correct, for answers to their lovers' letters; nor did any one of them ever know that I was the secretary to the others." In 1706 he was bound apprentice to John Wilde, a printer at Stationers' Hall, London. Although he served a rigid master, he contrived to steal from his hours of rest and relaxation some precious intervals for the improvement of his mind. After the completion of his apprenticeship he continued for five or six years to work as a compositor and corrector in a printing-office, and part of this time as an overseer. Thus he gradually arose to the situation of a master-printer, having first taken an office in a court in Fleet Street, and afterwards in Salisbury Court. As an apprentice he had been diligent and conscientious, as a master he was assiduous and liberal. In addition to the proper avocations of a printer, he on various occasions undertook to write indices, prefaces, and, as he describes them, honest dedications. The punctuality, together with the integrity and liberality of his dealings, speedily procured him friends, and his business became very prosperous. Through the interest of Mr Speaker Onslow, he was em-

Richard-son. played to print the Journals of the House of Commons, in twenty-six volumes folio. In 1754 he was chosen master of the Stationers' Company. In 1760 he purchased a moiety of the patent of law-printer to his Majesty, and in this branch of his business he was joint partner with Miss Catherine Lintot. He was thus enabled to live in comfort, and to make a suitable provision for his family. Like other prosperous citizens he set a due value on country air, and had first a residence at North End near Hammersmith, and afterwards at Parsons Green near Fulham, where he spent such intervals of time as he could spare from business, and where he was seldom without visitors.

The first work that recommended him to public notice was *Pamela, or Virtue Rewarded*, published in the year 1741. The two volumes of which it originally consisted appear to have been written in less than three months. Its success was almost unprecedented, for it reached a fifth edition within the space of a year. "The printer in Salisbury Court," says Mrs Barbauld, "was to create a new species of writing; his name was to be familiar in the mouths of the great, the witty, and the gay, and he was destined to give one motive more to the rest of Europe to learn the language of his country." Some inconsistencies in the work were powerfully ridiculed by Fielding in his *History of Joseph Andrews*, whom he introduces to his readers as the brother of Pamela. This was an injury which Richardson, though an amiable and benevolent man, found it very difficult, if not impossible, to forgive. In his correspondence with his admiring friends he predicted that Fielding would speedily sink into oblivion. But, in the present age, for every reader of *Pamela* and *Clarissa* there are at least five hundred of *Joseph Andrews* and *Tom Jones*.

The brilliant success of this novel prompted some nameless individual to write and publish a continuation of the story, under the title of *Pamela in High Life*. Richardson, who might very safely have disregarded such an attempt to invade his province, was thus induced to add a second part, which however made no addition to his reputation. "These volumes," says Mrs Barbauld, "two in number, are, like most second parts, greatly inferior to the first. They are superfluous, for the plan was already completed; and they are dull, for instead of incident and passion, they are filled with heavy sentiment, in diction far from elegant. A great part of it aims to palliate, by counter-criticism, the faults which had been found in the first parts. It is less a continuation than the author's defence of himself." On the story of Pamela the famous dramatist Goldoni has written two of his plays, *Pamela Nubile* and *Pamela Maritata*.

In the year 1749, Richardson published the first two volumes of *The History of Clarissa Harlowe*. This work, which he extended to eight volumes, is the chief foundation of his celebrity as an original and inventive writer. Notwithstanding its inordinate length, the book long continued to enjoy an almost unrivalled share of public favour, and, whatever may be its defects or redundancies, this favour could only be secured by the author's power over the imagination and moral feelings. The outline of the story is sufficiently simple, nor is the curiosity of the reader excited by intricate plots and marvellous adventures. It is a work, not of action and enterprise, but of character and sentiment. His next production was *The History of Sir Charles Grandison*, published in 1753, in seven volumes. In his previous works he had given ample delineations of female character, and he now endeavoured to exhibit a pattern of a perfect man. Whatever is graceful and engaging in the man of spirit and fine gentleman it was his aim to unite with every moral virtue, and with the strict observance of Christian principles. This was certainly a difficult enterprise; and the writer's genius is more successfully displayed in delineating the character of Clementina, than in portray-

ing that of his hero. The nervous system of Richardson was naturally weak; and during his latter years his hand shook, and he was subject to frequent fits of giddiness. His disorders having at length terminated in apoplexy, he died on the 4th of July 1761, at the age of seventy-two.

Richardson left behind him the character of a virtuous and benevolent man, highly respected in all the relations of private life. His chief weakness seems to have been vanity, which is sufficiently displayed in his private correspondence. His success in literature was so great and so unexpected, and he received so much flattery from his friends, especially from his female friends, that it would have required a very firm texture of mind to resist the access of that passion which so easily converts a wise man into a fool. He was twice married. His first wife was Miss Allington Wilde, daughter of the printer with whom he served his apprenticeship. She bore him five sons and a daughter, who all died young. His second wife, who survived him for many years, was Elizabeth, the sister of Mr Lcake, a bookseller of Bath. She became the mother of a son and five daughters. The son died at an early age, but four of the daughters survived him: Mary, married in 1757 to Mr Ditcher, an eminent surgeon of Bath; Martha, married in 1762 to Edward Bridgcn, Esq.; Anne, who died unmarried in 1804; and Sarah, married to Mr Crowther, surgeon of Boswell Court.

Besides his three novels in nineteen volumes, he published some other works. *The Negotiations of Sir Thomas Roe, in his Embassy to the Ottoman Porte from 1621 to 1628 inclusive*, 1740, fol.; *An edition of Æsop's Fables, with Reflections; Familiar Letters to and from several Persons upon Business and other subjects*. He furnished some additions to the sixth edition of De Foe's *Tour through Great Britain*; and some of his contributions are to be found in periodical works. Long after his death appeared *The Correspondence of Samuel Richardson, author of Pamela, Clarissa, and Sir Charles Grandison; selected from the original manuscripts bequeathed by him to his family; to which are prefixed a Biographical Account of that Author, and Observations on his Writings*, by Anna Lætitia Barbauld, London, 1804, 6 vols. 12mo. His works, with a sketch of his life and writings, by the Rev. Ed. Mangin, appeared in 19 vols., London, 1811. (For an estimate of Richardson's place as a novelist, see ROMANCE.)

RICHELIEU, ARMAND JEAN DUPLESSIS, Cardinal, *Duc de*, was the younger son of a Poitiers gentleman, whose impoverished exchequer did not allow him to support, in anything like style, the honours of his genealogical tree. Born on the 5th of September 1585, he received a tolerable education preparatory to his entering the army. One of his brothers, Alphonse, had already been comfortably provided for by the church, and a bishop's mitre at Luçon was the first prize which the Poitiers *gentilhomme* secured towards the worldly welfare of his family. Whilst the prelate thus sailed easily down the stream of life, the soldier would have to fight his way to distinction sword in hand, starting with the usual chances of a *cadet de famille*. History does not inform us whether young Armand's inclination was in accordance with the parental will; but certainly his subsequent conduct at the siege of La Rochelle proves that he was more at home on the field of battle than in the arena of theological discussion. The Bishop of Luçon had not yet been consecrated when, under the impression of religious scruples, he was induced to renounce a position so many would have earnestly coveted, and to withdraw himself entirely from the world. He entered a Carthusian monastery. This circumstance was likely to prove a serious matter to the straitened fortunes of the Duplessis family; but our soldier *in posse* thought that he was called upon to retain at any cost the position his brother had parted with; so, throwing back his sword into the scabbard, he adopted

Richelieu.

Richelieu. the crozier as the prop of his rising destinies. None of the transactions connected with this episcopal promotion will bear close examination. Richelieu was only twenty years old when it took place, and a great many difficulties were raised by the Pope, not without strong reasons. Henri IV. had to interfere; the French ambassador at Rome exhausted all his diplomatic resources; as a final climax, Richelieu himself started for the Eternal City, fully determined to conquer. His Holiness yielded at last, and the ceremony of consecration took place on April 17, 1608. The young Bishop of Luçon immediately after repaired to his diocese. Arriving in a part of France where the majority of the people belonged to the Protestant religion, Richelieu resolved to discharge his duties with vigour and prudence. He would settle differences, soften irritations, and display uniformly the spirit of forbearance, when brought into contact with his Huguenot diocesans. "Gentlemen," he said, in a sort of oratorical programme to that effect, "as I am come to live with you, and to make my habitual abode in this place, there is nothing that can be more agreeable to me than to see your faces, and to know from your own declarations that you feel pleasure at my presence. I thank you for the good wishes you express. I shall do my best to deserve them by every kindness in my power; for the strongest anxiety I have is, that I may be useful to all and each of you. There are some in this company who are separated from us, as I am aware, on matters of faith; may we, notwithstanding, be all united together in the bond of charity! I shall do all I can towards that object; it will be as useful to them as to us, besides pleasing the king, whom every one of us is bound to obey. Time will prove more fully than anything I can say the affection I bear to you; I shall therefore leave deeds to show that your welfare will be the end of my endeavours."¹

If Richelieu manifested kindly dispositions towards the Huguenot separatists, he affected likewise a strong sympathy for the common people, who, overwhelmed by taxes, and bearing the dreadful consequences of a protracted succession of civil wars, could hardly eke out a miserable livelihood. He solicited and obtained for them some slight relief. Here, however, we discover a strong contrast in the principles which the despotic statesman adopted subsequently as the foundation of all true government. "All politicians," he wrote, in his celebrated *Testament Politique*, "are agreed that, if the people's circumstances were too easy, it would be impossible to keep them within the bounds of duty. We must compare them to mules, which, being accustomed to burdens, are more injured by repose than by work."

What with the Huguenots, and what with the lame condition to which "the mules" were reduced, the see of Luçon does not appear to have been a very lucrative benefice. Richelieu, the powerful genius who ruled so long over the destinies of France, and whose very name struck terror into the heart of Austria,—Richelieu began by driving bargains for some cheap church furniture, and doing duty in second-best surplices. A number of letters written by him at this period have been published; they are full of little chit-chat on domestic grievances,—letters which show that the bishop then lived in a laudable state of apostolic simplicity. His favourite correspondent was a Madame de Bourges, who resided in Paris, and who seems to have been in the habit of procuring for the young prelate the necessities he required from time to time. "I shall find no lack of occupation here," he writes to her in April 1609, "I assure you; everything is in such a ruinous condition that it will require hard labour to set matters right again. I am very badly off for lodgings, as there is not one chimney but

smokes. You may imagine that I am not anxious for a severe winter: patience, however, is the best remedy. I can give you my word that my bishopric is the ugliest, the muddiest, the most disagreeable in the kingdom; but I leave you to guess what is the condition of the bishop. I have neither garden nor avenue, nor any place at all where I may take a walk; I am, in fact, a prisoner in my own house. I break off this discourse to tell you that we could not find amongst my clothes a tunic and a dalmatica of white taffeta, which were to be forwarded with the white damask ornaments you ordered for me; this makes me think that they must have been forgotten."

Many of the letters to Madame de Bourges are exactly in the same style; trifling topics are discussed, sometimes in a genuine vein of comic humour, always with a kind of philosophic *insouciance*. Then our bishop, after having sedulously done what he could amidst the Huguenots and the "mules" of the diocese, feels that he ought to refresh himself by a journey to Paris, and a visit to those who, at the Louvre, dispense honours, riches, and power. There is the Bishop of Evreux, Du Perron; his controversial works have procured him almost the reputation of an oracle; his sermons are drawing large crowds to Notre Dame; he has become a *lionized* prelate, and a man of unbounded influence. "Why," quoth Richelieu, "should not I walk in his footsteps?" But in order to do so he must have an hôtel in Paris. An hôtel! Yes, for the sake of decorum—of appearances. For a bishop, furnished lodgings would hardly be the thing. Madame de Bourges, that excellent housekeeper, is once more consulted. "You will oblige me much by your good advice: I am rather hesitating, especially about a house. On one hand, I am afraid that much furniture will be required; on the other, as my temper, similar to yours, is a little inclined towards vainglory, I should like both to be more comfortable, and also to make some figure. Now this might be more conveniently managed if I had a house of my own. A poor nobleman is a pitiable thing; yet there is no helping that."

And accordingly, off to Paris he went, determined to make his way at court, and to get into some sort of notice. His first attempt proved a signal failure; he endeavoured to create a sensation by his sermons, and preached several times before the queen, but apparently to no purpose. Nay, if we believe Priolo, the Bishop of Luçon was *infelix concionator*. Altogether, the result of these Paris journeys does not seem to have been very encouraging. Richelieu returned to his diocese, and soon found out that, without taking the trouble of a long and expensive pilgrimage from Poitou to the metropolis, he could have secured close at hand, the advice, the encouragement, and the assistance which he required.

There lived at that time in the west of France a man whose religious zeal and whose talent as a preacher were much talked of. François Leclerc du Tremblay, a Capuchian friar, better known afterwards as *Father Joseph*, had, when twenty-two years old, renounced the most brilliant prospects to embrace the monastic life. Neither the earnest entreaties of his mother nor the allurements of the world could avail. He donned the cowl; but by his transcendent powers soon raised himself to the highest posts in his community. He uncompromisingly denounced from the pulpit the lax ideas which the civil wars had introduced into the church, and which especially infected the convents. Moved by his sermons, the nuns of Fontevault had even requested him to draw up a plan for the reformation of the monasteries belonging to their order. This Father Joseph did successfully; but in order to consolidate the work he had been enabled to begin, he wished to secure the appointment, as

¹ See for all this the first volume of Richelieu's correspondence, published by M. Avenel, and the clever articles of M. Sainte-Beuve in the *Causeries du Lundi*, vol. vii.

Richelieu. abbess, of Antoinette d'Orléans, sister of the Duc de Longueville; and some difficulties, it would seem, stood in the way of this nomination. The Bishop of Luçon was then residing in the Priory des Roches, near Fontevault; Father Joseph called upon him for his advice. These two clever men soon understood each other's character; and although Du Tremblay was eight years older than Richelieu, he constantly affected to receive his instructions with the greatest respect. When they both went to court for the purpose of reporting about the settlement of the Fontevault business, Father Joseph spoke of Richelieu to Marie de Medici as of a superior prelate who could render her the greatest services.

We have seen the bishop endeavouring to steer his course steadily amongst difficulties of a temporal nature. He was not by any means so fortunate in disposing of cases connected with the anxieties of the soul and the appeals of conscience. He was ignorant of spiritual things; and the few letters reprinted that relate to such subjects are as commonplace and tame as can be imagined. Fancy his reverence sitting down to his desk with a *Complete Religious Letter-Writer* before him, and instead of giving to the distressed the outpourings of his heart, sending to them pages from a manual published *cum privilegio*. If we would study the veritable Richelieu, and see him himself again, we must turn to the despatches in which he lectures a vicar-general or a parish priest. Let the following (penned in 1610) suffice by way of specimen:—"Sir, I have received the letter you wrote to me on the subject of the differences which have arisen between M. De la Coussaye and yourself. I cannot but blame you for them, because my desire is, that those who have the management of affairs in my diocese should live in peace together. I inform M. De la Coussaye of this, and I warn you likewise, so that you may make it your object to preserve union. You are both my vicars-general, and as such your only aim ought to be to please me in all things, which will certainly be the case, provided you act for the glory of God. Your letter makes it clear that you were out of temper when you took up your pen; for my part, I love my friends so well that I wish to be acquainted only with their good tempers, and in my opinion they ought not to show any other. . . . Thank God, I know how to behave myself, and I know still better how they should behave who are placed under me. . . . I wish you to tell me of the irregularities which you may notice in my diocese; but you must do so more gently."

The circumstances in which Richelieu was placed at that time compelled him to display much deference to some people respecting whom he entertained in after-life a very different opinion. For instance, while he is only the insignificant Bishop of Luçon, wearing questionable surplices, and dwelling in a house with smoky chimneys, he can write to Sully in the most submissive manner. A letter, dated September 21, 1612, begins thus:—"Sir, if I had as many ways of being of service to you as I have occasion to be importunate, I would prove my affection and my zeal with as much pleasure as I feel pain now, in taking up the pen to beg for undeserved marks of your benevolence. I would never have ventured to do so had I not been aware that those who may be called truly great, more by their qualities than by the offices they fill, are very glad of an opportunity of assisting their inferiors; for they prove thus, that if their power commends them, their kindness places them higher still," &c. &c. Compare the obsequious tone which characterises the above letter with the opinions which the prelate gives of Sully in the *Histoire de la Mère et du Fils*.

We should, however, remember that, as late as 1626, contemporary historians and annalists took very little notice of Richelieu. When they speak of him, it is quite *par hasard*, and often in the most disparaging manner. Baptiste Le Grain's allusion to the bishop is not only laconic, but bor-

dering upon contempt. Savaron, relating the opening of the States-General in 1614, merely says that Richelieu, in delivering up the *cahiers* of the clergy, spoke for a long hour. Then, when he describes the negotiations which took place between the king and the queen-mother,—negotiations in which Richelieu played so conspicuous a part,—he omits his name altogether, alluding only to Cardinal de la Rochefoucauld and to Father de Bérulle. Paul Phélypeaux de Pontchartrain, who had been employed since 1610 as secretary of state in the most important transactions, and who must have been well acquainted with Richelieu, has the following sentence, under the date of December 1616:—"About that time several rumours were spread abroad. . . . All the old ministers were to withdraw and to make way for two or three men whose sole merit and experience consisted in their abetting the designs of the marshal (Concini), and of his wife." Appreciations such as these are scarcely credible, except upon the supposition, that the writers who penned them were blinded either by party spirit or by jealousy.

The murder of Henri II. produced in Europe the effect of a thunderbolt. At the time when that event was permitted to happen, France had reached a state of prosperity which seemed doubly glorious after the horrors of the civil wars. Party animosity was gradually subsiding, and Catholics and Protestants were living together in the bonds of mutual forbearance. But, on the other hand, it must be acknowledged that the Edict of Nantes was grounded upon a wrong basis; the Protestants were considered, not as a church, but as a political community; whilst the edict was odious to the crown, it could hardly satisfy the Huguenots; and it was quite evident that, as soon as the stroke of death removed the monarch who had brought about the compact, the structure he had reared would speedily fall to the ground. The persons most anxious to play a part in the game of politics observed each other closely; and Richelieu's absence from his diocese became a matter of common occurrence. We have already alluded to the speech which he pronounced before the States-General. It is a tedious composition, written in the affected style of the age, and rather remarkable for the view the orator takes of administration and public business. He succeeded so thoroughly in flattering the ambition of Marie de Medici that she named him almoner to her household,—a post which, by-the-bye, he did not long retain, for a few days only after his appointment he sold it, *permissione superiorum*, to the Bishop of Langres. This was, we must acknowledge, a smart way of raising the wind, and of proving that our *pauvre noblesse* had their wits about them. With the results of the bargain Richelieu could keep up a better establishment than the one which Madame de Bourges enabled him to maintain; and he patiently awaited the course of events. In the meanwhile, he was very assiduous in his attentions to the powers that were,—the under-secretary of state Barbin, Concini, and Leonora Galigai. The storm of factions was agitating the court; amidst a crowd of petty intriguers and of men whose talents were not equal to their ambition, Concini felt the advantage of securing the cool judgment and the steady determination of Richelieu.

And truly France had been reduced to a pitiable condition. From the height of prosperity it had sunk into the most precarious state. Indolent, headstrong, and wavering, the queen-mother, Marie de Medici, retained for her advisers the men least capable of offering her a firm support in the season of adversity. Villeroy, Jeannin, Sillery, possessed ability no doubt, but only as instruments in the master's hands. They could not take the initiative: guide them, they would act judiciously; leave them to themselves, and they were lost. The nobles, who still entertained the hope of regaining their former power, had at first reckoned upon the support of the States-General. De-

Richelieu.

ceived in this expectation, they had withdrawn altogether from the court, and, strengthened by crowds of adventurers still anxious for plunder and thirsting for blood, they raised the standard of civil war. Such was the general desolation that the king had an army to attend his progress when he went to Bordeaux, on the occasion of his own marriage with Ann of Austria, and to settle the union between his sister Elizabeth and the son of Philip III. In the interim, Father Joseph had undertaken to negotiate with the confederate princes who were then assembled at Saint Maixent; in the name of the queen-mother, Marshal Brissac and the Duc de Villeroy began a series of conferences which the ambition of the rebels protracted as much as possible. At length, in the first days of May 1616, a peace was signed at Loudun, the terms of which implied so much weakness on the part of the government that, although the princes had obtained every pledge they required, it was evident they did not intend to be satisfied at so cheap a rate. "The princes," says Richelieu in his memoirs, "received from the king great gifts and rewards instead of the punishment they deserved; consequently they did not abandon to his Majesty the faith they had sold him so dear; or, if they did, it was not for long." In fact, the pretensions of the nobles rose as high as the throne: they talked of nothing less than shutting up the queen in a convent, and giving the crown to the Prince de Condé. The danger became imminent; France had an aftertaste of the League, or an anticipation of the Fronde. Things demanded an act of vigour and determination. Whilst Villeroy, Jeannin, and Sillery were hesitating, and forming a thousand resolutions which they did not know how to carry out, Richelieu, Barbin, and a few others prevailed upon the queen to sanction the arrest of the princes. She did so; but the plan was so clumsily managed that Condé alone was secured. It is not at all unlikely that the escape of the rest, which a little would have prevented, hastened the advent of Richelieu to the ministry. He had himself vainly attempted to negotiate with the Duc de Nevers; hostilities were already beginning in several places, and a civil war was opening of which no one could foresee the result. On November 30, 1616, Armand Jean du Plessis de Richelieu received his commission as secretary of state, with the right of precedence over all his colleagues. He had already for some time been employed upon missions of no slight moment, and he had even been appointed to proceed to Spain in the capacity of an ambassador. This was a post he would much like to have filled; but the fresh propositions which the queen made to him through Concini were still more to his taste, and he accordingly took his seat at the council-board as the leader of a few obscure but zealous men. It was a ministry inspired by the most vigorous patriotism. One obstacle, however, stood in the way of their usefulness,—they had met, so to speak, under the patronage of Marshal d'Ancre, and this circumstance rendered them unpopular.

Richelieu had not long assumed the presidency of the new cabinet when a strange revolution took place in the management of public affairs; it became evident that an experienced hand was at the helm, and that decision and firmness were to be the principles that should prevail. An impartial historian must conceal none of the difficulties which Richelieu had to surmount during this his first ministry. In the first place, although he was nominally the *premier*, yet his influence was not, by any means, unchecked. The under-secretary Barbin, for instance, had almost equal power; and it was clear that a man of less energy than Richelieu could not have kept the cabinet together for a month. The want of money proved a more serious obstacle; the exchequer was empty, and Richelieu had often to advance funds in order to defray the necessary expenses which occurred in the course of business.

The armies were badly equipped, badly paid, and either utterly dispirited, or in a complete state of insubordination. There were, besides, no sources of information that could be relied upon; not one single document or copy of a despatch existed at the seat of government; state-papers had never been deemed worth preservation; and the ministers were absolutely compelled to labour in the dark. But difficulties are the test of genius; and Richelieu overcame all those which stood in his way. He began by inviting, in the most energetic manner, the princes and the other rebel leaders to return to their duty; taking, at the same time, all the necessary means of compelling them to do so. Whilst fresh levies were being raised, and the army remodelled, ambassadors were despatched to England, to Germany, to the Netherlands, for the purpose of depriving the rebels of the assistance they expected from those foreign courts. Richelieu's request, however, did not determine the princes to lay down their arms. Consequently all things being now ready, a warrant of high treason was issued against them: three different armies took the field, and attacked them simultaneously in Champagne, Berry, and L'Ile de France. In the course of two months the princes, completely beaten, and driven from the posts which they occupied, were obliged to surrender unconditionally in the hands of the king.

When the *coup d'état* of April 24, 1617, in bringing De Luynes to power, revived once more, but for a short time only, the expectations of the nobility, Richelieu, by an exceptional piece of good luck, did not suffer for his devotedness to the queen-mother. Probably his position as an ecclesiastic secured to him some measure of respect; but this was not all. He had managed to gain by timely flattery the good-will of the new favourite, and the very alteration which took place in his fortunes only brought him more prominently forward. Banished as he was at Mirebeau, he contrived to interest both parties on his behalf. To the court he adduced his withdrawal from public business as a proof of the most absolute submission; to Marie de Medici he described it as the result of his unremitting zeal for her service, and as a new persecution on the part of her enemies. He thus contrived to weather the storm; and when the excitement produced by the catastrophe of Concini had subsided, he looked round to see what could be done. We cannot enter here into the particulars connected with the disgrace of the queen-mother. Suffice it to say, that Richelieu served her to the utmost of his power, and rendered her party so formidable that it proved a serious obstacle to the ambitious views of the new favourite. The Bishop of Luçon through his intrigues, his determination, and his unscrupulous conduct, had become a dangerous personage; he was first ordered to return to his priory at Coussay, then to his episcopal palace, and finally he was banished to Avignon. There he seemed determined upon leading a life of retirement; and a casual observer, anxious to know how he spent his time, would have found him busily employed in writing theological works. This, of course, was merely a feint, designed to throw his enemies off their guard. Attention to his books did not prevent Richelieu from observing the course of events; and when Marie de Medici contrived to escape from Blois, he joined her without any further delay. By his influence, the whole of the Anjou nobility—the Ducs de Longueville, de Bouillon, d'Epemon—rallied round the standard of the queen. The issue of this campaign is well known. A battle was fought at Pont de Cé, near Angers, where the rebel troops met with a signal defeat. A treaty, nevertheless, concluded shortly after, secured to Richelieu almost as many advantages as if he and not De Luynes had triumphed. The queen received permission to return to court, with the full enjoyment of all the privileges and honours due to her rank; and the king pledged himself to

Richelieu.

Richelieu. solicit a cardinal's hat for Richelieu, whose niece, Made-moiselle de Pont Courlay, married the Marquis de Combalet, nephew of De Luynes.

After the death of the favourite in 1621, Richelieu did not immediately return to power, but he saw that his day was coming; and when he resumed again the supreme authority, his reign lasted without interruption till the fatal moment which saw him struck down, as it were, at the foot of the scaffold to which he had sent Cinq-Mars and De Thou. Louis XIII. had always, from the very first, felt an unconquerable aversion for the Bishop of Luçon, and it was with the greatest difficulty that Marie de Médici obtained the prelate's appointment to the office of privy-councillor. The patent was signed nevertheless, and although no definite duties were assigned to him, it was not long before he cast all his colleagues into the shade. The first important result accomplished by the new ministry was the marriage of Henrietta, the beautiful daughter of the late king, with the Prince of Wales. This match had already been contemplated by La Vieuville under the Luynes administration. It was an object of the highest moment, as it strengthened France against the influence of Austria;—Austria, the Carthage of Richelieu—the enemy which he must destroy at any cost. The Pope, reduced at that time to act as a mere tool in the hands of the Spaniards, was occupying on their behalf the Valteline, and thus protecting their communication with the German empire through the passes of the Alps. Instead of gaining the neutrality of Switzerland by a series of negotiations which would have wasted time, Richelieu sends (1624) the Marquis de Cœuvres against the Papal troops, at the head of a Swiss army, and we witness the singular spectacle of a Roman Catholic prelate defeating the successor of St Peter with weapons both spiritual and temporal;—we say spiritual, because Richelieu had obtained from the theological board at the Sorbonne a sort of salvo for his conscience. Many have professed astonishment at the system of policy thus adopted by the French minister. It has seemed inconsistent for a cardinal to start in his ministerial career by making an alliance with two heretic nations, England and the Netherlands, and by waging war against the Pope; but we must not forget that the preservation of France, as a first-rate political power, was the great end the cardinal had in view: to this he sacrificed every other consideration, and, without any scruple respecting the means employed, pushed forward to the goal. He once said to La Vieuville,—“I never undertake anything without having well considered it; but when I have made up my mind I go on resolutely, overthrowing every obstacle, mowing down every impediment, and then I cover everything under my red gown.” To form an accurate idea of the system of policy pursued by Richelieu, it is only necessary to read Gabriel Naude's *Apologie pour les Coups d'Etat*. It is there explained in a few pages; and the despotic cardinal might, if he had thought fit, have produced from that volume, chapter and verse to justify the decapitation of Marillac and the death of Puylaurens.

The following year the energetic minister made a trial of his strength upon the Huguenots, but at that period France had no navy, and the Protestants of La Rochelle, supported by the English government, would have easily triumphed over the troops of Louis XIII. if an attack had been directed against that well-fortified town. The Bishop of Luçon determined to wait for a while; and, notwithstanding all the squibs and pasquils which were levelled at him, he treated with the Protestant party. This short delay was employed by him in necessary preparations, and in securing the means of effective action afterwards. He began by obtaining from Montmorency the cession of the admiralship; he suppressed the important post of constable, and all the other high offices connected with the crown; an

assembly of the notables, called together under Richelieu's own influence, voted considerable reductions in the salaries of the state dignitaries; the fortresses not situated on the frontiers were completely destroyed. These summary reforms evidently were chiefly designed to reduce the power of the nobles. For the achievement of this object, Richelieu spared neither time nor means. The mania of duelling during the seventeenth century had reached so extraordinary a pitch that, in the course of twenty years, 8000 letters of free pardon were signed by the king on behalf of *gentilshommes* who had either sent or received challenges. This barbarous custom was stopped at once. Comte de Chapelle and the Duc de Bouteville had fought a duel on the Place Royale in Paris; they were both beheaded. John Barclay, in the complimentary epistle to Louis XIII., which forms the Preface of his *Argenis*, says:—“*Nec acrior sceptri vindex fuisti, quam deinde salutis singulorum: impio more sublato, qui jubebat Gallos tuos, levibus inter se rixis commissis, passim jugulum suum dare, aut petere alienum.*” Richelieu has a claim to the full benefit of this congratulation; but we cannot believe that humanity was the chief motive which actuated him in his legislative enactments against duelling. He took advantage of what had become a fashionable mania to deal a blow at the nobility, who, he well knew, would quarrel and challenge one another in spite of the strictest edicts.

It was not to be expected that the cardinal would meet with no opposition in the course of his administration. A conspiracy, excited by the Duchess de Chevreuse and some other ladies (the fair sex have always been politicians in France), was organized in support of Gaston, Duke of Orleans. They wanted that indolent prince to wrest from Richelieu's iron hand a sceptre which no one else could safely wield; they had even gone so far as to arrange for him a matrimonial alliance with a foreign princess. The minister lost not a minute; but first he would try what gentle means might do; and he presented D'Ornano, Gaston's governor, with the *bâton* of a marshal of France. This act of kindness was mistaken for fear, and the conspirators became bolder than ever: then a perfect *razzia* took place; every legal form was preserved by prosecutors who were entirely and unreservedly devoted to Richelieu. Chalais, the ringleader, forfeited his life; Gaston in the meanwhile quietly got out of the way, purchased his own safety by the most abject apologies, and whilst the executioner was busy with his friends, he married Marie de Bourbon. D'Ornano died (poisoned 1626) within the walls of the Bastille.

The terrible manner in which Richelieu treated the turbulent remains of feudalism produced for a short time the desired effect; and, free from every other obstacle, he could now devote his whole attention to his favourite scheme, the destruction of the Protestants as a political party in France. The greatest mistake Henri IV. ever committed was the introduction in the Edict of Nantes of the clauses which preserved the status of the Huguenots as a political body. If we examine their condition at the beginning of the reign of Louis XIII., we see that they formed an *imperium in imperio*, and ambitious men knew well what use to make of this element of strife. Not only did they possess their places of safety, their assemblies, and their military leaders, but the Duc de Rohan entertained the hope of organizing in France a Calvinist republic on the model offered by the united provinces of Holland. The confusion of the temporal and the spiritual principles in matters of government has ever been productive of the greatest mischief; and it seems clear that, if the French Protestants had not yielded to the perfidious solicitations of Rohan and Lesdiguières,—if they had been satisfied with the enjoyment of religious liberty,—they would not, at all

Richelieu.

Richelieu. events, have supplied their adversaries with a pretext to begin the work of destruction which the ill-advised Louis XIV. carried out. An apology for commencing the war was not long wanting. The Duke of Buckingham, who had been foolish and impudent enough to boast openly of being the favoured lover of Anne of Austria, was informed that if he attempted to land in France, orders were issued for his immediate arrest. Highly irritated at this insult, he determined to be revenged; and, at the Duc de Rohan's request, he sailed with a few thousand men to support the Protestant Rochellese in another civil war. Such an expedition might have been crowned with success if the English government had persevered in countenancing the Huguenots; but Charles I. found sufficient work to occupy him at home without interfering with foreign politics; and, despite the most obstinate resistance, the citizens of La Rochelle, left to their own resources, were compelled (1628) to surrender. The war continued for a short time in the south of France; but at last the Duc de Rohan, one of the chief Protestant leaders, laid down his arms: his submission, which brought about that of the whole party, was purchased at the price of a hundred thousand crowns. The taking of La Rochelle may be considered as one of the most important events in the history of Richelieu; it was a fatal blow, not only to the political strength of the Huguenots, but also to the ambition of the nobles. One of those chieftains who accompanied the royal army had said, "We shall not be such fools as to take La Rochelle;" and in expressing himself thus, he gave utterance to the feelings of the whole party; for they had in the capital of French Protestantism a powerful auxiliary with whom they combined when they wanted to annoy the government by the threat of a civil war. La Rochelle surrendered, however; and the best proof that all this transaction was a political, not a religious one, is to be seen in the terms imposed by Richelieu. They were hard, no doubt; but they included neither the demolition of the Protestant churches, nor any infringement of the rights of public worship. We may say, in short, that under the administration of Richelieu, and of his successor Mazarin, the French Protestants were in a very favourable condition.

Richelieu's policy was developed with such energy that success crowned all his endeavours. As to the means employed he never felt very scrupulous; and his subordinates, with the exception of Father Joseph Chavigny, and a few others, were undoubtedly the greatest ruffians of their time. What an interesting sight for any one who could have been admitted for a moment within the walls of that council-chamber when the *cadet* of the House of Richelieu, now a cardinal, a peer of the realm, and the true king of France, was preparing from his arm-chair by the fireside the unity of the state and the glory of Louis XIV. To see the *éminence rouge* discussing with Father Joseph—the *éminence grise*—a plan of attack against John de Wert, or the execution of some impudent young nobleman, compromised in a new freak of the Duke of Orleans. Above the door of that chamber might have been written, by way of a motto, the aphorism which Gabriel Naudé himself proposes: *Salus populi suprema lex esto*. But let us notice that Robespierre, Danton, and the terrorists of '93, adopted no other motto. There is a point when red republicans and red-cassocked despots meet, both borrowing their statecraft from the atrocious recipes supplied by the *Apologie pour les Coups d'Etat*.

The Protestants being now subdued at home, Richelieu defeated the Catholics abroad: penetrating into Italy, he secured to the Duke de Nevers the possession of Mantua and of the Montferraté (1630), and destroyed for ever the Spanish influence in a peninsula where that nation had enjoyed an absolute sway since the days of Charles V.

The events of the war had brought the court to the south of France. Anne of Austria, Marie de Medici, all the ministers, were there, accompanied by a suite of noblemen, who, not frightened at the fate of D'Ornano and Chalais, were again watching a favourable opportunity to effect the disgrace of Richelieu. These reiterated attempts are surprising enough; but what astonishes us most is, that the conspirators should have allowed themselves to be led astray by Gaston, Duc d'Orleans,—a man who, in the hour of danger, would not hesitate to betray his bosom friend, if his own safety could be purchased at such a price. And yet they fell into the snare. The king was dangerously ill at Lyons; they thought the opportunity too good to be lost; and indeed managed so well, that when the court had returned to Paris, the cardinal's disgrace seemed inevitable. But he determined upon making a final effort; and, securing an interview of a quarter of an hour with Louis XIII. at Versailles, he frightened the monarch, and left the palace as powerful as ever. "This *coup d'état*," says M. Michelet (*Précis d'Histoire Moderne*), "was a perfect comedy: the cardinalists packed off in the morning, and it was the turn of the royalists to make their exit at sunset. Marshal Marillac had to pay for the rest; seized in the middle of his army, he was tried before a court composed of his private enemies, and in the cardinal's very palace at Ruel. Of course, under such circumstances, it was useless to expect mercy: the unfortunate warrior was beheaded. In the meanwhile, what had become of Gaston? Banished with his mother to Brussels, he felt at last some shame at not taking any personal part in the struggle against his enemy. Besides, the Duc de Montmorency, governor of Languedoc, had informed him that his presence in the disaffected provinces would undoubtedly excite a general rebellion. Assisted by the Duc de Lorraine, whose daughter he had married, Gaston raised an army of brigands, as they have justly been termed. Unfortunately, in order to reach Languedoc, it was necessary that this select band should cross France from north to south. Badly paid, badly fed, they took to pillage by way of compensation, and thus materially impaired the cause they were engaged to serve. A battle was fought (1632) at Castelnaudary; the king's troops were victorious, and Montmorency shared the fate of Marillac, whilst Gaston d'Orleans, "swore by the faith of a gentleman that he would ever be my lord the cardinal's best friend."

The destruction of the House of Austria was the great object of Richelieu's foreign diplomacy. The Thirty Years' War, now raging in all its fury, had increased an hundred-fold the emperor's power. Tilly, Wallenstein, Bernard of Saxe-Weimar—Schiller's heroes—were upholding, sword in hand, on many battle-fields, the destinies of the House of Austria. Richelieu's genius and activity checked the valour of the great imperialist generals, and opposed to them a warrior who, in his short career, abundantly proved that a clever system of tactics does not always ensure success. Gustavus Adolphus, the hero of Lutzen, fought at the same time the battles of Richelieu and those of the Protestant cause. After the death of the King of Sweden, the position of France became for awhile extremely difficult. The imperialists assumed the offensive; they had entered France by Burgundy and by Picardy. If Bernard of Saxe-Weimar had not gained the two battles of Rheinfeld and Brissach, it is impossible to conjecture what would have been the issue. In the year 1640, however, Richelieu adopted a more expeditious plan: he occupied the Spaniards at home by sending his support to the rebels of Catalonia and of Portugal; whilst, to retaliate, the government of Madrid espoused the Duke of Orleans' cause, and prepared the catastrophe which was to impart such a tragic feature to the last moments of the great cardinal. M.

Richelieu. Alfred de Vigny's admirable romance¹ has thrown over the insignificant figure of Cinq Mars a lustre which it certainly does not deserve; but the history of this mad-cap conspiracy, whilst it proves to us the cold and selfish character of Louis XIII., is an instructive lecture on the folly of those who trust to the smiles of kings and princes. Richelieu lived long enough to see the French standard hoisted on the walls of Perpignan, and when death at last summoned him away, in the year 1642, he left a successor, Giulio Mazarini, who was one day to complete with almost greater skill than his patron the work begun by Armand Jean du Plessis. In estimating the government of Cardinal Richelieu,² it must be admitted that the unity of France was worth purchasing at the expense of some measures of extraordinary severity; but it is equally true that Richelieu's motto was essentially the lust of domination, and whatever may have been the results of his administration, the only object he had set his heart upon was to reign without a rival. We should also observe, as the key-stone of the cardinal's home-policy, the establishment of that scheme of absolute monarchy which, ever since the days of Philippe-le-bel, has been gradually developing itself in France. By the ruin of the aristocracy and the insignificant position to which the Parliament were reduced, the balance of power was completely destroyed; and the nation, thus deprived of all legitimate means of making known its wishes, its grievances, and its sympathies, became alienated from rulers who, in the course of time, had not even the merit of energy and enlightened patriotism to justify the abuse of authority. Another important fact, which we have already had occasion to notice, is the reform introduced by Richelieu in the various branches of the service. Here he certainly manifested great discernment, and made for the good of the country sacrifices which cannot be thought lightly of. The following passage from the *Testament Politique* will be enough to illustrate this fact:—"Je supplie aussi très humblement sa Majesté de trouver bon que l'on lui mette entre les mains la somme de 1,500,000 livres, de laquelle je puis dire avec vérité m'être servi très utilement aux grandes affaires de sa Etat, en sorte que si je n'eusse eut cet argent à ma disposition, quelques affaires qui ont bien succédé eussent apparemment mal réussi, ce qui me donne sujet d'oser supplier sa Majesté de destiner cette somme que je lui laisse pour employer en diverses circonstances qui ne peuvent souffrir la longueur des formes de finances."

It will scarcely be credited that Cardinal de Richelieu, amidst all the requirements of politics, found time to cultivate literature. History informs us that Bonaparte was prouder of belonging to the Institute than of wearing the epaulettes of general-in-chief; from the same cause, Richelieu was jealous of Corneille's laurels. The success which the fine tragedy *Le Cid* obtained "frightened him as much," Fontenelle says, "as if the Spanish army had been under the walls of Paris." He composed two plays: *Mirame*, a tragi-comedy; and *La Grand Pastorale*, both very indifferent performances. Richelieu, nevertheless, was a true friend to intellectual culture: he founded the *Académie Française*, enlarged the Sorbonne and the royal printing-office, built the College du Plessis, and established the botanical garden known by the name of Jardin du Roi. The only writings of his which will

really be found valuable, are his *Testament Politique*,³ his *Memoirs*,⁴ and his correspondence. Allusion has already been made to his sermons and to his controversial treatises: a man who mistook *Terentianus Maurus* for the title of a play, and translated it "The Moor of Terence," could not be deeply read in classical antiquity. But such matters are trifles in the history of him who conquered the Valteline, the duchy of Savoy, and La Rochelle, and whose genius prepared the peace of Westphalia and the treaty of the Pyrenees. The Bishop of Luçon was not the only remarkable man in the Richelieu family. One of his descendants earned an unenviable reputation as the greatest *roué* of the last century; whilst another, who died thirty years ago, played a conspicuous and most honourable part in the history of the Restoration.

(G. M.)

RICHMOND, a market-town, parliamentary and municipal borough of England, in the North Riding of Yorkshire, occupies a beautiful position on a rocky height rising steeply from the Swale, here crossed by a stone bridge, 11 miles S.W. of Darlington, and 41 N.N.W. of York. The country around is richly wooded and very picturesque; and the romantic character of the place is enhanced by the old castle of Richmond, which stands to the south of the town, on the summit of cliffs which rise almost perpendicularly from the river. The Norman keep of the castle is still almost entire; the walls, 11 feet thick, rise to the height of nearly 100 feet. It was founded by Alan Rufus, Earl of Brittany, who came over with the Conqueror, and obtained from him the title of Earl of Richmond, along with the estates of the Saxon earl Edwin. The estates of Richmond became the crown property on the accession of that family in the person of Henry VII; but they were conferred by Charles II. in 1675 on his son Charles Lennox, in whose family it still remains. The town is irregularly laid out, and has one handsome broad street and a large market-place. The parish church is chiefly of Gothic architecture, but has some parts in the Norman style. A fine pinnacled tower rises from the west end. Trinity Chapel is a building of much antiquity, standing in the market-place. The other places of worship in the town belong to Wesleyans, Baptists, and Roman Catholics. There is a good town-hall, containing accommodation for the quarter-sessions, and a large assembly-room. The grammar-school of Richmond, incorporated by Queen Elizabeth, has six scholarships at Oxford, Cambridge, and Durham, and contained in 1854, 60 pupils. The town has also a corporation school, national and infant schools, a school supported by Roman Catholics, a scientific society, and a mechanics' institute. The manufactures of the place are not of much importance, consisting of a large paper-mill, iron and brass foundries, tanneries, rope-works, and corn-mills. The market for corn here is of some importance; and though the town is not at present in a very flourishing condition, it is the residence of many wealthy families, and stands in a region where there are many parks and seats of the nobility and gentry. The borough is governed by a mayor, 3 other aldermen, and 12 councillors, and returns 2 members to Parliament. Near the town there are some remains of an ancient monastery of the priory of St Martin, and of St Nicholas' Hospital. Pop. of the parliamentary borough (1851) 4969.

¹ *Cinq Mars, ou une conspiration sous Louis XIII.*

² The system adopted by Cardinal Richelieu has been very severely criticised by the following writers:—Edgar Quinet, "Philosophie de l'Histoire de France," *Revue des Deux Mondes*, 1855, tom. ix., p. 55; Ch. de Rémusat, "Richelieu et sa Correspondence," *Revue des Deux Mondes*, 1854, tom. v., p. 772; the same, "L'Ancien Régime et la Révolution," par M. Alexis de Tocqueville," *Revue des Deux Mondes*, 1856, tom. iv., p. 653; Alb. de Broglie, "Conclusions de l'Hist. de France," *Revue des Deux Mondes*, 1854, tom. v., p. 265; Alexis de Tocqueville, *L'Ancien Régime et la Révolution*. M. Caillet's volume, *De l'Administration en France sous le ministère du Cardinal de Richelieu* (Paris, 8vo, 1857), although rather too eulogistic, is very valuable, and full of most important details.

³ See on this book two valuable articles by M. Hyver de Beauvoir in the *Bulletin du Bouquiniste* for 1857, pp. 211, 257.

⁴ See a series of very interesting papers by M. Avenel in the *Journal des Savants* for March and August 1858 and February and May 1859. The Cardinal's *Memoirs* were published for the first time in M. Petitot's collection, 1823.

Richmond. RICHMOND, a town of England, in the county of Surrey, on the sides and top of a hill on the right bank of the Thames, 10 miles W.S.W. of St Paul's in London. On the summit of the hill stands the Star and Garter Hotel, and along the brow runs a terrace, both commanding a wide view over one of the richest and most beautiful tracts of country in England. In the lower part of the town the houses are small and old-fashioned; but there are many very handsome buildings in the more modern portions, and in the outskirts. The parish church is a plain brick edifice, with a low embattled tower. In it and the churchyard there are monuments to Thomson the poet, Kean the actor, Dr John Moore, and Gilbert Wakefield, who are buried here. The church of St John, built in 1831, is a good building in the pointed style. Independents, Baptists, Wesleyans, and Roman Catholics possess in the town places of worship; and there is a Wesleyan theological institution, occupying a very fine edifice in the Tudor style. There are in the town several schools, a literary and scientific institution, mechanics' institute, theatre, and savings-bank. Richmond Park, which lies to the south-east of the town, is inclosed by a brick wall, and has an area of 2253 acres. It is open to the public, the main entrance being at the west end of the terrace; and it is well stocked with deer. This is called the New Park; the Old Park, which extends along the river as far as Kew, being closed to the public. Richmond is much more remarkable as a place of pleasure and summer resort than as the seat of business or commerce. Being connected with the capital by railway, as well as by the river steamboats, it is resorted to by great numbers of visitors. It was for a long time the seat of royalty; and probably it is to Edward I. that this honour is owing. Henry V. rebuilt the palace in a magnificent style; but in the reign of Henry VII. it was burned down, and a new palace erected. This monarch changed the name of the place from *Sheen*, which it previously had, to Richmond, his own title before his accession. In that palace Henry VII. died in 1509, Charles V. was lodged in 1523, and Queen Elizabeth, who had been confined here by Mary, and afterwards made it a favourite residence, breathed her last in 1603. Under the Commonwealth, the palace was sold, and was demolished partly then and partly in the next century. Pop. (1851) 9065.

RICHMOND, a town of the United States of North America, capital of Virginia, on the left bank of the James River, 130 miles S. by W. of Washington, and about the same distance above the entrance of Chesapeake Bay. The general appearance of the town is very picturesque, somewhat resembling that of Edinburgh. It is divided into two parts by the valley through which Shockoe Creek flows into James River, and is built for the most part on the hills on either side. The streets are regular and the houses substantial, some of them very handsome. The most conspicuous edifice is the Capitol, a Grecian building after the model of the Maison Carrée at Nismes, standing on the top of a hill in the midst of well-planted grounds about 8 acres in extent. It contains a statue of Washington by Houdon, considered the best likeness of that great man. At one corner of the Capitol grounds stands the City Hall, a fine Doric building; and not far off is the residence of the governor. Of the churches in the town, about 30 in number, many are handsome buildings. They belong to Baptists, Episcopalians, Methodists, Presbyterians, Quakers, Roman Catholics, &c. The educational establishments of the town include Richmond College, under the direction of the Baptists, with 6 professors and 167 students; the Virginia Baptist Theological Seminary, with 3 professors and 67 students; and the medical department of Hampden Sydney College, with 7 professors and 90 students. The last of these occupies a fine building in the Egyptian style. There are here, too, a historical and philosophical society,

numerous schools, a court-house, penitentiary, alms-house, armoury, and orphan hospital. Richmond has great natural advantages for manufacturing industry, from the great amount of water-power supplied by the river. The articles most generally produced are flour, tobacco, cotton and woollen fabrics, paper, machinery, hardware, cannon, nails, &c. James River flows over a bed of granite, and has inexhaustible quarries on its banks, not far from the town; while within a short distance there are extensive deposits of coal. The trade of the town is rapidly increasing. It is the terminus of several railways, and of the James River Canal, which extends up the river for 200 miles. Vessels drawing 10 feet can come up to the town, and those drawing 15 to within 3 miles. Tobacco, wheat, and flour are the principal articles exported. The shipping of the district, June 30, 1852, amounted in all to 3078 tons registered, and 6100 enrolled and licensed. In the year ending on that day there entered from foreign ports 35 vessels, tonnage 7120; and cleared 71, tonnage 22,803. The aggregate value of the goods imported by railway and canal into the town is more than L.2,000,000. Richmond was founded in 1742, and became the capital of the state in 1779-80, but was then a small place, remarkable for nothing but the beauty of its scenery. Pop. (1800) 5737; (1820) 12,067; (1840) 20,153; (1850) 27,570, of which 17,643 were free, and 9927 slaves.

RICHTER, JEAN PAUL FRIEDRICH, was born 21st March 1763, at Wunsiedel, in the Fichtelgebirge, Bavaria, where his father, John Christopher Richter, was school-master and organist. Two years after, however, he was appointed parson at Joditz, and finally at Schwarzenbach. He appears in Jean Paul's fragment of autobiography as a clever, witty man, indulgent at home, prone to melancholy, and struggling all his life with debt. Jean Paul's education was conducted at home in an irregular fashion till his thirteenth year, when he was sent to the gymnasium at Hof. He had already acquired an amount of knowledge extraordinary for a boy, by dint of reading everything he could get to read in his father's library, and in the larger one of his friend Vogel, a neighbouring clergyman, and had commenced that system of making copious extracts from the books he read which he continued ever after. At Hof he lived with his mother's parents till the death of his father in 1780, which was shortly followed by the death of his grandfather and grandmother. To his mother, their favourite child, they left their property, which was considerable, in Hof, and she went there to reside. The will was contested by other expectants, and the expenses of the lawsuit and the debts of her deceased husband swallowed up the bequest, and reduced her to poverty. In these circumstances, Jean Paul was sent to the university of Leipzig, to study for the church, it being the ardent wish of his mother that he should follow his father's profession; and Leipzig was preferred to Erlangen on account of the supposed privileges of poor students at the former university. He entered 19th May 1781, and heard Platner lecture on logic and æsthetics, Morus on theology, Wieland on morals, and Hempel on the English language, to which he applied himself. It does not appear that he had at any time the serious intention of becoming a preacher, for his multifarious reading had already brought him under the influence of the scepticism of the time; but he seems to have been willing enough to fulfil his mother's desire, until his intercourse with the humorists of England—Addison, Swift, Pope, Young, Sterne—thoroughly awakened his powers into consciousness, and then it became his fixed resolve to live a literary life, and no other. Dire necessity pushed the resolve into premature action: want stared him in the face. The small sums his mother could afford to send him were insufficient for a bare subsistence; the letters in which he begs money or thanks her for it, consoling her, at

Richter.

Richter. the same time, for her disappointed hopes of his becoming a preacher by the golden prospects of fame and independence to be won by his writings, are of a most pathetic cheerfulness. For his first book, *Lob der Dummheit* ("The Praise of Stupidity"), suggested (too obviously) by the *Encomium* of Erasmus, he could not find a publisher. In no wise daunted, he threw it into the fire, and commenced a second *Grönlandische Prozessen* ("Greenland Lawsuits"), a series of satirical essays or sketches directed against German follies, and specially against the literary class. These first essays are certainly replete with wit, native and borrowed; and had he himself left nothing to compare them with, much more would be found in them. They were published by Voss at Berlin in 1783, and the author was made rich with 15 louis-d'ors. For a third volume he, after numerous solicitations, could find no publisher nor editor. In 1784 he returned to Hof, and lived with his mother in a very straitened way, cheerfully pursuing his studies, assisted by the books, and often by the money, of his friends Vogel and Otto. In Hof, while his eccentric freedom of dress (he wore his own hair and an open shirt-collar, and was otherwise wild in his attire) and of speech had made him enemies, he had a circle of warm friends, mostly of the fair sex, for whom he was already a great and wonderful man, before Weimar and Berlin had told them so. Two changes intervened before the dawn of his fame. In 1786 he became tutor in the family of a Von Oerthel at Topen, the father of a school and college friend between whom and Richter existed a warm affection. Here, however, he was rendered miserable by the disposition of his pupil and the arrogant narrowness of his employer; and on the death of his friend in 1789 he returned to Hof. It would appear that this occurrence produced a powerful impression on the mind of Richter: he himself dates from it as an epoch, and the recollection, varied and exalted by imagination, is repeated through all his works. Under the influence of this event he first struck the tone of profound melancholy and thoughtfulness, blending with higher hopes, which is the ground-tone of so much that is best in his works, in a little essay, *Was der Tod ist* ("What Death is"), which he sent to Herder, and which called forth an appreciating letter from Madame Herder, who received it. In 1798 he went to Schwarzenbach, on the invitation of his friends Cloter, Volkel, and Vogel, to teach their children, and resided alternately with each of them. Meantime he worked at a romance, *Die unsichtbare Loge* ("The Invisible Lodge"), which was published at Berlin in 1791, and which, though not very successful, brought him into notice among the cultivated. He himself described this romance as "a born ruin." But by the successive publication of *Hesperus* (1794), *Quintus Fixlein*, and the *Blumen, Frucht, and Dornen Stücke* ("Flower, Fruit, and Thorn Pieces"), 1796, he raised himself to a recognised place among the greatest writers of Germany, at a time when Herder and Wieland, Goethe and Schiller, were above the horizon at once. If we add *Levana* and the *Flegeljähre*, these are the works by which his name is best known out of Germany. A time of wandering followed,—residences in Weimar, where he especially attached himself to Herder, who reciprocated all his love; in Dresden, in Leipsic, and elsewhere; everywhere flattered and caressed, and finding access to the highest and most cultivated society. This severe trial of the successful author Richter met as a man of thoroughly-grounded self-knowledge and insight. Other trials he had with his fair admirers, who were numerous and ardent, and did not all understand his Platonic affection and doctrine of female friendship as he did, or were not so capable of its reserves. The fascination his writings exercised over female minds his presence and conversation completed: twice he had to say a resolute "No" to women who would marry him in spite

of himself; and in both cases the women—Madame von Kalb in Weimar, and Emilie von Berlespsh, a young and rich Swiss widow whom he met at Eger—were women of personal attractions, rank, and fortune. Richter wished, longed for a quiet retirement, where he might live his youth over again, not far from the very spot where its scenes first passed. He had no ambition of the worldly kind: quiet domestic joys, secured by his own exertions, were his ideal of happiness. In 1799 he formed an engagement with a young noble lady at the court of Hildburghausen. They were even betrothed; but the engagement was broken off, for reasons that did not transpire. Next year he met Caroline Meyer in Berlin; and on the 27th May 1801 he married her. The union was a happy one; their ideas of domestic happiness were the same; and she proved exactly the quiet, worshipping, careful *Hausfrau* whom Richter wanted and was seeking. In the meantime, he had published his *Palingenesien*, *Clavis Fichtiana*, some smaller works, and the first volume of *Titan* (1799). The *Clavis* had a success "of occasion" derived from the reputation of the object of the satire. Richter, who in respect of philosophy, was a follower of Jacobi, and to whom a personal Deity and a personal immortality were necessities of the heart, had no sympathy with the destructive logic of Fichte; and through his whole works may be found, now in exquisite ridicule (as in the man with the fixed idea that he has lost his *Ich*), now in deep and powerful protest (as in that truly appalling "Oration of Jesus Christ to the Universe," proclaiming that there is no God), evidences of his revolt from the new idealism. After a visit to Weimar, a year's stay in Meiningen, where he published the *Flegeljähre* ("Wild Oats," according to Carlyle), and a short residence in Coburg, he finally fixed himself (1804) at Bayreuth, where, near his dearest friend Otto, and in a house overlooking the Main, he spent the rest of his life as he had longed to do, diversifying it only by short annual tours to visit his scattered friends. During the heat of the war, when literature was at a discount, he felt the pressure of poverty, and solicited and received a pension of 1000 gulden (L.85) from the Prince-Bishop von Dalberg, paid, however, after 1811 by the Bavarian government. Of the works he published in these latter years, the most notable are the *Vorschule der Aesthetik* ("Introduction to Æsthetics"), 1813; *Levana*, a work on education, showing a remarkable insight into the nature of children, and full of the wisest practical suggestions; *Leben Fibels* ("The Life of Fibel"), 1812, a little work of strange humour; and *Der Comet oder Nicolaus Marggraf*, 1820–22. In 1811, already feeling the effects of incessant toil, he received a severe blow in the loss of his only son Max, at the age of nineteen. The youth had distinguished himself much at Munich, especially in languages, and went to Heidelberg, where he appears to have ruined his health by excessive study and needless privations. From this stroke he never completely recovered. His eyesight failing, he sent for his nephew, Otto Spazier, from Dresden, to assist him in revising his writings for a complete edition; and the work was only interrupted on the day of his death, 14th November 1825.

The affectionate adjective with which the Germans accompany the name of Jean Paul, *der Einzige* ("the Unique"), well denotes the difficulty of describing and the impossibility of classifying him. He is his own species, in a manner. That other common designation of him, as "a western oriental," is a real attempt at description; but it does not go beyond the mere first impression made on every reader of Jean Paul by the combination of contrasting qualities which he presents, by the copiousness of his imagery, by frequent obscurity, and by the boldness of his imaginative flights. The reason why so little that is definite can be said, beyond the expression of amazement and admiration,

Richter.

Richter. lies chiefly in the formlessness of his works,—a formlessness veiled and excused by the all-embracing atmosphere of pure ethereal humour in which they are as it were suspended, and which sweeps about them on all sides in copious mist-drapery. Taking for a moment a low and certainly unjust view of Jean Paul as a writer, it would seem as if, conscious of deficiency in the power of conceiving and representing the real, in constructing and narrating probable events, and in the dramatic synthesis of character, he employed his humour as artists unskilful in anatomy, but skilful in colour, employ drapery, to conceal those deficiencies, and allow him an opportunity of pouring forth, in digressive monologue, the precious stores of his wit and wisdom. Dropping the idea of purpose, such a supposition well enough describes the general character of Jean Paul's works. It is in fact the fault of the reader if he expects in any of them a coherent, probable story, probable characters well developed, dramatic dialogue and incident. But if he throw himself upon the contents alone, without fastidiousness, no author will more speedily repay studious and resolved perusal. A wealth of profound wisdom and keenest insight is contained in them, to the utterance of which a wonderful knowledge of nature and of science is compelled to minister, mirroring it in singular and typical forms. Further intimacy will acquit Jean Paul completely of all affectation, or use of humour for such purposes as above indicated, and will show it to be the compelled expression of a really powerful and Shaksperian soul, to which the vastness and the mystery of the universe, with the petty singularities of details, the noble and godlike attributes of humanity, with its infinite littlenesses and contradictions, were continually present together. Still, with the fullest appreciation of the rich compensation provided by the humour and the wisdom of Jean Paul, it is impossible not to note the deficiencies for which they compensate. In his great works *Hesperus* and *Titan*, the reader is painfully sensible that the story is absurd, that the characters are exaggerated and quite impossible, and that the ambition with which they are delineated ends in failure. Beside the story, and in the story, there is wisdom, and drollery, and poetry of the highest kind, enough to furnish forth with these things a library of fiction; but the story itself, and its men and women, are naught. Much better does he succeed in this way, when, without aspiring to produce heroes and heroines of the grand kind, who cannot act, and in whose mouths his finest sentiments are mere windy fustian, he simply relies upon self-delineation, and upon the recollections of the humble personages and the humble life in which he had been reared, and on which his observation, always fine and microscopic, had been exercised from boyhood. Nothing can be more perfect as comedy than the scenes of Siebenkäs, no character more true to life than Lenette; Walt and Vult in the *Flegeljähre*, Fixlein, Fibel, Schmelzle, are all in their way, and allowing for the necessary caricature, beings thoroughly human; and all are side-views of that Jean Paul whom he knew so well, and at whom he could laugh so heartily. But he is unsuccessful in supplying personages to complete his drama; and his story, after transacting itself for a short season on the solid earth, dissipates and ascends into the air as vapour, shapes itself into fantastic cloud-forms, and leaves the reader with elevated, perhaps, but also with disappointed look, gazing after it. Closely connected with this defect of structure, and allied to his dominating *humour*, are the serious defects of style in his works; and it is as much these faults as those of structure that render him so untranslatable, and consequently limit so much his influence and his fame. Beyond all the whims of mere humour, and all the requirements and value of the mere thought, his expression is far too frequently involved and overloaded. It is true, as Carlyle has remarked, that in the *Vorschule der Aesthetik*, which

may be considered his apology, there are excellent observations on this subject of style which show that he understood the subject as well as any French or German critic. Of subjecting himself to its laws, however, in practice, he has no idea; yet, if they are laws at all, they rise out of the nature of the thing. Of the judicious parsimony and restraint which is the first law of good writing Jean Paul has no notion. All the trifles and straws which he had gleaned out of a life's laborious reading of books, useful and useless, are whirled along in the current of his thought: cryptic and unintelligible allusions are huddled round this or that idea; the humour or aptness of many a comparison is lost, one side of it requiring for most readers, even well informed, elaborate explanation; we are astonished, we admire, but we neither laugh nor are much the wiser. It is absurd to gloss this copiousness and confusion of trifles, that no man cares to keep, with the name of intellectual wealth, for Richter would be none the poorer were it swept from his pages. His real wealth is not his learning, but his wisdom,—his knowledge of, and intense sympathy with, the human heart,—his fine sensibility and his elevated religion. As humorist, he is unquestionably to be placed in the highest rank. But he is something more. Mere humour, intellectually considered, is mere universal destructiveness. As wit, which is the compressed logic of analogy, when uncontrolled by truth, tends to juggling with analogical fallacy and mere paradox; so humour, which brings forth for sport's sake the innumerable contradictions, self-deceptions, illusions, and pretensions in the world, tends to utter scepticism and mere buffoonery, unless it has its work completed by the vision of faith which brings forward the eternal reality, and its hand checked by sympathy with real holiness and real suffering, and humble reverence for real greatness, nobleness, and elevation. Of the contradictions between free aspiration and necessity, none is more striking than that arising out of the demands of the moral nature of man and the urgencies of his passions; and these contradictions may be clashed against each other in sport. But it depends on the humorist on which side the laugh will be; and according as he is, will the laugh he raises be a degrading and deteriorating one, or an elevating and humanizing one. It is Jean Paul's highest merit, that a noble love of humanity, a keen sympathy with suffering, and a humble reverence for the truly great and holy, always subdued, controlled, and directed his wonderful powers of ridicule, and place him above the class of humorists, among the seers, the sages, and the comforters of humanity.

The complete works of Jean Paul were published after his death by his nephew Otto Spazier, to whom we are also indebted for a biographical commentary. A second edition of the works appeared at Berlin, 1840, in 33 volumes. The Paris edition, in 4 vols., 1837, is said to be a more faithful reprint of the original editions. A complete French translation was projected in 1834 by M. Philarète Chasles, but only four volumes, containing *Titan*, appeared. *Levana*, portions of the *Flegeljähre* and of the *Blumen, Frucht, und Dornen Stücke* have been translated into English; *Quintus Fixlein*, by Carlyle, in his "German Romances," vol. 3, 1827, with a characteristic notice prefixed, which remains still the best word spoken on Jean Paul; the *Campaner Thal*, by Miss Gower, in 1857; besides many fragments and short sketches in magazines. (W. H. C.)

RICKMAN, THOMAS, an eminent architect, was the son of a surgeon and apothecary, and was born at Maidenhead in 1776. The early part of his life was spent in trying a variety of employments. He was first a druggist's assistant in London. He was then one of the men in an extensive grocery establishment at Saffron-Walden. Not long afterwards, in 1801, he went to Lewes to undertake a part of his father's business. There too his disposition remained unsettled. In the course of two years he was in the service

Rickmansworth of a corn-factor in the metropolis. At length, in 1808, he brought his wandering career to a close by settling down in Liverpool as clerk to one of the principal insurance-brokers in that city. It was about this time Rickman began to devote himself to the study of Gothic architecture. Every leisure hour was sedulously employed in his favourite pursuit. He examined ancient buildings. He classified the different modes of the pointed style. His hand also practised itself in designing monuments and other small erections for his friends. So far, indeed, did he carry his studies that he obtained the first prize for a design for one of the government churches, and was thus induced to become at once a professional architect. Rickman removing soon afterwards to the more central town of Birmingham, took a high place in his new calling. There was scarcely a county in which his services were not employed. Among other edifices erected by him, there were St John's College, Cambridge; the church of Oulton, near Leeds; and the church of Hampton Lucy, near Stratford-on-Avon. At his death, in March 1841, he had perhaps designed more churches than any other architect. Rickman is the author of a popular treatise entitled *The Different Styles of Architecture in England*.

RICKMANSWORTH, or **RICKMERSWORTH**, a market-town of England, in the county of Hertford, on the Colne, 18 miles N.W. of London, and 23 S.W. of Hertford. It is a straggling place, and has a parish church recently rebuilt, but retaining the embattled tower of the older edifice. The Wesleyans and Baptists have also churches in the town. National and British schools afford means of education; and there are also Sunday-schools, almshouses, &c. Straw-plaiting and weaving of horse-hair fabrics are carried on; and in the vicinity there are flour, paper, cotton, and silk mills, mostly moved by water-power. Here too is a large brewery. Markets are held weekly, and fairs thrice a year. The Grand Junction Canal passes near the town. Pop. of the parish (1851) 4851.

RIDLEY, NICHOLAS, Bishop of London, and a martyr to the Reformation, was descended of an ancient family, and born in the beginning of the sixteenth century at Wilmontswick in Northumberland. From the grammar-school of Newcastle-upon-Tyne he was sent to Pembroke Hall in Cambridge in the year 1518, and was there supported by his uncle, Dr Robert Ridley, fellow of Queen's College. In 1522 he took his first degree in arts; two years after was elected fellow; and in 1525 he commenced master of arts. In 1527, having taken orders, he was sent by his uncle, for further improvement, to the Sorbonne at Paris; from thence he went to Louvain, and continued abroad till the year 1529. On his return to Cambridge he was chosen under-treasurer of the university; and in 1533 was elected senior proctor. He afterwards proceeded bachelor of divinity, and was chosen orator and a chaplain of the university. At this time he was much admired as a preacher and disputant. He lost his kind uncle in 1536; but was soon after patronized by Dr Cranmer, Archbishop of Canterbury, who made him his domestic chaplain, and presented him to the vicarage of Herne in East Kent, where, we are told, he preached the doctrine of the Reformation. In 1540, having commenced doctor of divinity, he was made king's chaplain; and in the same year was elected master of his college in Cambridge. Soon after, Ridley was collated to a prebend in the church of Canterbury; and it was not long before he was accused in the bishop's court, at the instigation of Bishop Gardiner, of preaching against the doctrine of the Six Articles. The matter being referred to Cranmer, Ridley was acquitted. In 1545 he renounced the doctrine of transubstantiation, and was made a prebendary of Westminster; in 1547 he was presented by the fellows of Pembroke Hall to the living of Soham, in the diocese of Norwich; and the same year was conse-

VOL. XIX.

crated bishop of Rochester. In 1550 he was translated to the see of London. During the same year he was one of the commissioners for examining Bishop Gardiner, and concurred in his deprivation. In 1552, returning from Cambridge, he, unfortunately for himself, paid a visit to the Princess, afterwards Queen Mary; to whom, prompted by his zeal for reformation, he expressed himself with too much freedom; for she was scarcely seated on the throne when Ridley was doomed a victim to her revenge. With Cranmer and Latimer he was burnt alive at Oxford on the 16th of October 1555. Among other works he wrote *A Treatise concerning Images in Churches*; *A brief Declaration of the Lord's Supper*; *Certain godly and comfortable Conferences between Bishop Ridley and Mr Hugh Latimer during their imprisonment*; *A Comparison between the comfortable Doctrine of the Gospel and the Traditions of the Popish Religion*. The Life of Bishop Ridley was written by his relation, Dr Gloucester Ridley, in 1763.

RIDOLFI, CARLO, an eminent artist and writer on art, was born at Vicenza in 1602. His study of painting was characterised by shrewd practical common-sense. No narrow view of the subject would content him. He threw aside the false style of the Venetian school of that day, and strove to make his pencil imitate nature. He also sought instruction in studying the literature of painting. Nor did his sagacity forsake him when he came to be the biographer of artists. His style presented a favourable contrast with that of most of his predecessors. All tedious moralisings and childish fables were discarded. The only incidents brought forward were real facts clothed in precise language. His criticisms on pictures, too, were for the most part exact and judicious. Ridolfi is said to have died in 1658. His biographical work was entitled *The Wonders of the Art, or Lives of the Illustrious Painters of Venice and of the State*, in 2 vols. 4to, Venice, 1648.

RIENZI, NICOLO GABRINI DE, the deliverer of Rome, was born in that city about 1310. Although placed by fate in a humble station, the young man was by nature a prince. His noble mind could find its nourishment nowhere else than in the records of the ancient Roman glory. He pored over the battle-scenes and great forensic struggles described in Livy. He pondered among the remains of the queenly city of the Cæsars. As he meditated, the heroic spirit of antiquity came upon him. His imagination kindled with a desire for fame and power. His tongue grew inspired with the language of patriotism and liberty. It became, in fact, the ambition of his life to be the restorer of Rome to her former grandeur and renown. This aspiration of Rienzi's was confirmed by the daily sight of the deplorable condition of his fellow-countrymen. The Papal See had long since been removed to Avignon, and had left the city in a state of wild misrule. The people, a low, ignorant rabble, followed their own animal impulses. The nobles especially lived lives of armed violence and license. Their attendants were swaggering mercenaries from Germany, or desperate cut-throats from the Campagna. Their mansion-houses were fortified dens for thieves and murderers. From these they issued at intervals to gratify their headlong passions. They fought with each other in the streets, or committed rapine and outrage upon the defenceless citizens.

Rienzi having arrived at his prime, set himself to excite the people to throw off the yoke of their oppressors. His plan was to employ such means as would strike the dull sensibilities of the mob, without awakening the vengeance of the nobles. He therefore disguised all his proceedings under an appearance of eccentricity. As he lingered among the ruins, apparently wrapt in study, he would suddenly exclaim, in tones of intense regret, "Where are the old Romans? where is all their grandeur? why did I not live in those good times?" When the idle populace, startled by his voice, thronged around him with looks of

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Rienzi.

Rienzi. curious wonder, he would tell them in words of eloquent enthusiasm about the deeds of their great ancestors. The stirring effect which these speeches produced among the mass of the people encouraged him to make his measures more direct. He exhibited in the streets and churches allegorical pictures of the state of the city, representing the nobles under the semblance of lions, wolves, and bears. He also assembled a meeting of the entire inhabitants at the church of St John Lateran, at which he showed from the ancient *Lex Regia* that the Romans had the right of making their own laws and of choosing their own rulers. At length his observant eye saw that it was time to bring the plot speedily to a crisis. About the beginning of May 1347 he met a hundred conspirators by midnight on the top of Mount Aventine, and exacted from them an oath of unqualified support. A few days afterwards he summoned the citizens to assemble on the evening of the 19th of the same month before the church of St Angelo. During all that night of suspense his form was seen taking part in thirty masses for the success of his enterprise. On the following morning he issued from the church with his head bare, with his body cased in armour, surrounded by the hundred accomplices, and preceded by banners which bore emblems of liberty, justice, and concord. As the procession wound along the streets, his kingly person, and pale and earnest countenance, called forth the acclamations of the attendant crowd. On reaching the Capitol, he mounted the rostrum, and, in a speech of resistless eloquence, announced to his fellow-citizens that he had come forward to be their deliverer. No sooner had he ended than he found that he had achieved the great desire of his life. The Romans with deafening applause declared him their ruler, sanctioned his laws for the establishment of the *good estate*, and placed their lives and their fortunes entirely in his hands.

Rienzi now began with success to inaugurate his rule. To identify himself with the cause of the people, he took the title of "Tribune." To conciliate the Pope, he assumed into partnership with himself the Bishop of Orvieto, the papal vicar. Thus countenanced by two of the great powers in the state, he addressed himself to the task of making regulations for restoring the healthy condition of the commonwealth. Courts were established for the redress of wrongs. Provision was made for the relief of the poor. A vessel was placed in each port to protect commerce. A standing force was also levied to guard the rights of the government. Nor did measures fail to be taken for the direct extermination of abuses. The nobles were compelled to dismantle their castles, disband their followers, and appear in the character of simple citizens. Every murderer and robber that infested the city was seized by the iron hand of justice. There was no respect of persons. Among others, the notorious freebooter Baron Martin Ursini was dragged from his bridal chamber in the morning, and before night he swung on a gibbet in the sight of the entire city.

The sudden rise and vigorous administration of Rienzi produced an effect almost unexampled in the history of the world. The terror of his name restored peace and prosperity in the commonwealth. There was no desperado or public pest so bold as to remain within several miles of the city. The very barons—the haughty Colonna and Ursini—trembled before the majesty of the low-born tribune. "Ye gods," says an eye-witness, "how they trembled!" His reputation as a righteous and powerful supporter of liberty even extended in a short time throughout and beyond Italy. The people knelt with reverence on the high-ways when they saw his ambassadors posting along with no other weapon than a white wand. The envious cities of Venice, Florence, Siena, and Perugia placed their lives and fortunes at his disposal. The haughty princes of foreign states sent messengers to seek alliance and friendship with

him. At length his renown reached a climax when Lewis of Hungary and Jane of Naples made him their umpire touching the murder of Andrew, the brother of the former, and the husband of the latter.

It is no wonder that Rienzi, after such unparalleled success, became ostentatious and arrogant. What head would not have turned giddy after rising so suddenly and to such a height? The dream of his early ambition, he thought, was about to be realized. The sovereigns of the earth were already appealing to Rome as an arbiter. She was on the eve of becoming, as of old, the acknowledged queen of all cities. It was now time that in the person of her tribune she should formally assume the attributes of empire. If she did not, the ignorant and the envious might be slow to recognise her supremacy. He therefore resolved to show to the world by several unmistakable deeds that he was the successor of the old Roman potentates. On the 1st of August, on the occasion of his going to the church of St John Lateran to be knighted, he got up a procession, adorned with every sort of pomp and pageantry, in imitation of the great shows of the ancient Cæsars. On the evening of the same day, in purifying himself for the ceremony, he bathed in the sacred porphyry vase which the Emperor Constantine had used. Nor did his presumption end there. When the multitude came next morning to the church to see him in his knightly insignia, he appeared, and, with a voice of imperial authority, summoned Pope Clement VI. and the Emperor Charles IV. to appear before his tribunal. Then drawing his sword, he pointed to the three quarters of the world, accompanying his action with the words, "This, and this, and this, is mine." This extravagant ambition of Rienzi's soon caused his downfall. The barons, provoked by his overbearing pride, fled from the city, levied forces, and wasted all the country round. He indeed defeated them; but the citizens became discontented at the bloodshed and scarcity of provisions. Taking advantage of this state of feeling, the Pope sent a legate to call him to account for his usurpation of the rights and territories of the church. His disdainful refusal to acknowledge such an arbiter only brought his difficulties to a crisis. He was immediately branded with the sentence of excommunication. The citizens, with superstitious dread, shrunk from his cause. Without opposition they allowed 150 of his enemies to enter the gates and take up a strong position in the quarter of the Colonna. In vain he called upon the people, with all the eloquence of desperation, to take arms in defence of the commonwealth. The listless looks with which they responded to his appeals told him that his power was at an end. He therefore resigned the tribuneship, and left the Capitol after a reign of seven months.

From this sudden and severe fall Rienzi rose up unsubdued and undespairing. His ambition was as sanguine and active as ever. He spent 1348 in wandering restlessly through Italy under the guise of a monk, and in seeking for aid to re-instate him in his former power. The next year's concealment among the peaceful hermits of the Apennines did not quiet his troubled desires. He ventured into Rome amid the throngs of the jubilee to look for hope among his former subjects. At length, when he found that his friends could not aid him, he adopted the daring resolution of trying to win the needed help from his most powerful enemies. Accordingly, in 1350 he appeared before the emperor at Prague, and, with the calmest self-confidence, declared himself to be "Nicolo Rienzi, the deliverer of Rome." It is true that his bold measure was apparently foiled; that the emperor sent him to the Pope; and the Pope cast him into prison at Avignon. But he remained hopefully in his cell for three years, quietly reading his Livy, and drawing from the historian many political lessons for his future use, when he should be restored to the government of Rome.

Rienzi's hope was destined to be fulfilled. Ever since

Rienzi.

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Rieti.

his abdication Rome had been plunging deeper and deeper into anarchy and misery. It soon became evident that none but he could restore order and prosperity. He was therefore taken from prison by Innocent VI., and sent back to govern his native state, with the title of "Senator." His entrance was a brilliant redress for his previous wrongs. The whole city had put on its holiday attire to welcome him. He rode along under triumphal arches, over flower-besprinkled roads, and through lanes of exulting citizens. His government was established in the Capitol amid the applauding sanction of the multitude, and the laws of the *good estate* were restored. But the elements of the Roman state were too worthless and conflicting to be formed into a durable republic, even by the master-hand of Rienzi. He soon found himself in the midst of ever-thickening embarrassments. The rebellious barons fortified themselves at Palestrina, and involved him in an expensive war. His exchequer was drained, without having any regular means of being replenished. The jealous papal legate Albornoz refused him supplies. The selfish and ungrateful populace were least of all willing to give him any aid. No sooner did he begin to tax them than they began to murmur. In this state of feeling they allowed themselves to be hurried by the emissaries of the barons into open rebellion against him. On the morning of the 8th October 1354, four months after his restoration, an excited mob invested the Capitol, yelling out, "Down with the traitor who laid on the imposts!" It immediately became evident that nothing but his blood would glut their vengeance. In vain he appeared at the balcony and tried to address them. They drove him back with missiles, and commenced to destroy the doors. In vain he sought to escape through the throng in disguise. They detected him, and set him up to view on the platform of the palace. There, indeed, the sad sight of the fallen and deserted hero kept them awe-struck and silent for an hour; but no sooner did one of their ringleaders run him through the body, than they rushed forward in a mass to disfigure and insult his corpse with every display of malice.

The Life of Rienzi has been written in Italian by Forti-ficca, in 4to, 1624; and in French by Ducerceau, in 12mo, Paris, 1722. An English translation of the latter work appeared in London in 1836. The subject has also been treated by Muratori and other Italian historians, and by Gibbon. Bulwer, in the Appendix to his splendid prose epic of *Rienzi*, has given several very plausible reasons for taking a higher view of his hero's character than the historical writers have done.

RIESENGBIRGE, or GIANT MOUNTAINS, a mountain chain of Germany, forming a part of the Sudetes, in the widest sense of that term, but a continuation of the chain strictly and properly so called. They extend from S.E. to N.W., separating Bohemia from Silesia, and rise above the Henschauer-Gebirge, which join it on the S.E., on the confines of Glatz, and the Iser-Gebirge, which form its continuation to the N.W. They are for the most part composed of granite and schist; and the scenery is very wild and romantic. The lower slopes are covered with forests of oak and beech; farther up, their place is supplied by pines; which in turn give place to shrubs and lichens. The principal summits are the following, arranged in their order from S.E. to N.W. :—

	Feet.		Feet.
Schneekoppe	4983	Grosse Rad.....	4657
Kleine Sturmhaube	4400	Reifträger.....	4280
Grosse Sturmhaube.....	4540	Tafelfichte.....	3379

RIESI, a village of Sicily, at the foot of a mountain of the same name, in the province and 15 miles S. of Caltanissetta. There are sulphur mines in the vicinity. Pop. 6000.

RIETI (anc. *Reate*), a town of the Papal States, capi-

tal of a legation of the same name, stands on the slope and at the foot of a hill on the Velino, 42 miles N.N.E. of Rome. It is an ancient place, and contains a Gothic cathedral bearing the date 1456, but since then repeatedly altered. The town-hall (a large edifice in a lofty position), the episcopal palace, churches, convents, and college, are among the public buildings of the town, which is not so much remarkable for any architectural splendour as for the beauty of its situation, and many interesting remains of antiquity in the vicinity. Manufactures of woollen cloth, silk, leather, and glass are carried on here. Pop. 12,600.

The legation of Rieti is bounded on the N. by that of Spoleto, W. by that of Viterbo, S. by the Comarca di Roma, and E. by the Neapolitan province of Abruzzo Ultra; area, 528 square miles. It occupies the western portion of the ancient country of the Sabines, and is traversed by the mountain ridges which separate the valley of the Tiber from that of the Velino, the former of which rivers partly forms its S.W., and the latter its N.E. boundary. The mountain ranges are Monte Gennaræ, the ancient *Lucretilis*, in the S.; and Mount Canterius in the N. Besides the Velino, this country is watered by its affluent the Turano, the ancient *Telonium*, flowing northwards from Naples. The plain of Rieti is exceedingly beautiful and fruitful, covered with woods and vineyards, fields of corn, pulse, hemp, flax, &c., and producing in abundance all kinds of vegetables. Pop. (1853) 73,683.

RIFLE. See GUNMAKING.

RIGA (Livonian, *Rihga*; Esthonian, *Ria Linn*), a fortified and seaport town of Russia, next to St Petersburg the most important place in the empire for maritime commerce, capital of the government of Livonia, stands near the mouth of the Düna, here 3000 feet broad, at the head of the Gulf of Riga or Livonia, about 180 miles N.E. of Königsberg, and 312 S.W. of St Petersburg. It is walled, entered by seven gates, and defended by a citadel. The town proper, inclosed within the walls, is quite German in character, with narrow, crooked streets, and houses with pointed roofs; but the suburbs, which cover a wide extent of ground on both sides of the river, have all a Russian appearance, having broad, straight streets, lined with wooden houses. Of the two imperial palaces, one, the oldest building in the place, was till 1561 the residence of the master of the Brethren of the Sword (*Schwertbrüder*), an order of knighthood which preceded the Teutonic in these countries. The beautiful hall where the estates of Livonia used to meet, the bomb-proof custom-house, council-hall, guild-hall, three arsenals, and theatre are among the principal buildings. The cathedral contains the tombs of the early bishops of Riga, and the church of St Peter has a fine dome and a tower 440 feet high, the loftiest in Russia, commanding a fine view of the Baltic, the broad, mast-covered Düna, the dark pine forests of Curland on the left, and the endless expanse of sand which forms the eastern shore of the Gulf of Riga. There are another Greek church, 3 Lutheran, 1 Reformed, and 1 Roman Catholic. The public library contains a chair of Charles XII., several letters of Luther, a cannon-ball said to have been fired by Peter the Great, and other curiosities. In front of the palace is a large square containing a granite column with a bronze figure of Victory, to commemorate the repulse of a French force from the town in 1812. There are spacious quays on both sides of the river, which is crossed by a bridge of boats; and an extensive harbour is formed by the 5 miles of its course between the town and the Gulf of Riga. The town has a grammar school, school of navigation, several elementary and other schools, literary and scientific associations, and benevolent institutions. The manufactures of Riga are numerous and important, including tobacco, sugar, leather, paper, starch, wool, cotton, playing-cards, &c. Gypsum is quarried in the vicinity.

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The trade by sea is very great. Corn, linseed, hemp, flax, and timber are the principal articles of export. The number of vessels that entered in 1851 was 1706, and those that cleared 1720. The total value of the imports in 1851 was L.807,928, and in 1852 L.726,576; that of the exports in the former year L.2,271,395, and in the latter L.2,327,926. Riga was founded about the year 1200 by Adalbert, Bishop of Livonia, who was the founder of the order of Brethren of the Sword. This order obtained possession of Esthonia and Livonia, and were afterwards united with the Teutonic Knights. The city, which was mostly inhabited by Germans from Lubeck and Bremen, rapidly rose in wealth and influence; and in the thirteenth century became a member of the Hanseatic League. Riga was taken in 1621 by Gustavus Adolphus, and in 1710, after a vigorous resistance, by Peter the Great. On the latter occasion more than half of the town was destroyed; and in 1812 the suburbs and part of the town were burnt. It has suffered at several other times from floods and conflagrations. Pop. 70,463.

RIGAUD, HYACINTHE, sometimes called by his countrymen "the French Vandyck," was born at Perpignan in 1659, and studied painting at Montpellier, and afterwards at Paris. Although he gained the academy's first prize, which furnished him with the means of studying in Italy, he resolved to stay at home and practice portrait-painting. His bold, rich, and somewhat extravagant representations soon struck the attention of the public. In course of time he found a brilliant circle of patrons. Louis XIV. gave him a commission for a portrait. The princes of the blood, and the chief courtiers followed the example. Many illustrious personages in foreign lands also became his sitters. Nor did his fellow-artists fail to recognise his merit. He was successively professor, rector, and director of the academy. Rigaud died in 1742, leaving behind him many pictures, which are now scattered throughout the collections of Europe.

RIGGING, a general name given to all the ropes employed in a ship. Thus, those used to sustain the masts remain in a fixed position, and are called *standing rigging*; such are the shrouds, stays, and backstays. Those, again, which are employed to adjust the sails receive the general term of *running rigging*. Such are the braces, sheets, haliards, clue-lines, and brails.

RIGHT is a title conferred,—(1.) together with *Reverend*, upon all bishops; (2.) together with *Honourable*, upon earls, viscounts, and barons; (3.) by courtesy, together with *Honourable*, upon the sons of dukes, marquises, and the eldest sons of earls; (4.) together with *Honourable*, upon the speaker of the House of Commons, but upon no other commoner excepting those who are members of her Majesty's most honourable privy Council, and the three lords mayors of London, York, and Dublin, and the lord provost of Edinburgh, during their office.

RIGHT, *Petition of*, a parliamentary declaration of the liberties of the people assented to by King Charles I. (3 Car. I., c. 1). It was known as "the Petition" from being drawn up in that form, and was headed "The Petition exhibited to his Majesty by the Lords Spiritual and Temporal, and Commons, concerning divers RIGHTS and LIBERTIES of the subjects, with his Majesty's answer thereto." After reciting certain great rights and recent infringements of them, it prays that all such illegal acts be annulled, and that the popular rights and liberties, according to the laws and statutes of the realm, should be in future strictly observed. After some delay and evasion, the king replied in full Parliament, "Soit droit fait come est désiré."

RIGHTS, in the common acceptance of the word, are of various kinds; they are *natural* or *adventitious*, *alienable* or *inalienable*, *perfect* or *imperfect*, *particular* or *general*.

Natural rights are those which a man has to his life,

limbs, and liberty; to the produce of his personal labour; to the use, in common with others, of air, light, and water. That every man has a natural right or just claim to these things, is evident from their being absolutely necessary to enable him to answer that purpose for which he was made a living and a rational being.

Adventitious rights are those which a king has over his subjects, a general over his soldiers, a husband to the person and affections of his wife, and which every man has to the greater part of his property. The existence of civil society evidently contributes in a great degree to promote the sum of human happiness; and therefore whatever is necessary for the support of civil society in general, or for the conduct of particular societies already established, must be agreeable to the will of God; but the allegiance of subjects to their sovereign, the obedience of soldiers to their leader, the protection of private property, and the fulfilling of contracts, are all absolutely necessary to the support of society; and hence the rights of kings, generals, husbands, and wives, &c., though adventitious, and immediately derived from human appointments, are not less sacred than natural rights, since they may all be ultimately traced to the same source.

Rights, besides being natural or adventitious, are likewise *alienable* or *inalienable*. Every man, when he becomes the member of a civil community, alienates a part of his natural rights. In a state of nature, no man has a superior on earth, and each has a right to defend his life, liberty, and property, by all the means which nature has put in his power. In civil society, however, these rights are all transferred to the laws and the magistrate, except in cases of such extreme urgency as leave no time for legal interposition. This single consideration is sufficient to show that the right to civil liberty is alienable; though, in the vehemence of men's zeal for it, and in the language of some political remonstrances, it has often been pronounced to be an inalienable right. "The true reason," says Paley, "why mankind hold in detestation the memory of those who have sold their liberty to a tyrant is, that, together with their own, they sold commonly or endangered the liberty of others; of which they had certainly no right to dispose." The rights of a prince over his people, and of a husband over his wife, are generally and naturally inalienable.

Another division of rights is into those which are *perfect* and those which are *imperfect*. Perfect rights are such as may be precisely ascertained and asserted by force, or in civil society by the course of law. To imperfect rights neither force nor law is applicable. A man's right to his life, person, and property, are all perfect; for if any of those be attacked, he may repel the attack by instant violence, punish the aggressor by the course of law, or compel the author of the injury to make restitution or satisfaction. A woman's right to her honour is likewise perfect; for if she cannot otherwise escape, she may kill the ravisher. Every poor man has undoubted right to relief from the rich; but his right is imperfect, for if the relief be not voluntarily given, he cannot compel it either by law or by violence. Here a question naturally offers itself: "How comes a person to have a right to a thing, and yet have no right to use the means necessary to obtain it?" The answer is, that in such cases the object or the circumstances of the right are so indeterminate that the permission of force, even where the right is real and certain, would lead to force in other cases where there exists no right at all. Thus, though the poor man has a right to relief, who shall ascertain the mode, season, and extent of it, or the person by whom it shall be administered? These things must be ascertained before the right to relief can be enforced by law; but to allow them to be ascertained by the poor themselves would be to expose property to endless claims. In like manner, the comparative qualifications of the can-

Rights.

didate must be ascertained before he can enforce his right; but to allow him to ascertain his qualifications himself, would be to make him judge in his own cause between himself and his neighbour. Where the right is imperfect on one side, the corresponding obligation on the other must be imperfect likewise. The violation of it, however, is often not less criminal in a moral and religious view than of a perfect obligation. It is well observed by Paley that greater guilt is incurred by disappointing a worthy candidate of a place upon which perhaps his livelihood depends, and in which he could eminently serve the public, than by filching a book out of a library, or picking a pocket of a handkerchief.

Rights are *particular* or *general*. Particular rights are such as belong to certain individuals or orders of men, and not to others. The rights of kings, of masters, of husbands, of wives, and in short all the rights which originate in society, are particular. General rights are those which belong to the species collectively. Such are our rights to the vegetable produce of the earth and to the flesh of animals for food. If the vegetable produce of the earth be included under the general rights of mankind, it is plain that he is guilty of wrong who leaves any portion of land waste merely for his own amusement; he is lessening the common stock of provision which Providence intended to distribute among the species. On this principle it would not be easy to vindicate certain regulations respecting game, as well as some other monopolies which are protected by the municipal laws of most countries. Dr Paley, by just reasoning, has established this conclusion, "that nothing ought to be made exclusive property which can be conveniently enjoyed in common." An equal division of land, however, the dream of some visionary reformers, would be injurious to the general rights of mankind, as it may be demonstrated that it would lessen the common stock of provisions, by laying every man under the necessity of being his own weaver, tailor, shoemaker, smith, and carpenter, as well as ploughman, miller, and baker. Among the general rights of mankind is the right of *necessity*, by which a man may use or destroy his neighbour's property when it is absolutely necessary for his own preservation. It is on this principle that goods are thrown overboard to save the ship, and houses pulled down to stop the progress of a fire. In such cases, however, there must be restitution when it is in our power.

RIGHTS, *Bill of*, a declaration delivered by the Lords and Commons to the Prince and Princess of Orange, 13th February 1688; and afterwards enacted in Parliament when they became king and queen. It sets forth that King James did, by the assistance of divers evil counsellors, endeavour to subvert the laws and liberties of this kingdom, by exercising a power of dispensing with and suspending of laws; by levying money for the use of the crown by pretence of prerogative without consent of Parliament; by prosecuting those who petitioned the king, and discouraging petitions; by raising and keeping a standing army in time of peace; by violating the freedom of election of members to serve in Parliament; by violent prosecutions in the Court of King's Bench; and causing partial and corrupt jurors to be returned on trials, excessive bail to be taken, excessive fines to be imposed, and cruel punishments to be inflicted; all which were declared to be illegal. And the declaration concludes in these remarkable words: "And they do claim, demand, and insist upon, all and singular the premises, as their undoubted rights and liberties." And the act of Parliament itself (1 Will. and Mary, stat ii., cap. 23) recognises "all and singular the rights and liberties asserted and claimed in the said declaration to be the true, ancient, indubitable rights of the people of this kingdom."

RIMINI (anc. *Ariminum*), a town of the Papal States, legation of Forlì, near the mouth of the Marecchia in the

Adriatic, 24 miles E.S.E. of Forlì. It is entered from the N. by the bridge of Augustus over the Marecchia, and from the S. through the triumphal arch of the same emperor, both of white marble, in the best style of architecture. These form the only undoubted remains of the ancient grandeur of the place; for the pedestal in the market-place, said to have been used as a pulpit by Cæsar after he had crossed the Rubicon, is probably not genuine. The cathedral church of St Francesco, built in the fourteenth century, and re-modelled in the middle of the following one by Sigismund Pandolfo Malatesta, is the chief edifice of the town, an interesting example of the transition from the Gothic to the classic style. The Gothic windows on the side of the building are concealed by seven arches, under which are as many tombs of illustrious friends of the architect. The interior retains little of its original pointed architecture; it is richly adorned with sculpture, and contains many interesting monuments. The other churches and the palaces contain many fine paintings. There is a fortress, and a public library of 30,000 volumes. The house of Francesco da Rimini associates this town with one of the most beautiful parts of Dante's poetry. Silk fabrics, glass, and earthenware are manufactured; and the trade was once of much importance, but the ancient harbour is now choked up with sand, and there is but little traffic in corn, fish, salt, silk, &c. Ariminum was originally an Umbrian city, but fell into the hands of the Gauls, from whom it was wrested, and a colony established, by the Romans in 268 B.C. It was important as a military post and seaport; and at a later period was connected with Rome and Placentia by the Flaminian and Æmilian roads. In most of the subsequent wars in Italy it played a conspicuous part, commanding Cisalpine Gaul and the E. coast of Italy. After the fall of the Western Empire, still a flourishing city, it formed part of the Pentapolis, under the exarchs of Ravenna, until the Lombard invasion. It subsequently came under the German emperors; and in 1200 Malatesta was made viceroy, and his descendants for some time enjoyed that dignity. The town subsequently passed into the hands of Venice, and finally into those of the Pope. Pop. 13,000.

RINCON, ANTONIO, an early Spanish painter, was born at Guadalajara in 1446. His career was attended with complete success. Eschewing the stiff Gothic style of his age and country, he soon rose to the first place in his profession. Ferdinand and Isabella gave him the order of Santiago, and made him their painter in ordinary. Till his death in 1500, he continued to be employed on public pictures, which have all since perished.

RINGWOOD, a market-town of England, Hampshire, in a flat country, on the left bank of the Avon, which spreads out here into a broad sheet of water, with many islands, on the skirts of the New Forest, 20 miles W.S.W. of Southampton, and 92 S.W. by W. of London. It is an old but generally well-built town, containing a parish church, part of which dates as far back as 1230; other churches belonging to Wesleyans, Independents, and Unitarians; a grammar school, and national schools. Woollen cloth, hosiery, and beer are made here; markets for corn are held weekly, and fairs for horses and cattle twice a year. The town was in existence as early as the times of the Romans, and was a place of some importance under the Anglo-Saxons. Pop. of the parish (1851) 3928.

RINGWORM is a disease of the skin, which appears in small circular patches, or rings of vesicles round the circumference of a circle of apparently healthy skin. These vesicles are small, and contain a transparent fluid, which is discharged in three or four days, when little dark scabs form over them. Sometimes there is a succession of the circles on the upper parts of the body, as the face and neck, and the arms and shoulders. The more formidable and

Rio de
Janeiro.

infectious species of ringworm appears in distinct patches of an irregularly circular figure, on the scalp, head, and neck. It generally occurs in children of three or four years old and upwards, and often continues for several years. While the patches are in an inflamed and irritable condition, we must be content with regular washing or sponging with warm water, or some emollient fomentation. The application of a solution of one drachm of nitrate of silver in half an ounce of diluted nitric acid has been well recommended. The constitutional treatment is of consequence. A nutritious diet must be prescribed, containing a due admixture of animal food; the clothing must be warm; regular exercise must be enjoined; and a course of tonic medicines, such as iron or quinine, must be ordered.

RIO DE JANEIRO, an important province of Brazil, is bounded on the N. by Espiritu Santo, from which it is separated by the River Capabuan, and by Minas Geraes, from which it is divided by the rivers Preto and Parahiba, and in part by the Serra da Mantiqueira; on the W. it borders on San Paulo; and the Atlantic Ocean washes it on the S. and E. It lies between S. Lat. 21. 23. and 32. 20., W. Long. 40. 53. and 44. 40. Its area is estimated at 18,226 square miles. This province is distinguished for its romantic beauty and great fertility, notwithstanding its being very mountainous. From S.W. to N.E. run the Serra dos Orgaos, or Organ Mountains, and this chain divides it into two nearly equal portions; the northern half sloping gradually to the Parahiba, and the southern to the sea-coast. The Organ Mountains derive their appellation from the appearance of the pyramidal heads of granite which bristle up along the horizon, and bear a fanciful resemblance to organ-pipes in a vast cathedral. The whole province is well watered by a number of streams, the most considerable being the Parahiba. This river originates in a small lake in the southern part of the Serra da Bocania, a continuation of the Organ Mountains, in the province of San Paulo; and after a long and winding course it enters that of Rio de Janeiro, and falls into the Atlantic in its N.E. part. Many streams discharge themselves into the bay of Rio towards its upper end, several of them being navigable to some distance. The country is also watered by the affluents of the Parahiba, and by many rivers which flow into the Atlantic. There are many lakes and lagoons, especially in the N.E., where the coast is low and monotonous. Towards the S., and especially near the capital, the scenery is of a very different and more picturesque character.

The principal bays by which the coast is indented are the bay of Rio de Janeiro, and Angra dos Reys, or King's Bay. The bay of Rio is stated to be no less than 32 miles in circumference, and on its shores are numerous smaller inlets, which may be termed sub-bays. All travellers agree in praising the surpassing grandeur and beauty of this majestic inlet of the sea. The capacious basin is embosomed among elevated mountains, which have conical summits, and, being well wooded, have a romantic and picturesque beauty. Some of these advance a considerable distance into the bay, whilst others retire as far inland, leaving between them deep recesses and glens. The entrance of the bay is narrow, being only about a mile in breadth; and its granite barriers are so bold, causing it to resemble a gap or chasm in the mountain ridge, that doubtless it was often passed by early navigators without their apprehending the existence of such an immense salt-water lake within. Being completely land-locked, and protected from gales on every side, it is perfectly secure, even for boats, at all seasons of the year; from which circumstance, as well as from many other advantages which it possesses, it has been pronounced the finest harbour in the world. It is so well defended by strong forts that it seems completely closed against a hostile force. The bay

is studded with about a hundred islands, on many of which are forts. That of Ilha dos Cobras, or Snake Island, is of great strength, and constitutes one of the most commanding points for the defence of the city. In short, the Brazilians and early subjugators of the country have carefully availed themselves of every advantage presented by nature for rendering their capital unassailable by a maritime force. On either side the shores of the bay, lined at the water's edge with cottages and hamlets of fishermen, sweep widely round; while behind, hills in the richest state of cultivation, studded with farm-houses and villas, and crowned with churches and monasteries, all of purest white, rise abruptly on every side, till, a few miles inland, they terminate in the bold, beautiful, and picturesque ranges of the Organ Mountains.

With the exception of the capital, there are few places in the province of Rio which require particular notice, Canto Gallo is the capital of a district of amazing fertility, and carries on considerable trade with Rio in the productions of the soil. Porto d'Estrella and Mage are the names of other towns which have much traffic with the capital. The productions of this province comprise almost everything for which Brazil is celebrated; diamonds and precious stones, sugar, coffee, cotton, and, in short, all fruits peculiar to the tropics, are here produced in the richest abundance, and of the most excellent quality. The forests yield great quantities of timber, used for various purposes; gums, balsams, and medicinal herbs are not wanting. Gardening is much attended to; and the extension of cultivation is gradually clearing the land of the wild beasts that still haunt the forests. Cattle and horses are bred in great numbers. The province is divided into eight comarcas. Its provincial assembly of 36 members meets at Niterohi, opposite Rio de Janeiro. It is represented in the legislature of Brazil by 6 senators and 12 deputies. Pop. (1856) 1,200,000.

RIO DE JANEIRO, formerly *St Sebastian*, the capital of the above province and of the Brazilian empire, is situated on the south-western side of the bay or harbour just described, about 4 miles from its entrance; S. Lat. 23. 54., W. Long. 43. 9. It occupies the N.E. part of a tongue of land of an irregularly quadrangular shape, and extending on an inclined plane a short distance into the bay. The site selected for their town by the early settlers is considered the best that could have been chosen, out of many excellent ones that everywhere present themselves. Its most easterly point is the Punta do Calabouco; the most northerly is the Armazem do Sal, opposite to which is the small island of Ilha dos Cobras. The most ancient and important part of the city is built between these two points, lying from N.W. to S.E.; and a beautiful quay, constructed of solid blocks of chiselled granite, stretches along the shore. The houses of Rio are neatly and substantially built, generally of granite, and two storeys high, with little wooden balconies in front. Their lower storeys are commonly occupied by shops and warehouses, and the upper ones by the family apartments. The whole town is disposed in squares, the streets crossing each other at right angles, and, although narrow, they are well paved, and lined at each side by flagged trottoirs. In its style of architecture the old town is in general mean, resembling the old part of Lisbon; but the new town is in a much more handsome style. Although this town has always ranked as the most important in Brazil, or as second only to Bahia at the time when the latter was the seat of government, yet it was only after the imperial residence and the court were fixed here that it assumed the character of a European city. Great improvements took place after that event. The new town has almost wholly sprung up since it occurred. This part of Rio is connected with the south-western quarter, or Bairro de Mato-porcos, by the bridge of St Diogo, thrown over a salt-water inlet. Between the

Rio de
Janeiro.

Rio de
Janeiro.

old and new town is situated a large plain nearly surrounded by an amphitheatre of mountains, clothed at their bases with the richest verdure, and terminating by belts of forest-trees of immense growth and of every variety. One of these elevations is called the Corcovado, or Broken Back, an appellation which it acquired from its extraordinary and fantastical shape. The plain thus environed is inclosed with houses so as to form an enormous quadrangle, perhaps the largest square in the world. Here are erected the senate-house, the museum, the camera or town-hall, and other public buildings. One of the most striking features of the Brazilian capital is the number of its churches and monasteries, which not only abound in the city, but are seen crowning almost all the surrounding eminences. Among the former, the most conspicuous are the cathedral of La Gloria, an octagonal building crowning a lofty wooded hill; the majestic church of Candelaria, the largest in the town, and surmounted by the loftiest towers in Brazil; the richly-ornamented church of the Cross; and that of Sao Francisco, with its two round towers. The convent of St Anthony is a large and gorgeous edifice; and that of Sao Bento is so richly adorned as to be one mass of gilding in the interior.

Near the centre of the quay, which has already been mentioned, there is a large square, surrounded on three of its sides with buildings, but having its fourth open to the bay. In this square the palace or imperial residence is situated; but although extensive in its dimensions, and commodious and even splendid in its internal arrangements, there is nothing magnificent or striking in its architecture. The public library occupies a suite of rooms in this quarter. It contains sixty or seventy thousand volumes in all languages, and is considered a very admirable collection. On the quay in front of the square is a very beautiful fountain for supplying water to this part of the city, and to the shipping in the harbour. It is fed by a splendid stone aqueduct leading from the Corcovado Mountain, not more striking for the magnificent singularity of its appearance than important for its utility. This great work, which is called Arcos de Cariaco, extends across a deep valley, resting on a double tier of lofty arches placed one above the other to the height of 90 feet, and the water is conducted to the reservoir by a succession of stone troughs laid on the top of this bridge, under an arched covering of brick-work. Each tier comprises forty-two arches, the upper one extending 280 yards. The following is the provision made for education:—A military academy, a naval academy, a surgical and medical academy; an academy of the fine arts (in connection with which we may mention a national museum), and lastly, two ecclesiastical seminaries, where the ancient and modern languages are taught, as well as divinity and the sciences. Besides these, there are several superior and numerous primary schools. In periodicals and newspapers the city is by no means deficient; and book-printing is carried on, although not extensively. Government has a printing establishment. There is a large botanic garden, well laid out and rich in exotics, at some distance from the town.

The trade of Rio is very great, and rapidly increasing. The export of coffee from this port is equal to that from all the others in the world, amounting in 1856 to 8,683,120 cwt., valued at L.4,788,000. In the same year there were exported 14,338 carats of diamonds and precious stones, L.53,680 worth of timber, L.59,040 worth of calves' leather, L.40,120 worth of spirits, as well as quantities of tapioca, sarsaparilla, ipecacuana, horns, &c. The principal articles imported in 1854 and 1855 were as follows:—

	1854.	1855.
Eatables—corn, butter, &c.....	L.954,000	L.1,263,840
Cotton fabrics	1,250,000	1,206,800
Liquors—wine, tea, &c.	692,000	767,160
Woollen fabrics	292,000	547,400

Rio Grande

	1854.	1855.
Coal and metals	444,000	418,200
Watches, jewellery, cutlery, &c...	404,000	395,600
Wood, furniture, &c.	348,000	354,400
Hats, haberdashery, &c.	356,000	298,480
Silk fabrics	316,000	310,400
Linen fabrics	154,000	223,000
Paper and books	162,000	185,720
Pottery, porcelain, &c.....	112,000	171,600

The value of the exports and imports in 1855, arranged according to the different countries, is exhibited in the following table:—

Countries.	Imports.	Exports.
Great Britain and colonies	L.2,404,800	L.2,055,360
United States.....	879,240	3,362,920
France	1,348,000	733,640
Hanse Towns	498,800	678,240
Portugal	598,080	209,680
Austria	46,720	206,760
Belgium	277,160	442,840
Spain	220,600	24,800
Sweden and Norway.....	160,840	78,000
Denmark	96,000	448,000
Sardinia	114,800	68,520
Holland	54,800	55,600
Switzerland	174,000	...
Prussia	40,000	...
La Plata and Chili	209,920	139,640
Other countries	227,200	351,280
Totals in 1855.....	L.7,850,960	L.8,855,280
Totals in 1854.....	6,836,000	6,460,800

The number of vessels that entered the port in 1856 was 3620, of which 2250 were from foreign ports; that of those that cleared was 3622.

The manufactures of the town are unimportant, notwithstanding the repeated attempts of the government to foster them. Leather and glass are the only articles produced in any great quantities. The climate is considered as favourable to health, comfort, and even longevity, as that of any other place between the tropics. During the summer months, which may be reckoned as extending from October to April, heavy rains fall; but on the whole few places possess a more beautiful climate than this celebrated city.

The bay of Rio was discovered on the 1st of January 1531 by Martin Alphonso de Sousa, a Portuguese navigator. The natives had given to this tranquil basin the significant appellation of *Nitherohi*, that is, "hidden water;" but he, supposing it the estuary of some great river like the Orinoco, called it the *Rio de Janeiro*, after the day on which it had been discovered. It remained many years unnoticed or unoccupied by the Portuguese, but in the meantime was taken possession of by France, and became an asylum for the persecuted Huguenots. These were subsequently expelled by the Portuguese, who, in 1567 founded the city of Rio. It steadily advanced in riches and importance; so that in the year 1763 Dom Joseph was induced to transfer hither the viceregal residence from Bahia, hitherto the capital of the province of Brazil. In 1808 it became the residence of the Portuguese court; and in 1822 was constituted the capital of the independent empire of Brazil. In 1831 it was the theatre of a revolution, in which 6000 armed citizens were joined by the troops of the line in their opposition to the government, and in consequence of which Dom Pedro abdicated the throne in favour of his son Pedro II. Pop. (1851) 205,906, of whom 77,989 were native white men, 36,329 foreign white men, 10,722 free coloured men, and 78,835 slaves; (1855) 296,136.

RIO GRANDE, a river of West Africa, Senegambia, rises in the mountains of Fouta Jallon, near the sources of the Senegal and Gambia, and flows in an irregular course westwards to the Atlantic. It enters the sea by several branches, broad, rapid, and navigable, though somewhat obstructed by shoals. The most northerly of these branches

Rio Grande is called the Jeba or Geba, a name sometimes applied to the whole river. The upper course of the Rio Grande has been very little explored. Its banks are well wooded, and studded with large ant-hills; and the neighbouring country is rich in many valuable productions.

Rio Grande
do Norte
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Rio Grande
do Sul.

RIO GRANDE DO NORTE, a province of Brazil, is bounded on the S. by Parahiba, on the N. and E. by the Atlantic Ocean, and on the W. by Ceara. Situated between the parallels of 4. 30. and 6. 45. of S. Lat.; the climate is of course very hot. At Cape St Roque, which forms the angle of this province, in Long. 36. 15. W., Lat. 5. 7. S., the coast of Brazil terminates towards the N.E.; and the Atlantic Ocean, which has so long been its boundary on the E., begins to wash its northern shores. The province has about 100 miles of sea-coast, and an area of 31,230 square miles. The Rio Grande, or Potengi, the great river of the province, rises in a ridge on its western limits, and traverses its whole extent in a direction from S.W. to N.E. The province is irrigated by other streams, on whose banks the most fertile land is to be found; but the soil in general is rather sterile. None of the rivers are of any great size. There are several salt lakes, which afford much excellent salt. It is mountainous in the S. and W., but gradually slopes toward the sea; and along the coast there is an expanse of low sandy ground. Cotton is the crop that grows best in this country; but maize, mandioc, rice, and the sugar-cane are also raised. The minerals include gold, silver, iron, limestone, sandstone, granite, &c.; but mining is only carried on to a very small extent. There are numerous small harbours along the coast; but navigation is interrupted by many shoals, some of them very dangerous, which line the shore. The small island of Fernando de Noronha, about 250 miles E.N.E. of Cape St Roque, belongs to this province, and is used as a place of transportation. Salt, cotton, sugar, hides, salt fish, &c., are exported from Rio Grande do Norte. The capital, Natal, is the seat of the provincial assembly of twenty members. The province sends one senator and two deputies to the legislative assembly of Brazil. Pop. (1856) 190,000.

RIO GRANDE DO SUL, or *S. Pedro do Rio Grande*, the most southerly province of Brazil, bounded on the N. by the provinces of Curtiba and S. Catherina, E. by the Atlantic, S. by Uruguay, and W. by La Plata, lying between S. Lat. 25. 30. and 32. 30., W. Long. 49. 40. and 58. 20. It is upwards of 500 miles in length by 400 in breadth, and has an area of 118,758 square miles. This extensive country consists chiefly of large plains covered with immense herds of cattle and other animals. Some mountain ridges traverse it in various directions, but none of them is of any great height. Here several large rivers have their origin, of which the Uruguay, the Jacuhy, and the Camapuam, are the most important. Its great extent of level and alluvial coast exhibits some lakes of vast dimensions. The Lagoa dos Patos is the largest lake in Brazil, being 140 miles in length from N.E. to S.W., and about 40 miles in breadth. This lake is the recipient of almost all the streams which irrigate the northern and eastern portions of the country. It is very shallow, and its water continues fresh as far as the Island dos Marinheiros, near the port of S. Pedro. The peninsula lying between the lake and the ocean is low and level, and its eastern side lies almost in a direct line, but the opposite side forms various points and bays. The western shore of the lake is bold but not rugged, and is cut by several rivers, of which the Camapuam and Jacuhy, already mentioned, are most deserving of notice. The sources of the former are in a chain of low hills called the great Cochilha, which traverses the western limits of the country. It flows with a rapid and disturbed current, interrupted by continued cataracts for nearly 100 miles, and falls into the lake about the middle of its western side. The Jacuhy is a river of still greater

value. It rises in the north of the province, and after traversing the southern declivity of the general ridge for several miles, it turns eastward, describing innumerable windings for a course of about 80 miles, during which it collects the water of a number of smaller rivers, many of them navigable. It then suddenly bends towards the S., and after running 15 miles in this direction, enters the lake not far below its northern extremity. To the S.W. of the Lagoa dos Patos lies another sheet of water, called Lake Mirim. It is 90 miles in length by about 20 in breadth, and discharges itself into the Lagoa dos Patos by means of a channel called the river of St Gonzales. Lake Mirim is very shallow, and in the rainy season it widely extends its borders. The Gonzales is 50 miles in length: it is wide and handsome, and navigable for small vessels, which by this channel pass into Lake Mirim, and thence by means of rivers penetrate into the fertile interior, and distribute their cargoes to the large towns on the coast. There are other large lakes running parallel with the shore, but these are the most important.

The climate of the province is mild and healthy; the greater part of the soil is fertile, and produces various kinds of grain, and many of the fruits of Europe. Timber is not very abundant, but of very good quality. Among the minerals are gold, silver, iron, sulphur, and porcelain clay. The rearing of cattle, however, is what chiefly distinguishes the country, and gives employment to its inhabitants. They are either slaughtered to form the salt beef for the export of which the province is celebrated, or sent in droves to Sao Paulo and Rio Janeiro. Horses and mules are bred to a great extent, and are highly valued for the excellence of the breed. The provincial assembly of Rio Grande do Sul consists of twenty-eight members; and the province sends to the Brazilian legislature three senators and six deputies. Pop. (1856) 201,300.

The capital, Rio Grande do Sul, or S. Pedro do Sul, formerly stood a few miles from where it now stands, in the situation called Estreito, near the head of a bay or harbour, at the entrance of the Lagoa dos Patos; but the encroachment of the sands has made such progress as almost to have overwhelmed the town, and occasioned its removal to the present site. It is now situated on a level plain a little above high-water mark; but, like its predecessor, it suffers much from the accumulation of sand. Its public buildings comprise a plain but handsome cathedral, several other edifices, and a fort. Its commercial importance appears to be considerable. Large quantities of wheat, hides, tallow, dried beef, cheese, and other articles are shipped from this port, and commerce is rapidly increasing. Pop. of the town, 3560; of the district, 12,000.

RIOJA. See PLATA, La.

RIOM, a town of France, capital of an arrondissement in the department of Puy-de-Dôme, in a rich and beautiful country, on a hill above the Ambone, 8 miles N.N.E. of Clermont. It is encircled by boulevards shaded by trees, and has a cheerful aspect, though built of dark lava from the neighbouring quarries of Volvic. The streets are broad, and the houses generally are well built. Many of the public buildings, such as the court-house, prefect's residence, hospitals, &c., are very handsome; and the church of St Amable is a curious and interesting old edifice. On one of the boulevards of the town is a granite monument to General Desaix, who fell at the victory of Marengo. Riom is the seat of several law courts and of a college. It has manufactures of linen fabrics, leather, brandy, and other articles; and a considerable trade in these, as well as in corn, wine, fruit, oil, &c. It was formerly the capital of Auvergne, and the old ducal palace is now the court-house. Pop. (1856) 10,078.

RIONERO, a town of Naples, the largest in the province of Basilicata, on the slopes of two hills and the inter-

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vening valley, 8 miles S. of Melfi. It is remarkable for nothing so much as for the traces which about half of the town retains of the terrible earthquake which desolated this place and the surrounding district in 1851. There are several churches and a convent. Wooden snuff-boxes are manufactured, and some trade in oil and wine is carried on. Pop. 9600.

RIPLEY, a market-town of England, in the West Riding of Yorkshire, 18 miles N. of Leeds, and 25 N.N.W. of York. It stands on the Nidd, which is here crossed by a bridge, and is neatly and well built. There is a large cruciform church, containing many tombs of the Ingilby family, who reside in Ripley Castle, one of the chief ornaments of the town. This family residence was built in 1855; and it was here that Cromwell spent the night before the battle of Marston Moor. Pop. of the parish (1851) 1286.

RIPON, a market-town, parliamentary and municipal borough of England, in the West Riding of Yorkshire, on the right bank of the Ure, 23 miles N.W. of York, and 215 N.N.W. of London. It stands in the midst of a rich and well-wooded country, and consists of irregularly laid-out streets, many of which meet in the spacious market-place near the centre of the town. Here there is a handsome town-hall, and an obelisk 90 feet high, surmounted by the city arms. The principal edifice is the cathedral, one of the best proportioned churches in the kingdom. Its whole length is 260 feet, that of the transept 132 feet, the breadth of the nave and aisles 87 feet, and that of the choir and aisles 66 feet. At the west front two uniform towers rise to the height of 110 feet; and in the centre is a large but lower one, called St Wilfred's Tower. Under the chapter-house is a vault containing a great number of human remains in good preservation. The architecture of the church is partly Norman and partly early English; the building was begun in 1331, but not completed till 1494. Besides Trinity church, an early English cruciform building, erected in 1826, there are in Ripon, Wesleyan, Primitive Methodist, and Independent churches. The educational establishments comprise a free grammar school, national and infant schools, a blue-coat school, &c. Here, too, are a mechanics' institute, subscription library, news-room, hospital, and dispensary. Ripon was once famous for the manufacture of spurs and of woollen fabrics. Many saddletrees are made here; tanning, malting, and linen-weaving are also carried on. Near the town the Ure is crossed by a fine bridge. A short canal, constructed in 1767, brings the navigation up to the town. A weekly market and six annual fairs are held, chiefly for cattle, leather, and cloth. The borough is governed by a mayor, three other aldermen, and twelve councillors; and it sends two members to the House of Commons. It is a place of much antiquity, having existed in the time of the Saxons, who were here defeated by the Danes at an early period. A monastery was founded in 661, when there were only thirty houses in the place; and the town was made a borough by Alfred the Great. In 1069 it was wasted by William the Conqueror, and in 1319 and 1324 by the Scots under Bruce. In 1643 it was seized by the parliamentary party, but rescued for the royalists by Sir John Mollory. Pop. (1851) of the parish, 15,103; of the parliamentary borough, 6080.

RIPPERDA, JOHN WILLIAM, *Baron of*, a political adventurer, was born in the province of Gröningen in the Netherlands, in 1680, and was educated in the college of the Jesuits at Cologne. A desire for power began early to be seen in his actions. He married a rich wife that he might not be hampered by poverty in the race of ambition. He assumed the creed of a Protestant to make himself eligible for government offices. A colonelcy in the army did not content him. He did not cease to show off his accomplishments until, in 1715, he was appointed ambassador to Spain. Ripperda had not been very long at the

intriguing chance-directed court of Madrid before he resolved to try his hand in the game of Spanish politics. Laying down the office of Dutch ambassador in 1718, he brought all his arts into play. He secured the interest of the influential Jesuits by becoming a pious and penitent convert to the Catholic faith. He made his talents known to the king, Philip V., by drawing up schemes for the renovation of the national prosperity. Nor did his ambition hesitate to try more dangerous artifices. Returning from an embassy to Vienna in 1725, he pretended to the queen that he had effected her favourite scheme of betrothing her son Don Carlos to the eldest archduchess. His immediate elevation to a dukedom, and to the office of prime minister, compelled him to persist in this imposture. He was backed up by lie; the nation was impoverished to furnish him with hush-money; and he continued to try every bungling shift until, in 1726, he was convicted and disgraced. The rest of Ripperda's life was spent in a fruitless attempt to retrieve his fortune. Escaping from the castle of Segovia, he sought in vain for a place of political importance in some foreign country. The English statesmen treated him hospitably only so long as they were at variance with Spain. He could not see the slightest chance of success at any other European court. It is true that at length the land of promise seemed to have been discovered in Morocco. He was welcomed thither by the Emperor Muley Abdallah, and after qualifying himself for office by becoming a Mohammedan, was placed at the head of the administration of the country. But his ambition soon began again to be thwarted. His royal patron was driven from the throne. He himself was glad to escape with his head to Tetuan. There he could find no better employment for his restless spirit than that of asserting himself to be the last and greatest of the prophets. He died in 1737, giving out as his new creed a heterogeneous mass of Mohammedan, Jewish, and Christian doctrines. (See *Lives of Alberoni, Ripperda, and Pombal*, by George Moore, London, 1819.)

RITSON, JOSEPH, a meritorious critic and antiquary, was born at Stockton-upon-Tees on the 2d October 1752. His family, whose original name seems to have been *Richardson*, were respectable yeomen in Westmoreland, and could trace their descent as far back as the reign of Edward VI. He received a solid education from the Rev. John Thompson, the incumbent of his native town, was articled first to a solicitor, and subsequently to a barrister, previous to his setting out for London. His earliest literary effort, which possesses very little merit, was an address to the ladies of Stockton, printed in the *Newcastle Miscellany* in 1772. Ritson had now reached his nineteenth year, and his personal eccentricities had already begun to develop themselves in ways which spoke more for the determination of the future critic than for his eminent personal courtesy. He then began the practice, to which he adhered through life, of restricting himself to a milk and vegetable diet. His biographer, Sir Harris Nicolas, informs us that Ritson made this resolution from "a most refined sense of humanity." Unfortunately, the future conduct of the acrimonious critic rather clouds this pretty motive; and however sentimental may have been the origin of the practice, its continuance must be attributed, "during the whole course of those thirty years," to a quite different cause. As illustrative of Ritson's character, however, it throws much light on that determination, which occasionally approached something like doggedness, to judge on every subject for himself. In 1773 he visited Edinburgh on a short holiday excursion, and so much had he already been smitten with the antiquarian fever that he finds, on summing up his purchases of "tartans" and other items, that there was "not money left to pay my reckoning," at which he expresses great distress. In 1775 Ritson settled in London as a conveyancer, at a salary of L.150. He seems to have

Ritson.

Ritson. lost both his parents during these years, to whom he was very much attached. In 1778 he printed a broadside entitled *Tables showing the Descent of the Crown of England*, which displayed accuracy and research, and proved the writer to be a firm Jacobite. He visited Oxford in 1779 to explore the literary treasures of the Bodleian; and his diary during this journey affords the first evidence of his sceptical opinions. He printed anonymously, in 1781, a small satirical tract termed *The Stockton Jubilee, or Shakspeare in his Glory*; in 1782 he visited Cambridge, and made the acquaintance of Dr Farmer, whom he describes as "a most sensible, liberal, benevolent, and worthy man." He was busily occupied at this time with his "scurrilous libel upon Warton," as he jocularly called his *Observations on the History of English Poetry*. The rude and bold style of this work, the severity of its criticisms, and the reckless personal taunts in which the writer indulged, brought down upon him a perfect horde of enemies, from whom his erudition, research, and candour served in vain to shield him. In vain it was that Ritson disclaimed all personal motives, that he averred he had no other object but truth and justice; he had been guilty of coarse and intemperate treatment of a highly respectable man, and such an offence could not be tolerated. A controversy accordingly raged in the *Gentleman's Magazine*, in which the formidable critic played of course a very important part. It may not be unworthy of remark that a late editor of Warton's *History of English Poetry* adopted the greater part of Ritson's observations. In 1783 he published a volume of *Remarks, Critical and Illustrative, on the Text of the last edition of Shakspeare*, in which he fell foul of Johnson and Stevens in a very unceremonious manner for the very careless way in which they had gone about their task. Despite, however, the acerbity of the writer, the public had much reason to thank him for his profound research, his felicitous conjectures, and his singular acquaintance with the great poet. This year was one of the most prolific of Ritson's pen. Besides editing *Gammer Gurton's Garland, or the Nursery Parnassus*, he published a *Select Collection of English Songs*, in 3 vols., to which he prefixed a historical essay of very great merit. In 1784 he published a slight tract called the *Bishopric Garland, or Durham Minstrel*; and about the same period was appointed high bailiff of the Liberty of the Savoy. The ensuing four years he seems to have devoted to his profession. There is one work from his pen during this period, entitled the *Spartan Manual, or Tablet of Morality*, for "the improvement of youth, and the promoting of wisdom and virtue." His *Quip Modest* was published during the same year, which was the letting out of a deadly feud between the author and the *Critical Review*. In 1790 appeared Ritson's *Ancient Songs*, and the succeeding year witnessed the publication of his *Pieces of Ancient Popular Poetry*, in an unusual style of typographical elegance. During the same year he visited Paris, and the ancient Jacobite found himself called upon to venerate the new order of things in the French metropolis; and he went so far as to adopt the French calendar in dating, and the republican style in closing his letters to his "citizen" friends. His nervous system was gradually giving way; and he could only write, he tells us, with great difficulty. Yet his labour must have been incessant. Between the years 1793 and 1795 appeared his *English Anthology*, his *Scottish Songs*, his *Poems of Laurence Minot* written in 1352, and his celebrated *Collection of the Robin Hood Ballads*. After a short respite, his pen was again busy; and in 1803 he brought out his *Bibliographia Poetica*, being a catalogue of English poets between the twelfth and the sixteenth centuries; a *Collection of English Metrical Romances*; and, as his final effort, *An Essay on Abstinence from Animal Food as a Moral Duty*. Of the numerous literary

friends of Ritson, one of the most genial was Sir Walter Scott, who alludes to him frequently in his poems and novels in terms of kindness and respect. But the busy strife of men was already waxing fainter and fainter on his ear, more dimly shone to him the pleasant sunlight, and tangible things were gradually becoming more and more intangible, when a great summons came on the 23d of September 1803. He left a number of works all but ready for the press, which have since appeared under the care of his nephew. They are, *The Life of King Arthur*; *Memoirs of the Celts and Gauls*; *Annals of the Caledonians*; *Fairy Tales*. (See the *Letters of Joseph Ritson, Esq.*, with a memoir of the author, by Sir Harris Nicolas, 2 vols. 1833.)

RITTENHOUSE, DAVID, an eminent American astronomer, was born near Germantown in Pennsylvania in 1732, and was early put to work on his father's farm. His youth was characterised by signs of uncommon talent. Every spare moment was employed in gratifying his taste for the exact sciences. When he stopped his team on the field, he covered the plough-tails with mathematical figures. As he sauntered about in the evening after his day's labour, he plied his knife in making wooden clocks. A present of watchmaking tools, which he received at the age of eighteen, was the means of still further developing his genius. Taking up the more congenial trade of a watchmaker, he enjoyed greater opportunities for prosecuting his favourite studies. The utmost use was made of the two or three mathematical books which he had. Ere he was twenty he had begun to read the *Principia*. It is even said that he had found out the method of fluxions before he was aware of the discoveries of Newton and Leibnitz on the same subject. The attainments of Rittenhouse soon came to be generally acknowledged, and a series of honours and appointments followed. In 1769 he was named one of the committee to observe the transit of Venus over the sun's disk. In 1779 he was employed to determine the boundary line between Pennsylvania and Virginia. The Academy of Arts and Sciences at Boston elected him a member in 1782. The American Philosophical Society made him their president, in the room of Franklin, in 1791. The Royal Society of London also elected him a fellow in 1795. He was director of the mint of the United States when he was seized with his last attack of debility in 1795; and he died in June 1796. His published works consist of a number of papers, chiefly on astronomical subjects, in the *Transactions of the American Philosophical Society*.

RIVA (Germ. *Reif*), a town of the Tyrol, in the circle and 9 miles W.S.W. of Roveredo, stands in a beautiful situation at the head of the Lake of Garda, under the lofty and precipitous mountains which impart grandeur to the scenery of the lake. The climate is delicious; vines, myrtles, oranges, and olives grow in the open air; but the town is dirty and dilapidated. The castle of La Rocca, now a prison, and several convents, are the chief buildings. The lake abounds in fish; and the port is much frequented. Pop. 4980.

RIVE-DE-GIER, a town of France, in the department of Loire, on the right bank of the Gier, 12 miles N.E. of St Etienne. It is entirely a modern town, having nearly trebled its population since 1815; and it derives its importance and prosperity from the coal-fields among which it is situated. Formerly it had fortifications, but these have been destroyed. There are no public buildings of any importance. The river was once crossed by an ancient Roman bridge which has been removed, and its place supplied by five of modern erection. There are more than forty coal-mines in operation in the vicinity worked by steam. Lyons and many other towns derive their supply of fuel, in whole or in part, from Rive-de-Gier. It has large glass-works, and manufactories of steel, hardware, machinery, silk, &c. The trade is very considerable; and the canal of Givors connects the place with Givors on the Rhone. Pop. 11,694.

Ritten-
house
||
Rive-de-
Gier.

RIVER.¹

River. A RIVER is a current of fresh water, flowing in a BED or CHANNEL from its source to the sea.

Definition. The term is appropriated to a *considerable* collection of waters, formed by the conflux of two or more BROOKS, which deliver into its channel the united streams of several RIVULETS, which have collected the supplies of many RILLS trickling down from numberless springs, and the torrents which carry off from the sloping grounds the surplus of every shower.

Utility of rivers. Rivers form one of the chief features of the surface of this globe, serving as voiders of all that is immediately redundant in our rains and springs, and also as boundaries and barriers, and even as highways, and in many countries as plentiful storehouses. They also fertilize our soil by laying upon our warm fields the richest mould, brought from the high mountains, where it would have remained useless for want of genial heat.

Origin of their names. Being such interesting objects of attention, every branch acquires a proper name, and the whole acquires a sort of personal identity, of which it is frequently difficult to find the principle; for the name of the great body of waters which discharges itself into the sea is traced backwards to one of the sources, while all the contributing streams are lost, although their waters form the chief part of the collection. And sometimes the feeder in which the name is preserved is smaller than others which are united to the current, and which like a rich but ignoble alliance lose their name in that of the more illustrious family. Some rivers indeed are respectable even at their birth, coming at once in force from some great lake. Such is the Rio de la Plata, the river St Lawrence, and the mighty streams which issue in all directions from the Baical Lake. But, like the sons of Adam, they are all of equal descent, and should take their name from one of the feeders of these lakes. This is indeed the case with a few, such as the Rhone, the Rhine, the Nile. These, after having mixed their waters with those of the lake, resume their appearance and their name at its outlet.

Origin and progress similar to the life of man. But in general their origin and progress, and even the features of their character, bear some resemblance (as has been prettily observed by Pliny) to the life of man. The river springs from the earth, but its origin is in heaven. Its beginnings are insignificant, and its infancy is frivolous; it plays among the flowers of a meadow; it waters a garden, or turns a little mill. Gathering strength in its youth, it becomes wild and impetuous. Impatient of the restraints which it still meets with in the hollows among the mountains, it is restless and fretful; quick in its turnings, and unsteady in its course. Now it is a roaring cataract, tearing up and overturning whatever opposes its progress, and it shoots headlong down from a rock; then it becomes a sullen and gloomy pool, buried in the bottom of a glen. Recovering breath by repose, it again dashes along, till, tired of the uproar and mischief, it quits all that it has swept along, and leaves the opening of the valley strewn with the rejected waste. Now, quitting its retirement, it comes abroad into the world, journeying with more prudence and discretion, through cultivated fields, yielding to circumstances, and winding round what would trouble it to overwhelm or remove. It passes through the populous cities and all the

busy haunts of man, tendering its services on every side, and becomes the support and ornament of the country. Now increased by numerous alliances, and advanced in its course of existence, it becomes grave and stately in its motions, loves peace and quiet; and in majestic silence rolls on its mighty waters, till it is laid to rest in the vast abyss.

The philosopher, the real lover of wisdom, sees much to admire in the economy and mechanism of running waters; and there are few operations of nature which give him more opportunities of remarking the nice adjustment of the most simple means for attaining many purposes of most extensive beneficence. All mankind seems to have felt this. The heart of man is ever open (unless perverted by the habits of selfish indulgence and arrogant self-conceit) to impressions of gratitude and love. He who ascribes the religious principle (debased though it be by the humbling abuses of superstition) to the workings of fear alone, may betray the slavish meanness of his own mind, but gives a very unfair and a false picture of the hearts of his neighbours. Lucretius was but half a philosopher when he penned his often quoted apophthegm. Indeed his own invocation shows how much the animal was blended with the sage.

We apprehend, that whoever will read with an honest and candid mind, unbiassed by licentious wishes, the accounts of the ancient superstitions, will acknowledge that the amiable emotions of the human soul have had their share in creating the numerous divinities whose worship filled up their kalendars. The sun and the host of heaven have in all ages and nations been the objects of a sincere worship. Next to them, the rivers seem to have attracted the grateful acknowledgments of the inhabitants of the adjacent countries. They have everywhere been considered as a sort of tutelar divinities; and each little district, every retired valley, had its river-god, who was preferred to all others with a partial fondness. The expostulation of Naaman the Syrian, who was offended with the prophet for enjoining him to wash in the river Jordan, was the natural effusion of this attachment. "What!" said he, "are not Abana and Pharpar, rivers of Damascus, more excellent than all the waters of Judea? Might I not wash in them and be clean? So he went away wroth."

In those countries particularly, where the rural labours and the hopes of the shepherd and the husbandman were not so immediately connected with the approach and recess of the sun, and depended rather on what happened in a far distant country by the falls of periodical rains or the melting of collected snows, the Nile, the Ganges, the Indus, the river of Pegu, were the sensible agents of nature in procuring to the inhabitants of their fertile banks all their abundance, and they became the objects of grateful veneration. Their sources were sought out with anxious care even by conquering princes; and when found, were universally worshipped with the most affectionate devotion. These remarkable rivers, so eminently and so palpably beneficent, preserve to this day, amidst every change of habit, and every increase of civilization and improvement, the fond adoration of the inhabitants of those fruitful countries through which they hold their stately course, and their waters are still held sacred. No progress of artificial refinement, not all the corruption of luxurious sensuality, has

¹ From the great ability displayed in this article by the late Professor Robison of Edinburgh, and from the frequent allusion to it, even at the present day, by men of the first distinction in physical science, the Editor has been induced to allow it a place here. (For further information, see HYDRODYNAMICS and the SIXTH DISSERTATION.)

History. been able to eradicate this plant of native growth from the heart of man. The sentiment is congenial to his nature, and therefore it is universal; and we could almost appeal to the feelings of every reader, whether he does not perceive it in his own breast. Perhaps we may be mistaken in our opinion in the case of the corrupted inhabitants of the populous and busy cities, who are habituated to the fond contemplation of their own individual exertions as the sources of all their hopes. Give the shoemaker but leather and a few tools, and he defies the powers of nature to disappoint him; but the simpler inhabitants of the country, the most worthy and the most respectable part of every nation, after equal, perhaps greater exertion, both of skill and of industry, are more accustomed to resign themselves to the great ministers of Providence, and to look up to heaven for the "early and the latter rains," without which all their labours are fruitless.

Extrema per illos
Numenque excedens terris vestigia fecit.

And among the husbandmen and the shepherds of all nations and ages, we find the same fond attachment to their springs and rivulets.

Fortunate senex, hic, inter flumina nota
Et fontes sacros, frigus captabis opacum,

was the mournful ejaculation of poor Melibœus. We hardly know a river of any note in our own country whose source is not looked on with some respect.

We repeat our assertion, that this worship was the offspring of affection and gratitude, and that it is giving a very unfair and false picture of the human mind to ascribe these superstitions to the working of fear alone. These would have represented the river-gods as seated on ruins, brandishing rooted-up trees, with angry looks, pouring out their sweeping torrents. But no such thing. The lively imagination of the Greeks felt, and expressed with an energy unknown to all other nations, every emotion of the human soul. They figured the Naiads as beautiful nymphs, patterns of gentleness and of elegance. These they represented as partially attached to the children of men; and their interference in human affairs is always in acts of kind assistance and protection. They resemble, in this respect, the rural deities of the northern nations, the fairies, but without their caprices and resentments. And if we attend to the descriptions and representations of their RIVER-GODS, beings armed with power, an attribute which slavish fear never fails to couple with cruelty and vengeance, we shall find the same expression of affectionate trust and confidence in their kind dispositions. They are generally called by the respectable but endearing name of *father*. "Da Tyberi pater," says Virgil. Mr Bruce says that the Nile at its source is called the *abay*, or "father." We observe this word, or its radix, blended with many names of rivers of the east; and think it probable that when our traveller got this name from the inhabitants of the neighbourhood, they applied to the stream what is meant to express the tutelary or presiding spirit. The river-gods are always represented as venerable old men, to indicate their being coeval with the world. But it is always a *cruda viridisque senectus*, and they are never represented as oppressed with age and decrepitude. Their beards are long and flowing, their looks placid, their attitude easy, reclined on a bank, covered, as they are crowned, with never-fading sedges and bulrushes, and leaning on their urns, from which they pour out their plentiful and fertilizing streams. Mr Bruce's description of the sources of the Nile, and of the respect paid to the sacred waters, has not a frowning feature; and the hospitable old man, with his fair daughter Irepone, and the gentle priesthood which peopled the little village of Gecsh, form a contrast with the neighbouring Galla (among whom a mili-

History. tary leader was called the *lamb*, because he did not murder pregnant women), which very clearly paints the inspiring principle of this superstition. Pliny says (lib. viii. 8) that at the source of the Clitumnus there is an ancient temple highly respected. The presence and the power of the divinity are expressed by the fates which stand in the vestibule. Around this temple are several little chapels, each of which covers a sacred fountain; for the Clitumnus is the father of several little rivers which unite their streams with him. At some distance below the temple is a bridge which divides the sacred waters from those which are open to common use. No one must presume to set his foot in the streams above this bridge; and to step over any of them is an indignity which renders a person infamous. They can only be visited in a consecrated boat. Below the bridge we are permitted to bathe, and the place is incessantly occupied by the neighbouring villagers. See also Vibius Sequester Oberlini, p. 101-103, and 221-223; also Sueton. *Caligula*, c. 43; Virg. *Georg.* ii. 146.

What is the cause of all this? The Clitumnus, near its source, flows through the richest pastures, through which it was carefully distributed by numberless drains; and these nourished cattle of such spotless whiteness and extraordinary beauty that they were sought for with eagerness over all Italy, as the most acceptable victims in their sacrifices. Is not this superstition then an effusion of gratitude?

Such are the dictates of kind-hearted nature in our breasts, before it has been vitiated by vanity and self-conceit, and we should not be ashamed of feeling the impression. We hardly think of making any apology for dwelling a little on this incidental circumstance of the superstitious veneration paid to rivers. We cannot think that our readers will be displeased at having agreeable ideas excited in their minds, being always of opinion that the torch of true philosophy will not only enlighten the understanding, but also warm and cherish the affections of the heart.

With respect to the origin of rivers, we have very little to offer in this place. It is obvious to every person, that besides the torrents which carry down into the rivers what part of the rains and melted snows is not absorbed by the soil or taken up by the plants which cover the earth, they are fed either immediately or remotely by the springs. A few remarkable streams rush at once out of the earth in force, and must be considered as the continuation of subterranean rivers, whose origin we are therefore to seek out; and we do not know any circumstance in which their first beginnings differ from those of other rivers, which are formed by the union of little streams and rills, each of which has its own source in a spring or fountain. This question, therefore, what is the process of nature, and what are the supplies which fill our springs? will be treated of under the word *SPRING*.

Whatever be the source of rivers, it is to be met with in almost every part of the globe. The crust of earth with which the rocky framing of this globe is covered is generally stratified. Some of these strata are extremely pervious to water, having but small attraction for its particles, and being very porous. Such is the quality of gravelly strata in an eminent degree. Other strata are much more firm, or attract water more strongly, and refuse it passage. This is the case with firm rock and with clay. When a stratum of the first kind has one of the other immediately under it, the water remains in the upper stratum, and bursts out wherever the sloping sides of the hills cut off the strata, and this will be the form of a trickling spring, because the water in the porous stratum is greatly obstructed in its passage towards the outlet. As this irregular formation of the earth is very general, we must have springs, and of course rivers or rivulets, in every corner where there are high grounds.

Rivers flow from the higher to the low grounds. It is

History. the arrangement of this elevation which distributes them over the surface of the earth. This appears to be accomplished with considerable regularity; and, except the great desert of Kobi on the confines of Chinese Tartary, we do not remember any very extensive tract of ground that is deprived of those channels for voiding the superfluous waters; and even there they are far from being redundant.

They flow from the higher to the lower grounds. The courses of rivers give us the best general method for judging of the elevation of a country. Thus it appears that Savoy and Switzerland are the highest grounds of Europe, from whence the ground slopes in every direction. From the Alps proceed the Danube and the Rhine, whose courses mark the two great valleys, into which many lateral streams descend. The Po also and the Rhone come from the same head, and with a steeper and shorter course find their way to the sea through valleys of less breadth and length. On the west side of the valleys of the Rhine and the Rhone the ground rises pretty fast, so that few tributary streams come into them from that side; and from this gentle elevation France slopes to the westward. If a line, nearly straight, but bending a little to the northward, be drawn from the head of Savoy and Switzerland all the way to Solikamskoy in Siberia, it will nearly pass through the most elevated part of Europe; for in this tract most of the rivers have their rise. On the left go off the various feeders of the Elbe, the Oder, the Wesel, the Niemen, the Duna, the Neva, the Dwina, the Petzora. On the right, after passing the feeders of the Danube, we see the sources of the Sereth and Pruth, the Dniester, the Bog, the Dnieper, the Don, and the mighty Volga. The elevation, however, is extremely moderate; and it appears from the levels taken with the barometer by the Abbé Chappe d'Auteroche, that the head of the Volga is not more than 470 feet above the surface of the ocean. And we may observe here, by the by, that its mouth, where it discharges its waters into the Caspian Sea, is undoubtedly lower by many feet than the surface of the ocean. (See PNEUMATICS.) Spain and Finland, with Lapland, Norway, and Sweden, form two detached parts, which have little symmetry with the rest of Europe.

Course of the rivers of Europe, A chain of mountains begins in Nova Zembla, and stretches due south to near the Caspian Sea, dividing Europe from Asia. About three or four degrees north of the Caspian Sea it bends to the south-east, traverses Western Tartary, and passing between the Tengis and Zaizan lakes, it then branches to the east and south. The eastern branch runs to the shores of Korea and Kamtschatka. The southern branch traverses Turkestan and Thibet, separating them from India, and at the head of the kingdom of Ava joins an arm stretching from the great eastern branch, and here forms the centre of a very singular radiation. Chains of mountains issue from it in every direction. Three or four of them keep very close together, dividing the continent into narrow slips, which have each a great river flowing in the middle, and reaching to the extreme points of Malacca, Cambodia, and Cochinchina. From the same central point proceeds another great ridge due east, and passes a little north of Canton in China. We called this a singular centre; for though it sends off so many branches, it is by no means the most elevated part of the continent. In the triangle which is included between the first southern ridge (which comes from between the lakes Tengis and Zaizan), the great eastern ridge, and its branch which almost unites with the southern ridge, lie the Boutan and part of Thibet; and the many little rivers which occupy its surface flow southward and eastward, uniting a little to the north of the centre often mentioned, and then pass through a gorge eastward into China. The higher grounds (if we except the ridges of mountains which are boundaries) of the continent seem to be in the country of the Calmucs, about 96° east from London, and latitude 43° or 45° north. It is

History. represented as a fine though sandy country, having many little rivers which lose themselves in the sand, or end in little salt lakes. This elevation stretches north-east to a great distance; and in this tract we find the heads of the Irtysh, Selenga, and Tunguskaia (the great feeders of the Oby), the Olenitz, the Lena, the Yana, and some other rivers, which all go off to the north. On the other side we have the great river Amur, and many smaller rivers, whose names are not familiar. The Hoangho, the great river of China, rises on the south side of the great eastern ridge we have so often mentioned. This elevation, which is a continuation of the former, is somewhat of the same complexion, being very sandy, and at present is a desert of prodigious extent. A great ridge of mountains begins at the south-east corner of the Euxine Sea, and proceeds eastward, ranging along the south side of the Caspian, and, still advancing, unites with the mountains first mentioned in Thibet, sending off some branches to the south, which divide Persia, India, and Thibet. From the south side of this ridge flow the Euphrates, Tigris, Indus, and Ganges, and from the north the ancient Oxus and many unknown streams.

Of the rivers of Africa we still know but little. The Nile indeed is perhaps better known than any river out of Europe; and of it, so far as yet known, we have given a full account in a separate article. (See NILE.)

By the register of the weather kept by Mr Bruce at Gondar in 1770 and 1771, it appears that the greatest rains fall about the beginning of July. He says that at an average each month after June it doubles its rains. The calish or canal is opened at Cairo about the 9th of August, when the river has risen fourteen peeks (each twenty-one inches), and the waters begin to decrease about the 10th of September. Hence we may form a conjecture concerning the time which the latter employs in coming from Abyssinia. Mr Bruce supposes it nine days, which would require a velocity of not less than fourteen feet in a second; a thing past belief, and inconsistent with all our notions. The general slope of the river is greatly diminished by several great cataracts; and Mr Bruce expressly says that he might have come down from Sennaar to the cataracts of Syene in a boat, and that it is navigable for boats far above Sennaar. He came from Syene to Cairo by water. We apprehend that no boat would venture down a stream moving even six feet in a second, and none could row up if the velocity was three feet. As the waters begin to decrease about the 10th of September, we must conclude that the water then flowing past Cairo had left Abyssinia when the rains had greatly abated. Judging in this way, we must still allow the stream a velocity of more than six feet. Had the first swell at Cairo been noticed in 1770 or 1771, we might have guessed better. The year that Thevenot was in Egypt, the first swell of eight peeks was observed on the 28th of January. The calish was opened for fourteen peeks on the 14th of August, and the waters began to decrease on the 23d of September, having risen to twenty-one and two-third peeks. We may suppose a similar progress at Cairo corresponding to Mr Bruce's observations at Gondar, and date every thing five days earlier.

The frame-work (so to call it) of America is better known, and is singular.

A chain of mountains begins, or at least is found, in longitude 110° west of London, and latitude 40° north, on the northern confines of the kingdom of Mexico, and, stretching southward through that kingdom, forms the ridge of the neck of land which separates North from South America, and keeping almost close to the shore, ranges along the whole western coast of South America, terminating at Cape Horn. In its course it sends off branches, which after separating from it for a few leagues, rejoin it again, enclosing valleys of great extent from north to south, and of prodigious

History. gious elevation. In one of these, under the equatorial sun, stands the city of Quito, in the midst of extensive fields of barley, oats, wheat, and gardens containing apples, pears, and gooseberries, and, in short, all the grains and fruits of the cooler parts of Europe; and although the vine is also there in perfection, the olive is wanting. Not a dozen miles from it, in the low countries, the sugar-cane, the indigo, and all the fruits of the torrid zone, find their congenial heat, and the inhabitants swelter under a burning sun. At a small distance on the other hand tower aloft the pinnacles of Pichincha, Corambourou, and Chimboração, crowned with never-melting snows.

The individual mountains of this stupendous range cut off therefore all communication between the Pacific Ocean and the inland continent; and no rivers are to be found on the west coast of South America which have any considerable length of course or body of waters. The country is drained, like Africa, in the opposite direction. Not 100 miles from the city of Lima, the capital of Peru, which lies almost on the sea-shore, and just at the foot of the high Cordilleras, arises out of a small lake the Maragnon or Amazons river, which, after running northward for about 100 miles, takes an easterly direction, and crosses nearly the broadest part of South America, and falls into the great western ocean at Para, after a course of not less than 4095 miles. In the first half of its descent it receives a few middle-sized rivers from the north, and from the south it receives the great river Combos, springing from another little lake not fifty miles distant from the head of the Maragnon, and enclosing between them a wide extent of country. It then receives the Yuta, the Yuerva, the Cuchivara, and Parana Mire, each of which is equal to the Rhine; and then the Madeira, which has flowed above 1300 miles. At their junction the breadth is so great that neither shore can be seen by a person standing up in a canoe; so that the united stream must be about six miles broad. In this form it rolls along through a flat country, covered with impenetrable forests, and most of it as yet untrodden by human feet. Mr Condamine, who came down the stream, says that all is silent as the desert, and the wild beasts and numberless birds crowd round the boat, eyeing it as some animal of which they did not seem afraid. The bed was cut deep through an equal and yielding soil, which seemed rich in every part, if he could judge by the vegetation, which was rank in the extreme. What an addition to the possible population of this globe! A narrow slip along each bank of this mighty river would equal in surface the whole of Europe, and would probably exceed it in general fertility; and although the velocity in the main stream was considerable, he observed that it was extremely moderate, nay almost still, at the sides; so that in those parts where the country was inhabited, the Indians paddled up the river with perfect ease. Boats could go from Para to near the mouth of the Madeira in thirty-eight days, which is nearly 1200 miles.

Not far from the head of the Maragnon, the Cordilleras send off a branch to the north-east, which reaches and ranges along the shore of the Mexican Gulf; and the Rio Grande de Sta Martha occupies the angle between the ridges.

Another ridge ranges with interruption along the east coast of Terra Firma, so that the whole waters of this country are collected into the Oroonoko. In like manner, the north and east of Brazil are hemmed in by mountainous ridges, through which there is no considerable passage; and the ground sloping backwards, all the waters of this immense tract are collected from both sides by many considerable rivers into the great river Paraguay, or Rio de la Plata, which runs down the middle of the country for more than 1400 miles, and falls into the sea through a vast mouth, in latitude 35°.

History. Thus the whole of South America seems as if it had been formerly surrounded by a mound, and been a great basin. The ground in the middle, where the Parana, the Madeira, and the Plata, take their rise, is an immense marsh, uninhabitable on account of its exhalations, and quite impervious in its present state.

The manner in which the continent of North America is watered, or rather drained, has also some peculiarities. By looking at the map, one will observe, first of all, a general division of the whole of the best-known part into two, by the valleys in which the beds of the rivers St Lawrence and Mississippi are situated. The head of this is occupied by a singular series of fresh-water seas or lakes, viz. the Lakes Superior and Michigan, which empty themselves into Lake Huron by two cataracts. This again runs into Lake Erie by the river Detroit, and the Erie pours its water into the Ontario by the famous Fall of Niagara, and from the Ontario proceeds the great river St Lawrence.

The ground to the south-west of the Lakes Superior and Erie is somewhat lower, and the middle of the valley is occupied by the Mississippi and the Missouri, which receive on both sides a number of smaller streams, and, having joined, proceed to the south under the name Mississippi. In latitude 37° this river receives into its bed the Ohio, a river of equal magnitude, and the Cherokee river, which drains all the country lying at the back of the United States, separated from them by the ranges of the Appalachian Mountains. The Mississippi is now one of the chief rivers on the globe, and proceeds due south till it falls into the Mexican Bay through several shifting mouths, which greatly resemble those of the Danube and the Nile, having run above 1200 miles.

The elevated country between this bed of the Mississippi and St Lawrence and the Atlantic Ocean is drained on the east side by a great number of rivers, some of which are very considerable, and of long course; because instead of being nearly at right angles to the coast, as in other countries, they are in a great measure parallel to it. This is more remarkably the case with Hudson's river, the Delaware, Potomac, and Rappahannoc. Indeed the whole of North America seems to consist of ribs or beams laid nearly parallel to each other from north to south, and the rivers occupy the interstices. All those which empty themselves into the bay of Mexico are parallel and almost perfectly straight, unlike what are seen in other parts of the world. The westernmost of them all, the North river, as it is named by the Spaniards, is nearly as long as the Mississippi.

For the length of the courses, and some peculiarities of the principal rivers, see PHYSICAL GEOGRAPHY.

PART I.—THEORY OF THE MOTION OF RIVERS AND CANALS.

THE importance of this subject needs no commentary. Import- Every nation, every country, every city is interested in it. ance of the Our wants, our comforts, and our pleasures require a know- doctrine of ledge of it. We must conduct the water of rivers to the centre of our dwellings; we must secure ourselves against the motion of rivers and canals. their ravages; we must employ them to drive those machines which, by compensating for our personal weakness, make a few able to perform the work of thousands; we employ them to water and fertilize our fields, to decorate our mansions, to cleanse and embellish our cities, to preserve or extend our demesnes, to transport from county to county every thing which necessity, convenience, or luxury, has rendered precious to man: for these purposes we must confine and govern the mighty rivers, we must preserve or change the beds of the smaller streams, draw off from them what shall water our fields, drive our machines, or supply

Theory. our houses. We must keep up their waters for the purposes of navigation, or supply their places by canals; we must drain our fens, and defend them when drained; we must understand their motions, and their mode of secret, slow, but unceasing action, that our bridges, our wharfs, our dikes, may not become heaps of ruins. Ignorant how to proceed in these daily recurring cases, how often do we see projects of high expectation and heavy expense fail of their object, leaving the state burdened with works not only useless, but frequently hurtful?

This has long been a most interesting subject of study in Italy, where the fertility of their fields is not more indebted to their rich soil and happy climate, than to their numerous derivations from the rivers which traverse them; and in Holland and Flanders, where their very existence requires unceasing attention to the waters, which are every moment ready to swallow up the inhabitants, and where the inhabitants, having once subdued this formidable enemy, have made those very waters their indefatigable drudges, transporting through every corner of the country the materials of an extensive commerce.

Such having been our incessant occupations with moving waters, we should expect, that while the operative artists are continually furnishing facts and experiments, the man of speculative and scientific curiosity, excited by the importance of the subject, would ere now have made considerable progress in the science; and that the professional engineer would be daily acting from established principle, and be seldom disappointed in his expectations. Unfortunately, the reverse of this is nearly the true state of the case: each engineer is obliged to collect the greatest part of his knowledge from his own experience, and by many dear-bought lessons, to direct his future operations, in which he still proceeds with anxiety and hesitation; for we have not yet acquired principles of theory, and experiments have not yet been collected and published by which an empirical practice might be safely formed. Many experiments of inestimable value are daily made; but they remain with their authors, who seldom have either leisure, ability, or generosity, to add them to the public stock.

This science as yet in its infancy.

The motion of waters has been really so little investigated as yet, that hydraulics may still be called a new study. We have merely skimmed over a few common notions concerning the motions of water; and the mathematicians of the first order seem to have contented themselves with such views as allowed them to entertain themselves with elegant applications of calculus. This, however, has not been their fault. They rarely had opportunity of doing more, for want of a knowledge of facts. They have made excellent use of the few which have been given them; but it required much labour, great variety of opportunity, and great expense, to learn the multiplicity of things which are combined even in the simplest cases of water in motion. These are seldom the lot of the mathematician; and he is without blame when he enjoys the pleasures within his reach, and cultivates the science of geometry in its most abstracted form. Here he makes a progress which is the boast of human reason, being almost insured from error by the intellectual simplicity of his subject. But when we turn our attention to material objects, and, without knowing either the size and shape of the elementary particles, or the laws which nature has prescribed for their action, presume to foresee their effects, calculate their exertions, direct their actions, what must be their consequence? Nature shows her independence with respect to our notions, and, always faithful to the laws which are enjoined, and of which we are ignorant, she never fails to thwart our views, to disconcert our projects, and render useless all our efforts.

To wish to know the nature of the elements is vain, and our gross organs are insufficient for the study. To sup-

pose what we do not know, and to fancy shapes and sizes at will, is to raise phantoms, and will produce a system, but will not prove a foundation for any science. But to interrogate Nature herself, study the laws which she so faithfully observes, catch her, as we say, in the fact, and thus wrest from her the secret; this is the only way to become her master, and it is the only procedure consistent with good sense. And we see that soon after Kepler detected the laws of the planetary motions, when Galileo discovered the uniform acceleration of gravity, when Paschal discovered the pressure of the atmosphere, and Newton discovered the laws of attraction and the track of a ray of light; astronomy, mechanics, hydrostatics, chemistry, optics, quickly became bodies of sound doctrine, and the deductions from their respective theories were found fair representations of the phenomena of nature. Whenever a man has discovered a law of nature, he has laid the foundation of a science, and he has given us a new mean of subjecting to our service some element hitherto independent; and so long as groups of natural operations follow a route which appears to us whimsical, and will not admit our calculations, we may be assured that we are ignorant of the principle which connects them all, and regulates their procedure.

This is remarkably the case with several phenomena in the motions of fluids, and particularly in the motion of water in a bed or conduit of any kind. Although the first general laws of Europe have for this century past turned much of their attention to this subject, we are almost ignorant of the *general laws* which may be observed in their motions. We have been able to select very few points of resemblance, and every case remains nearly an individual. About one hundred and fifty years ago we discovered, by experience only, the quantity and velocity of water issuing from a small orifice, and, after much labour, have extended this to any orifice; and this is almost the whole of our confidential knowledge. But as to the uniform course of the streams which water the face of the earth, and the maxims which will certainly regulate this agreeably to our wishes, we are in a manner totally ignorant. Who can pretend to say what is the velocity of a river of which you tell him the breadth, the depth, and the declivity? Who can say what swell will be produced in different parts of its course, if a dam or weir of given dimensions be made in it, or a bridge be thrown across it; or how much its waters will be raised by turning another stream into it, or sunk by taking off a branch to drive a mill? Who can say with confidence what must be the dimensions or slope of this branch, in order to furnish the water that is wanted, or the dimensions and slope of a canal which shall effectually drain a fenny district? Who can say what form will cause or will prevent the undermining of banks, the forming of elbows, the pooling of the bed, or the deposition of sands? Yet these are the most important questions.

The causes of this ignorance are the want or uncertainty of our principles; the falsity of our only theory, which is belied by experience; and the small number of proper observations or experiments, and difficulty of making such as shall be serviceable. We have, it is true, made a few experiments on the efflux of water from small orifices, and from them we have deduced a sort of theory, dependent on the fall of heavy bodies and the laws of hydrostatic pressure. Hydrostatics is indeed founded on very simple principles, which give a very good account of the laws of the quiescent equilibrium of fluids, in consequence of gravity and perfect fluidity. But by what train of reasoning can we connect these with the phenomena of the uniform motion of the waters of a river or open stream, which can derive its motion only from the slope of its surface, and the modifications of this motion or its velocity only from the width and depth of the stream? These are the only circumstances which can distinguish a portion of a river from

Theory.
Proper mode of investigation.

Our ignorance of the general laws of this motion,

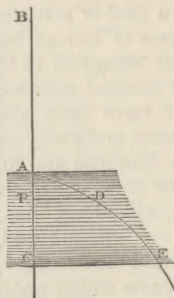
Theory. a vessel of the same size and shape, in which, however, the water is at rest. In both, gravity is the sole cause of pressure and motion; but there must be some circumstance peculiar to running waters which modifies the exertion of this active principle, and which, when discovered, must be the basis of hydraulics, and must oblige us to reject every theory founded on fancied hypothesis, and which can only lead to absurd conclusions; and surely absurd consequences, when legitimately drawn, are complete evidence of improper principles.

Principle on which the systems of hydraulics depend.

When it was discovered experimentally, that the velocities of water issuing from orifices at various depths under the surface were as the square roots of those depths, and the fact was verified by repeated experiments, this principle was immediately, and without modification, applied to every motion of water. Mariotte, Varignon, and Guglielmini, made it the basis of complete systems of hydraulics, which prevail to this day, after having received various amendments and modifications. The same reasoning obtains through them all, though frequently obscured by other circumstances, which are more perspicuously expressed by Guglielmini in his Fundamental Theorems.

He considers every point P (fig. 1) in a mass of fluid as an orifice in the side of a vessel, and conceives the particle as having a tendency to move with the same velocity with which it would issue from the orifice. Therefore, if a vertical line APC be drawn through that point, and if this be made the axis of a parabola ADE, of which A at the surface of the fluid is the vertex, and AB (four times the height through which a heavy body would fall in a second) is the parameter, the velocity of this particle will be represented by the ordinate PD of this parabola; that is, PD is the space which it would uniformly describe in a second.

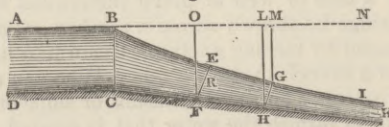
Fig. 1.



Theory derived from running waters. From this principle is derived the following theory of it.

Let DC (fig. 2) be the horizontal bottom of a reservoir, to which is joined a sloping channel CK of uniform breadth, and let AB be the surface of the standing water in the reservoir.

Fig. 2.



Suppose the vertical plane BC pierced with an infinity of holes, through each of which the water issues. The velocity of each filament will be that which is acquired by falling from the surface AB.¹ The filament C, issuing with this velocity, will then glide down the inclined plane like any other heavy body; and (by the common doctrine of the motion down an inclined plane) when it has arrived at F, it will have the same velocity which it would have acquired by falling through the height OF, the point O being in the horizontal plane AB produced. The same may be said of its velocity when it arrives at H or K. The filament immediately above C will also issue with a velocity which is in the subduplicate ratio of its depth, and will then glide down above the first filament. The same may be affirmed of all the filaments, and of the superficial filament, which will occupy the surface of the descending stream.

The consequences drawn from this theory. From this account of the genesis of a running stream of water, we may fairly draw the following consequences.

1. The velocity of any particle R, in any part of the

stream, is that acquired by falling from the horizontal plane AN.

2. The velocity at the bottom of the stream is everywhere greater than anywhere above it, and is least of all at the surface.

3. The velocity of the stream increases continually as the stream recedes from its source.

4. The depths EF, GH, &c. in different parts of the stream, will be nearly in the inverse subduplicate ratio of the depths under the surface AN: for since the same quantity of water is running through every section EF and GH, and the channel is supposed of uniform breadth, the depth of each section must be inversely as the velocity of the water passing through it. This velocity is indeed different in different filaments of the section; but the mean velocity in each section is in the subduplicate ratio of the depth of the filament under the surface AB. Therefore the stream becomes more shallow as it recedes from the source; and in consequence of this the difference between LH and MG continually diminishes, and the velocities at the bottom and surface of the stream continually approach to equality, and at a great distance from the source they differ insensibly.

5. If the breadth of the stream be contracted in any part, the depth of the running water will be increased in that part, because the same quantity must still pass through; but the velocity at the bottom will remain the same, and that at the surface will be less than it was before; and the area of the section will be increased on the whole.

6. Should a sluice be put across the stream, dipping a little into the water, the water must immediately rise on the upper side of the sluice till it rises above the level of the reservoir; and the smallest immersion of the sluice will produce this effect. For, by lowering the sluice, the area of the section is diminished, and the velocity cannot be increased till the water heap up to a greater height than the surface of the reservoir; and this acquires a pressure which will produce a greater velocity of efflux through the orifice left below the sluice.

7. An additional quantity of water coming into this channel will increase the depth of the stream, and the quantity of water which it conveys; but it will not increase the velocity of the bottom filaments unless it comes from a higher source.

All these consequences are contrary to experience, and show the imperfection at least of the explanation.

The third consequence is of all the most contrary to experience. If any one will but take the trouble of following a single brook from its source to the sea, he will find it most rapid in its beginnings among the mountains, gradually slackening its pace as it winds among the hills and gentler declivities, and at last creeping slowly along through the flat grounds, till it is checked and brought to rest by the tides of the ocean.

Nor is the second consequence more agreeable to observation. It is universally found that the velocity of the surface in the middle of the stream is the greatest of all, and that it gradually diminishes from thence to the bottom and sides.

And the first consequence, if true, would render the running waters on the surface of this earth the instruments of immediate ruin and devastation. If the waters of our rivers, in the cultivated parts of a country, which are two, three, and four hundred feet lower than their sources, ran with the velocity due to that height, they would in a few minutes lay the earth bare to the very bones.

The velocities of our rivers, brooks, and rills, being so greatly inferior to what this theory assigns to them, the

¹ See Guglielmini's Hydraulics, 21.

Theory. other consequences are equally contrary to experience. When a stream has its section diminished by narrowing the channel, the current increases in depth, and this is always accompanied by an increase of velocity through the whole of the section, and most of all at the surface; and the area of the section does not increase, but diminishes, all the phenomena thus contradicting in every circumstance the deduction from the theory; and when the section has been diminished by a sluice let down into the stream, the water gradually heaps up on the upper side of the sluice, and, by its pressure, produces an acceleration of the stream below the sluice, in the same way as if it were the beginning of a stream, as explained in the theory. The velocity now is composed of the velocity preserved from the source and the velocity produced by this subordinate accumulation; and this accumulation and velocity continually increase till they become such that the whole supply is again discharged through this contracted section: any additional water not only increases the quantity carried along the stream, but also increases the velocity, and therefore the section does not increase in the proportion of the quantity.

The theory, however, has been generally followed by the writers on the subject, It is surprising that a theory really founded on a conceit, and which in every one of the most familiar and obvious circumstances is contradicted by facts, should have met with so much attention. That Varignon should immediately catch at this notion of Guglielmini, and make it the subject of many elaborate analytical memoirs, is not to be wondered at. This author only wanted *donner prise au calcul*; and it was a usual joke among the academicians of Paris, when any new theorem was invented, *donnons le à Varignon à généraliser*. But his numerous theorems and corollaries were adopted by all, and still make the substance of the present systems of hydraulics. Gravesande, Muschenbroeck, and all the elementary treatises of natural philosophy, deliver no other doctrines; and Belidor, who has been considered as the first of all the scientific engineers, details the same theory in his great work the *Architecture Hydraulique*.

though some of the more ingenious saw its defects, and attempted to supply them. Guglielmini was, however, not altogether the dupe of his own ingenuity. He was not only a pretty good mathematician, but an assiduous and sagacious observer. He had applied his theory to some important cases which occurred in the exercise of his profession as inspector of the rivers and canals in the Milanese, and to the course of the Danube; and could not but perceive that great corrections were necessary for making the theory quadrate in some tolerable manner with observation; and he immediately saw that the motion was greatly obstructed by inequalities of the canal, which gave to the contiguous filaments of the stream transverse motions, which thwarted and confused the regular progress of the rest of the stream, and thus checked its general progress. These obstructions, he observed, were most effectual in the beginning of its course, while yet a small rill, running among stones, and in a very unequal bed. The whole stream being small, the inequalities bore a great proportion to it, and thus the general effect was great. He also saw that the same causes (these transverse motions produced by the unequal bottom) chiefly affect the contiguous filaments, and were the reasons why the velocity at the sides and bottom was so much diminished as to be less than the superficial velocity, and that even this might come to be diminished by the same cause. For he observed, that the general stream of a river is frequently composed of a sort of boiling or tumbling motion, by which masses of water are brought up to the surface and again descend. Every person must recollect such appearances in the freshes of a muddy river; and in this way Guglielmini was enabled to account in some measure for the disagreement of his theory with observation.

Mariotte had observed the same obstruction even in the smoothest glass pipes. Here it could not be ascribed to

Theory. the checks occasioned by transverse motions. He therefore ascribed it to friction, which he supposed to diminish the motion of fluid bodies in the same manner as of solids; and he thence concludes, that the filaments which immediately rub on the sides of the tube have their velocity gradually diminished, and that the filaments immediately adjoining to these, being thus obliged to pass over them or outstrip them, rub upon them and have their own velocity diminished in like manner, but in a smaller degree; and that the succeeding filaments towards the axis of the tube suffer similar but smaller diminutions. By this means the whole stream may come to have a smaller velocity; and at any rate, the medium velocity by which the quantity discharged is determined, is smaller than it would have been independent of friction.

Guglielmini adopted this opinion of Mariotte, and, in his next work on the Motion of Rivers, considered this as the chief cause of the retardation; and he added a third circumstance, which he considered as of no less consequence, the viscosity or tenacity of water. He observes that syrup, oil, and other fluids, where this viscosity is more remarkable, have their motions prodigiously retarded by it, and supposes that water differs from them only in the degree in which it possesses this quality; and he says, that by this means not only the particles which are moving more rapidly have their motions diminished by those in their neighbourhood which move slower, but that the filaments also which would have moved more slowly are accelerated by their more active neighbours, and that in this manner the superficial and inferior velocities are brought nearer to an equality. But this will never account for the universal fact that the superficial particles are the swiftest of all. The superficial particles, says he, acquire by this means a greater velocity than the parabolic law allows them; the medium velocity is often in the middle of the depth; the numerous obstacles continually multiplied and repeated, cause the current to lose the velocity acquired by the fall; the slope of the bottom then diminishes, and often becomes very small, so that the force remaining is hardly able to overcome the obstacles which are still repeated, and the river is reduced almost to a state of stagnation. He observes that the Rheno, a river of the Milanese, has near its mouth a slope of no more than 5", which he considers as quite inadequate to the task; and here he introduces another principle, which he considers as an essential part of the theory of open currents. This is, that there arises from the very depth of the stream a propelling force, which restores a part of the lost velocity. He offers nothing in proof of this principle, but uses it to account for and explain the motion of water in horizontal canals. The principle has been adopted by the numerous Italian writers on hydraulics, and, by various contrivances, interwoven with the parabolic theory, as it is called, of Guglielmini. Our readers may see it in various modifications in the *Idrostatica e Idraulica* of P. Lecchi, and in the *Sperienze Idrauliche* of Michelotti. It is by no means distinct either in its origin or in the manner of its application to the explanation of phenomena, and seems only to serve for giving something like consistency to the vague and obscure discussions which have been published on this subject in Italy. We have already remarked, that in that country the subject is particularly interesting, and has been much investigated. But the writers of England, France, and Germany, have not paid so much attention to it, and have more generally occupied themselves with the motion of water in close conduits, which seem to admit of a more precise application of mathematical reasoning.

Some of them have considered with more attention the effects of friction and viscosity. Sir Isaac Newton, with his usual penetration, had seen distinctly the manner in which it behoved these circumstances to operate. In his

Theory.
Sir Isaac
Newton's
observa-
tions on
this sub-
ject.

researches into the mechanism of the celestial motions, he had occasion to examine the famous hypothesis of Descartes, that the planets were carried round the sun by fluid vortices, and saw that there would be no end to uncertainty and dispute till the *modus operandi* of these vortices were mechanically considered. He therefore employed himself in the investigation of the manner in which the acknowledged powers of natural bodies, acting according to the received laws of mechanics, could produce and preserve these vortices, and restore that motion which was expended in carrying the planets round the sun. In the second book of the Principles of Natural Philosophy, he gives a series of beautiful propositions, viz. 51, 52, &c. with their corollaries, showing how the rotation of a cylinder or sphere round its axis in the midst of a fluid will excite a vortical motion in this fluid; and he ascertains with mathematical precision the motion of every filament of this vortex.

He sets out from the supposition that this motion is excited in the surrounding stratum of fluid in consequence of a want of perfect lubricity, and assumes as an hypothesis, that the initial resistance (or diminution of the motion of the cylinder) which arises from this want of lubricity, is proportional to the velocity with which the surface of the cylinder is separated from the contiguous surface of the surrounding fluid, and that the whole resistance is proportional to the velocity with which the parts of the fluid are mutually separated from each other. From this, and the equality of action and re-action, it evidently follows, that the velocity of any stratum of the vortex is the arithmetical medium between the velocities of the strata immediately within and without it. For the intermediate stratum cannot be in equilibrio, unless it is as much pressed forward by the superior motion of the stratum within it, as it is kept back by the slower motion of the stratum without it.

This beautiful investigation applies in the most perfect manner to every change produced in the motion of a fluid filament, in consequence of the viscosity and friction of the adjoining filaments; and a filament proceeding along a tube at some small distance from the sides has, in like manner, a velocity which is the medium between those of the filaments immediately surrounding it. It is therefore a problem of no very difficult solution to assign the law by which the velocity will gradually diminish as the filament recedes from the axis of a cylindrical tube. It is somewhat surprising that so neat a problem has never occupied the attention of the mathematicians during the time that these subjects were so assiduously studied; but so it is, that nothing precise has been published on the subject. The only approach to a discussion of this kind, is a Memoir of Mr Pitot, read to the academy of Paris in 1726, where he considers the velocity of efflux through a pipe. Here, by attending to the comparative superiority of the *quantity of motion* in large pipes, he affirms, that the total diminutions arising from friction will be (*ceteris paribus*) in the inverse ratio of the diameters. This was thankfully received by other writers, and is now a part of our hydraulic theories. It has not, however, been attended to by those who write on the motion of rivers, though it is evident that it is applicable to these with equal propriety; and had it been introduced, it would at once have solved all their difficulties, and particularly would have shown how an almost imperceptible declivity would produce the gentle motion of a great river, without having recourse to the unintelligible principle of Guglielmini.

Mr Couplet made some experiments on the motion of the water in the great main pipes of Versailles, in order to obtain some notions of the retardations occasioned by friction. They were found prodigious; but were so irregular, and unsuceptible of reduction to any general principle (and the experiments were indeed so few that they were unfit for this reduction), that he could establish no theory. What

Mr Belidor established on them, and makes a sort of system to direct future engineers, is quite unworthy of attention.

Upon the whole, this branch of hydraulics, although of much greater practical importance than the conduct of water in pipes, has never yet obtained more than a vague, and, we may call it, slovenly attention from the mathematicians; and we ascribe it to their not having taken the pains to settle its first principles with the same precision as had been done in the other branch. They were, from the beginning, satisfied with a sort of applicability of mathematical principles, without ever making the application. Were it not that some would accuse us of national partiality, we would ascribe it to this, that Newton had not pointed out the way in this as in the other branch; for any intelligent reader of the performances on the motions of fluids in close vessels, will see that not a principle, nay hardly a step of investigation, has been added to those which were used or pointed out by Sir Isaac Newton. He has nowhere touched this question, the motion of water in an open canal. In his theories of the tides, and of the propagation of waves, he had an excellent opportunity for giving at once the fundamental principles of motion in a free fluid whose surface was not horizontal. But, by means of some of those happy and shrewd guesses, in which, as Daniel Bernoulli says, he excelled all men, he saw the undoubted consequences of some palpable phenomenon which would answer all his present purposes, and therefore entered no farther into the investigation.

The original theory of Guglielmini, or the principle adopted by him, that each particle of the vertical section of a running stream has a tendency to move as if it were issuing from an orifice at that depth under the surface, is false; and that it really does so in the face of a dam when the floodgate is taken away, is no less so; and if it did, the subsequent motions would hardly have any resemblance to those which he assigns them. Were this the case, the exterior form of the cascade would be something like what is sketched in fig. 3, with an abrupt angle at B, and a concave surface BEG. This will be evident to every one who combines the greater velocity of the lower filaments with the slower motion of those which must slide down above them. But this greater advance of the lower filaments cannot take place without an expenditure of the water under the surface AB. The surface therefore sinks, and B instantly ceases to retain its place in the horizontal plane. The water does not successively flow forward from A to B, and then tumble over the precipice; but immediately opening the floodgate, the water wastes from the space immediately behind it, and the whole puts on the form represented in fig. 4, consisting of the curve A b P c EG, convex from A to c, and concave from thence forward. The superficial water begins to accelerate all the way from A; and the particles may be supposed (for the present) to have acquired the velocity corresponding to their depth under the horizontal surface. This must be understood as nothing more than a vague sketch of the motions. It requires a very critical and intricate investigation to determine either the form of the upper curve or the motions of the different filaments. The place A, where the curvature begins, is of equally difficult determination, and is various according to the differences of depth and of inclination of the succeeding canal.

We have thus given an historical sketch of the progress

Fig. 3.

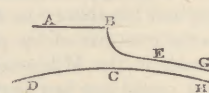
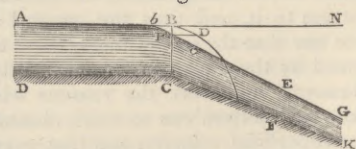


Fig. 4.



Theory. which had been made in this part of hydraulics, that our readers might form some opinion of the many dissertations which have been written on the motion of rivers, and of the state of the arts depending on it. Much of the business of the civil engineer is intimately connected with it; and we may therefore believe, that since there was so little principle in the theories, there could be but very little certainty in the practical operations. The fact has been, that no engineer could pretend to say, with any precision, what would be the effect of his operations. One whose business had given him many opportunities, and who had kept accurate and judicious registers of his own works, could pronounce, with some probability, how much water would be brought off by a drain of certain dimensions and a given slope, when the circumstances of the case happened to tally with some former work in which he had succeeded or failed; but out of the pale of his own experience he could only make a sagacious guess. A remarkable instance of this occurred some time ago. A small aqueduct was carried into Paris. It had been conducted on a plan presented to the academy, who had corrected it, and gave a report of what its performance would be. When executed in the most accurate manner, it was deficient in the proportion of five to nine. When the celebrated Desaguliers was employed by the city of Edinburgh to superintend the bringing in the water for the supply of the city, he gave a report on the plan which was to be followed. It was executed to his complete satisfaction; and the quantity of water delivered was about one sixth of the quantity which he promised, and about one eleventh of the quantity which the no less celebrated Maclaurin calculated from the same plan.

Uncertainty of the theories when applied to practice exemplified.

Necessity of multiplying experiments. Such being the state of our theoretical knowledge (if it can be called by this name), naturalists began to be persuaded that it was but losing time to make use of a theory so incongruous with observation, and that the only safe method of proceeding was to multiply experiments in every variety of circumstances, and to make a series of experiments in every important case, which should comprehend all the practical modifications of that case. Perhaps circumstances of resemblance might occur, which would enable us to connect many of them together, and at last discover the principles which occasioned this connection; by which means a theory founded on science might be obtained. And if this point should not be gained, we might perhaps find a few general facts, which are modified in all these particular cases, in such a manner that we can still trace the general facts, and see the part of each particular case which depends on it. This would be the acquisition of what may be called an empirical theory, by which every phenomenon would be explained, in so far as the explanation of a phenomenon is nothing more than the pointing out the general fact or law under which it is comprehended; and this theory would answer every practical purpose, because we should confidently foresee what consequences would result from such and such premises; or if we should fail even in this, we should still have a series of experiments so comprehensive, that we could tell what place in the series would correspond to any particular case which might be proposed.

Labours of Michelotti and Bossut in this way. There are two gentlemen whose labours in this respect deserve very particular notice, Professor Michelotti of Turin, and the Abbé Bossut of Paris. The first made a prodigious number of experiments, both on the motion of water through pipes and in open canals. They were performed at the expense of the sovereign, and no expense was spared. A tower was built of the finest masonry, to serve as a vessel from which the water was to issue through holes of various sizes, under pressures of from five to twenty-two feet. The water was received into basins constructed of masonry and nicely lined with stucco, from whence it was conveyed in canals of brickwork lined with stucco, and of various forms and declivities. The experiments on the expense of

Theory. water through pipes are, of all that have yet been made, the most numerous and exact, and may be appealed to on every occasion. Those made in open canals are still more numerous, and are no doubt equally accurate; but they have not been so contrived as to be so extensively useful, being in general very unlike the important cases which will occur in practice; and they seem to have been contrived chiefly with the view of establishing or overturning certain points of hydraulic doctrine which were probably prevalent at the time among the practical hydraulists.

The experiments of Bossut are also of both kinds; and though on a much smaller scale than those of Michelotti, seem to deserve equal confidence. As far as they follow the same tract, they perfectly coincide in their results, which should procure confidence in the other; and they are made in situations much more analogous to the usual practical cases. This renders them doubly valuable. They are to be found in his two volumes entitled *Hydrodynamique*. He has opened this path of procedure in a manner so new and so judicious, that he has in some measure the merit of such as shall follow him in the same path.

This has been most candidly and liberally allowed him by the Chevalier du Buat, who has taken up the matter where the Abbé Bossut left it, and has prosecuted his experiments with great assiduity, and, we must now add, with singular success. By a very judicious consideration of the subject, he hit on a particular view of it, which saved him the trouble of a minute consideration of the small internal motions, and enabled him to proceed from a very general and evident proposition, which may be received as the key to a complete system of practical hydraulics. We shall follow this ingenious author in what we have further to say on the subject; and we doubt not but that our readers will think we do a service to the public by making these discussions of the Chevalier du Buat more generally known in this country. It must not however be expected that we shall give more than a synoptical view of them, connected by such familiar reasoning as may be either comprehended or confided in by persons not deeply versed in mathematical science.

and the progressive experiments of Du Buat.

SECT. I.—Theory of Rivers.

It is certain that the motion of open streams must, in some respects, resemble that of bodies sliding down inclined planes perfectly polished; and that they would accelerate continually, were they not obstructed; but they are obstructed, and frequently move uniformly. This can only arise from an equilibrium between the forces which promote their descent and those which oppose it. Du Buat, therefore, assumes the leading proposition, that,

When water flows uniformly on any channel or bed, the accelerating force which obliges it to move is equal to the sum of all the resistances which it meets with, whether arising from its own viscosity, or from the friction of its bed.

This law is as old as the formation of rivers, and should be the key of hydraulic science. Its evidence is clear; and it is, at any rate, the basis of all uniform motion. And since it is so, there must be some considerable analogy between the motion in pipes and in open channels. Both owe their origin to an inequality of pressure, both would accelerate continually if nothing hindered, and both are reduced to uniformity by the viscosity of the fluid and the friction of the channel.

It will therefore be convenient to examine the phenomena of water moving in pipes by the action of its weight only along the sloping channel. But, previously to this, we must take some notice of the obstruction to the entry of water into a channel of any kind, arising from the deflection of the many different filaments which press into the channel from the reservoir from every side. We shall then be able

The subject of the following discussion proposed.

Theory. to separate this diminution of motion from the sum total that is observed, and ascertain what part remains as produced by the subsequent obstructions.

We shall then consider the principle of uniform motion, the equilibrium between the power and the resistance. The power is the relative height of the column of fluid which tends to move along the inclined plane of its bed; the resistance is the friction of the bed, the viscosity of the fluid, and its adhesion to the sides. Here is necessarily combined a number of circumstances which must be gradually detached, that we may see the effect of each, viz. the extent of the bed, its perimeter, and its slope. By examining the effects produced by variations of each of these separately, we discover what share each has in the general effect; and having thus analysed the complicated phenomena, we shall be able to combine those its elements, and frame a formula which shall comprehend every circumstance, from the greatest velocity to the extinction of all motion, and from the extent of a river to the narrow dimensions of a quill. We shall compare this formula with a series of experiments in all this variety of circumstances, partly made by Du Buat, and partly collected from other authors; and we shall leave the reader to judge of the agreement.

Confident that this agreement will be found most satisfactory, we shall then proceed to consider very cursorily the chief varieties which nature or art may introduce into these beds, the different velocities of the same stream, the intensity of the resistance produced by the inertia of the materials of the channel, and the force of the current by which it continually acts on this channel, tending to change either its dimensions or its form. We shall endeavour to trace the origin of these great rivers which spread like the branches of a vigorous tree, and occupy the surface even of a vast continent. We shall follow them in their course, unfold all their windings, study their train and regimen, and point out the law of its stability; and we shall investigate the causes of their deviations and wanderings.

The study of these natural laws pleases the mind: but it answers a still greater purpose; it enables us to assist nature, and to hasten her operations, which our wants and our impatience often find too slow. It enables us to command the elements, and to force them to administer to our wants and our pleasures.

We shall therefore, in the next place, apply the knowledge which we may acquire to the solution of the most important hydraulic questions which occur in the practice of the civil engineer.

We shall consider the effects produced by a permanent addition to any river or stream by the union of another, and the opposite effect produced by any draught or offset, showing the elevation or depression produced up the stream, and the change made in the depth and velocity below the addition or offset.

We shall pay a similar attention to the temporary swells produced by freshes.

We shall ascertain the effects of straightening the course of a stream, which, by increasing its slope, must increase its velocity, and therefore sink the waters above the place where the curvature was removed, and diminish the tendency to overflow, while the same immediate consequence must expose the places farther down to the risk of floods, from which they would otherwise have been free.

The effects of dams or weirs, and of bars, must then be considered; the gorge or swell which they produce up the stream must be determined for every distance from the weir or bar. This will furnish us with rules for rendering navigable or floatable such waters as have too little depth or too great slope. And it will appear that immense advantages may be thus derived, with a moderate expense, even from trifling brooks, if we will relinquish all prejudices, and not imagine that such conveyance is impossible be-

cause it cannot be carried on by such boats and small craft as we have been accustomed to look at.

The effects of canals of derivation, the rules or maxims of draining, and the general maxims of embankment, come in the next place; and our discussions will conclude with remarks on the most proper forms for the entry to canals, locks, docks, harbours, and mouths of rivers, the best shape for the starlings of bridges and of boats for inland navigation, and such like subordinate but interesting particulars, which will be suggested by the general thread of discussion.

It is considered as physically demonstrated (see *HYDRO-DYNAMICS*), that water issuing from a small orifice in the bottom or side of a very large vessel, almost instantly acquires and maintains the velocity which a heavy body would acquire by falling to the orifice from the horizontal surface of the stagnant water. This we shall call its *NATURAL VELOCITY*. Therefore, if we multiply the area of the orifice by this velocity, the product will be the bulk or quantity of the water which is discharged. This we may call the *NATURAL EXPENSE* of water, or the *NATURAL DISCHARGE*.

Let O represent the area or section of the orifice expressed in some known measure, and h its depth under the surface. Let g express the velocity acquired by a heavy body during a second by falling. Let V be the medium velocity of the water's motion, Q the quantity of water discharged during a second, and N the natural expense.

We know that V is equal to $\sqrt{2g} \times \sqrt{h}$. Therefore $N = O \sqrt{2g} \sqrt{h}$.

If these dimensions be all taken in English feet, we have $\sqrt{2g}$ very nearly equal to 8; and therefore $V = 8 \sqrt{h}$, and $N = O 8 \sqrt{h}$.

But in our present business it is much more convenient to measure every thing by inches. Therefore, since a body acquires the velocity of 32 feet 2 inches in a second, we have $2g = 64$ feet 4 inches, or 772 inches, and $\sqrt{2g} = 27.78$ inches, nearly $27\frac{3}{4}$ inches.

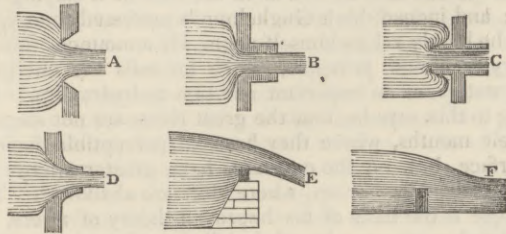
Therefore $V = \sqrt{772} \sqrt{h} = 27.78 \sqrt{h}$, and $N = O \sqrt{772} \sqrt{h} = O 27.78 \sqrt{h}$.

But it is also well known, that if we were to calculate the expense or discharge for every orifice by this simple rule, we should in every instance find it much greater than nature really gives us.

When water issues through a hole in a thin plate, the lateral columns, pressing into the hole from all sides, cause the issuing filaments to converge to the axis of the jet, and contract its dimensions at a little distance from the hole. And it is in this place of greatest contraction that the water acquires that velocity which we observe in our experiments, and which we assume as equal to that acquired by falling from the surface. Therefore, that our computed discharge may best agree with observation, it must be calculated on the supposition that the orifice is diminished to the size of this smallest section. But the contraction is subject to variations, and the dimensions of this smallest section are at all times difficult to ascertain with precision. It is therefore much more convenient to compute from the real dimensions of the orifice, and to correct this computed discharge, by means of an actual comparison of the computed and effective discharges in a series of experiments made in situations resembling those cases which most frequently occur in practice. This correction, or its cause, in the mechanism of those internal motions, is generally called *CONTRACTION* by the writers on hydraulics; and it is not confined to a hole in a thin plate: it happens in some degree in all cases where fluids are made to pass through narrow places. It happens in the entry into all pipes, canals, and sluices; nay even into the passage of water over the edge of a board, such as is usually set up on the head of a

Theory. dam or weir, and even when this is immersed in water on both sides, as in a bar or keep, frequently employed for raising the waters of the level streams in Flanders in order to render them navigable. We mentioned an observation¹ of Du Buat to this effect, when he saw a gooseberry rise up from the bottom of the canal along the face of the bar, and then rapidly fly over its top. We have attempted to represent this motion of the filaments in these different situations.

Fig. 5.



Motion of filaments in various particular situations,

A shows the motion through a thin plate. B shows the motion when a tube of about two diameters long is added, and when the water flows with a full mouth. This does not always happen in so short a pipe (and never in one that is shorter), but the water frequently detaches itself from the sides of the pipe, and flows with a contracted jet.

C shows the motion when the pipe projects into the inside of the vessel. In this case it is difficult to make it flow full.

D represents a mouth-piece fitted to the hole, and formed agreeably to that shape which a jet would assume of itself. In this case all contraction is avoided, because the mouth of this pipe may be considered as the real orifice, and nothing now diminishes the discharge but a trifling friction of the sides.

E shows the motion of water over a dam or weir, where the fall is free or unobstructed; the surface of the lower stream being lower than the edge or sole of the waste-board.

F is a similar representation of the motion of water over what we would call a *bar* or *keep*.

and the effects of contraction determined.

It was one great aim of the experiments of Michelotti and Bossut to determine the effects of contraction in these cases. Michelotti, after carefully observing the form and dimensions of the natural jet, made various mouth-pieces resembling it, till he obtained one which produced the smallest diminution of the computed discharge, or till the discharge computed for the area of its smaller end approached the nearest to the effective discharge. And he at last obtained one which gave a discharge of 983, when the natural discharge would have been 1000. This piece was formed by the revolution of a trochoid round the axis of the jet, and the dimensions were as follow:

Diameter of the outer orifice = 36
Diameter of the inner orifice = 46
Length of the axis = 96

The results of the experiments of the Abbé Bossut and of Michelotti scarcely differ, and they are expressed in the following table:

N or the natural expense.....10000 = $0.27.78 \sqrt{h}$
Q for the thin plate, fig. A, almost } 6526 = $0.18.13 \sqrt{h}$
at the surface..... }
Q for ditto at the depth of 8 feet..... 6195 = $0.17.21 \sqrt{h}$
Q for ditto at the depth of 16 feet..... 6173 = $0.17.15 \sqrt{h}$
Q for a tube 2 diameters long, fig. B... 8125 = $0.22.57 \sqrt{h}$

Q for ditto projecting inwards and } 6814 = $0.18.93 \sqrt{h}$
flowing full..... }
Q for ditto with a contracted jet, fig. C..... } 5137 = $0.14.27 \sqrt{h}$
Q for the mouth-piece, fig. D..... 9831 = $0.27.31 \sqrt{h}$
Q for a weir, fig. E..... 9536 = $0.26.49 \sqrt{h}$
Q for a bar, fig. F..... 9730 = $0.27.03 \sqrt{h}$

The numbers in the last column of this little table are the cubical inches of water discharged in a second when the height h is one inch.

It must be observed, that the discharges assigned here for the weir and bar relate only to the contractions occasioned by the passage over the edge of the board. The weir may also suffer a diminution by the contractions at its two ends, if it should be narrower than the stream, which is generally the case, because the two ends are commonly of square masonry or wood-work. The contraction there is nearly the same with that at the edge of a thin plate. But this could not be introduced into this table, because its effect on the expense is the same in quantity whatever is the length of the waste-board of the weir.

In like manner, the diminution of discharge through a sluice could not be expressed here. When a sluice is drawn up, but its lower edge still remains under water, the discharge is contracted both above and at the sides, and the diminution of discharge by each is in proportion to its extent. It is not easy to reduce either of these contractions to computation, but they may be very easily observed. We frequently can observe the water, at coming out of a sluice into a mill-course, quit the edge of the aperture, and show a part of the bottom quite dry. This is always the case when the velocity of efflux is considerable. When it is very moderate, this place is occupied by an eddy water almost stagnant. When the head of water is eight or ten inches, and runs off freely, the space left between it and the sides is about one and a half inch. If the sides of the entry have a slope, this void space can never appear; but there is always this tendency to convergence, which diminishes the quantity of the discharge.

It will frequently abridge computation very much to consider the water discharged in these different situations as moving with a common velocity, which we conceive as produced not by a fall from the surface of the fluid (which is exact only when the expense is equal to the natural expense), but by a fall h accommodated to the discharge: or it is convenient to know the height which would produce that very velocity which the water issues with in these situations.

And also, when the water is observed to be actually moving with a velocity V , and we know whether it is coming through a thin plate, through a tube, over a dam, &c. it is necessary to know the pressure or HEAD OF WATER h which has actually produced this velocity. It is convenient therefore to have the following numbers in readiness.

h for the natural expense..... = $\frac{V^2}{772}$
 h for a thin plate at the depth of 8 feet... = $\frac{V^2}{296}$
 h for a tube 2 diam. long..... = $\frac{V^2}{509}$
 h for a dam or weir..... = $\frac{V^2}{702}$
 h for a bar..... = $\frac{V^2}{731}$

It was necessary to premise these facts in hydraulics,

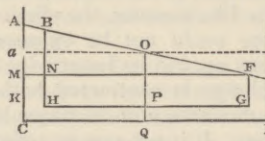
¹ See HYDRODYNAMICS, vol. xii.

Theory. that we may be able in every case to distinguish between the force expended in the entry of the water into the conduit or canal, and the force employed in overcoming the resistances along the canal, and in preserving or accelerating its motion in it.

The motion of rivers depends on the slope of the surface.

The motion of running water is produced by two causes: 1. The action of gravity; and, 2. the mobility of the particles, which makes them assume a level in confined vessels, or determines them to move to that side where there is a defect of pressure. When the surface is level, every particle is at rest, being equally pressed in all directions; but if the surface is not level, not only does a particle on the very surface tend by its own weight towards the lower side, as a body would slide along an inclined plane, but there is a force, external to itself, arising from a superiority of pressure on the upper end of the surface, which pushes this superficial particle towards the lower end; and this is not peculiar to the superficial particles, but affects every particle within the mass of water. In the vessel ACDE

Fig. 6.



(fig. 6), containing water with an inclined surface AE, if we suppose all frozen but the extreme columns AKB, FGLE, and a connecting portion HKCDLG, it is evident, from hydrostatical laws, that the water on this connecting part will be pushed in the direction CD; and if the frozen mass BHGF were moveable, it would also be pushed along. Giving it fluidity will make no change in this respect; and it is indifferent what is the situation and shape of the connecting column or columns. The propelling force (MNF being horizontal) is the weight of the column AMNB. The same thing will obtain wherever we select the vertical columns. There will always be a force tending to push every particle of water in the direction of the declivity. The consequence will be, that the water will sink at one end and rise at the other, and its surface will rest in the horizontal position aoe , cutting the former in its middle O. This cannot be, unless there be not only a motion of perpendicular descent and ascent of the vertical columns, but also a real motion of translation from K towards L. It perhaps exceeds our mathematical skill to tell what will be the motion of each particle. Newton did not attempt it in his investigation of the motion of waves, nor is it at all necessary here. We may, however, acquire a very distinct notion of its general effect. Let OPQ be a vertical plane passing through the middle point O. It is evident that every particle in PQ, such as P, is pressed in the direction QD, with a force equal to the weight of a single row of particles whose length is the difference between the columns BH and FG. The force acting on the particle Q is, in like manner, the weight of a row of particles = AC — ED. Now if OQ, OA, OE, be divided in the same ratio, so that all the figures ACDE, BHGF, &c. may be similar, we see that the force arising solely from the declivity, and acting on each particle on the plane OQ, is proportiona. to its depth under the surface, and that the row of particles ACQDE, BHPGF, &c. which is to be moved by it, is in the same proportion. Hence it unquestionably follows, that the accelerating force on each particle of the row is the same in all. Therefore the whole plane OQ tends to advance forward together with the same velocity; and in the instant immediately succeeding, all these particles would be found again in a vertical plane indefinitely nearer to OQ; and if we sum up the forces, we shall find them the same as if OQ were the opening of a sluice, having the water on the side of D standing level with O, and the water on the other side standing at the height AC. This result is extremely different from that of the hasty theory of Guglielmini. He considers each particle in OQ as urged

by an accelerating force proportional to its depth, it is true; but he makes it *equal* to the weight of the row OP, and never recollects that the greatest part of it is balanced by an opposite pressure, nor perceives that the force which is not balanced must be distributed among a row of particles which varies in the same proportion with itself. When these two circumstances are neglected, the result will be incompatible with observation. When the balanced forces are taken into the account of pressure, it is evident that the surface may be supposed horizontal, and that motion should obtain in this case as well as in the case of a sloping surface; and indeed this is Guglielmini's professed theory, and what he highly values himself upon. He announces this discovery of a new principle, which he calls the energy of deep waters, as an important addition to hydraulics. It is owing to this, says he, that the great rivers are not stagnant at their mouths, where they have no perceptible declivity of surface, but, on the contrary, have greater energy and velocity than farther up, where they are shallower. This principle is the basis of his improved theory of rivers, and is insisted on at great length by all the subsequent writers. Buffon, in his theory of the earth, makes much use of it. We cannot but wonder that it has been allowed a place in the theory of rivers given in the great *Encyclopédie* of Paris, and in an article having the signature (O) of D'Alembert. We have been very anxious to show the falsity of this principle, because we consider it as a mere subterfuge of Guglielmini, by which he was able to patch up the mathematical theory which he had so hastily taken from Newton or Galileo; and we think that we have secured our readers from being misled by it, when we show that this energy must be equally operative when the surface is on a dead level. The absurdity of this is evident. We shall see by and by, that deep waters, when in actual motion, have an energy not to be found in shallow running waters, by which they are enabled to continue that motion; but this is not a moving principle; and it will be fully explained, as an immediate result of principles, not vaguely conceived and indistinctly expressed, like this of Guglielmini, but easily understood, and appreciable with the greatest precision. It is an energy common to all great bodies. Although they lose as much momentum in surmounting any obstacle as small ones, they lose but a small portion of their velocity. At present, employed only in considering the progressive motion of an open stream, whose surface is not level, it is quite enough that we see that such a motion must obtain, and that we see that there are propelling forces; that those forces arise *solely* from the want of a level surface, or from the slope of the surface; and that, with respect to any one particle, the force acting on it is proportional to the difference of level between each of the two columns (one on each side of the particle) which produce it. Were the surface level, there would be no motion; if it is not level, there will be motion; and this motion will be proportional to the want of level or the declivity of the surface: it is of no consequence whether the bottom be level or not, or what is its shape.

Hence we draw a fundamental principle, that the *motion of rivers depends entirely on the slope of the surface.*

The *slope* or declivity of any inclined plane is not properly expressed by the difference of height alone of its extremities; we must also consider its length; and the measure of the slope must be such that it may be the same while the declivity is the same. It must therefore be the same over the whole of any one inclined plane. We shall answer these conditions exactly, if we take for the measure of a slope the fraction which expresses the elevation of one extremity above the other divided by the length of the plane. Thus $\frac{AM}{AF}$ will express the declivity of the plane AF.

Theory. If the water met with no resistance from the bed in which it runs, if it had no adhesion to its sides and bottom, and if its fluidity were perfect, its gravity would accelerate its course continually, and the earth and its inhabitants would be deprived of all the advantages which they derive from its numberless streams. They would run off so quickly, that our fields, dried up as soon as watered, would be barren and useless. No soil could resist the impetuosity of the torrents; and their accelerating force would render them a destroying scourge, were it not that, by kind Providence, the resistance of the bed, and the viscosity of the fluid, become a check which reins them in and sets bounds to their rapidity. In this manner the friction on the sides, which, by the viscosity of the water, is communicated to the whole mass, and the very adhesion of the particles to each other, and to the sides of the channel, are the causes which make the resistances bear a relation to the velocity; so that the resistances, augmenting with the velocities, come at last to balance the accelerating force. Then the velocity now acquired is preserved, and the motion becomes uniform, without being able to acquire new increase, unless some change succeeds either in the slope or in the capacity of the channel. Hence arises the second maxim in the motion of rivers, that *when a stream moves uniformly, the resistance is equal to the accelerating force.*

As in the efflux of water through orifices, we pass over the very beginnings of the accelerated motion, which is a matter of speculative curiosity, and consider the motion in a state of permanency, depending on the head of water, the area of the orifice, the velocity, and the expense; so in the theory of the uniform motion of rivers, we consider the slope, the transverse section or area of the stream, the uniform velocity, and the expense. It will be convenient to affix precise meanings to the terms which we shall employ.

Terms precisely explained.

The **SECTION** of a stream is the area of a plane perpendicular to the direction of the general motion. The resistances arise ultimately from the action of the water on the internal surface of the channel, and must be proportional (*cæteris paribus*) to the extent of the action. Therefore, if we unfold the whole edge of this section, which is rubbed as it were by the passing water, we shall have a measure of the extent of this action. In a pipe, circular or prismatical, the whole circumference is acted on; but in a river or canal ACDR (fig. 6) the horizontal line aOe , which makes the upper boundary of the section $aCDe$, is free from all action. The action is confined to the three lines aC , CD , De . We shall call this line $aCDe$ the **BORDER** of the section.

The **MEAN VELOCITY** is that with which the whole section, moving equally, would generate a solid equal to the expense of the stream. This velocity is to be found perhaps but in one filament of the stream, and we do not know in which filament it is to be found.

Since we are attempting to establish an empirical theory of the motion of rivers, founded entirely on experiments, and palpable deductions from them, and since it is extremely difficult to make experiments on open streams which shall have a precision sufficient for such an important purpose, it would be a most desirable thing to demonstrate an exact analogy between the mutual balancing of the acceleration and resistance in pipes and in rivers; for in those we can not only make experiments with all the desired accuracy, and admitting precise measures, but we can make them in a number of cases that are almost impracticable in rivers. We can increase the slope of a pipe from nothing to the vertical position, and we can employ every desired degree of pressure, so as to ascertain its effect on the velocity in de-

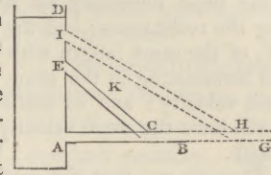
grees which open streams will not admit of. The Chevalier du Buat has most happily succeeded in this demonstration; and it is here that his good fortune and his penetration have done so much service to practical science.

Let AB (fig. 7) be a horizontal tube, through which the water is impelled by the pressure or HEAD DA. This head is the moving power; and it may be conceived as consisting of two parts, performing two distinct offices. One of them is employed in impressing on the water that velocity with which it *actually moves* in the tube. Were there no obstructions to this motion, no greater head would be wanted; but there are obstructions, arising from friction, adhesion, and viscosity. This requires force. Let this be the office of the rest of the head of water in the reservoir. There is but one allotment, appropriation, or repartition of the whole head which will answer. Suppose E to be the point of partition, so that DE is the head necessary for impressing the actual velocity on the water (a head or pressure which has a relation to the form or circumstance of the entry, and the contraction which takes place there). The rest EA is wholly employed in overcoming the simultaneous resistances which take place along the whole tube AB, and is in equilibrio with this resistance. Therefore, if we apply at E a tube EC, of the same length and diameter with AB, and having the same degree of polish or roughness; and if this tube be inclined in such a manner that the axis of its extremity may coincide with the axis of AB in the point C; we affirm that the velocity will be the same in both pipes, and that they will have the same expense; for the moving force in the sloping pipe EC is composed of the whole weight of the column DE and the relative weight of the column EC; but this relative weight, by which alone it descends along the inclined pipe EC, is precisely equal to the weight of a vertical column EA of the same diameter. Everything therefore is equal in the two pipes, viz. the lengths, the diameters, the moving forces, and the resistances; therefore the velocities and discharges will also be equal.

This is not only the case on the whole, but also in every part of it. The relative weight of any part of it EK is precisely in equilibrio with the resistances along that part of the pipe; for it has the same proportion to the whole relative weight that the resistance has to the whole resistance. Therefore (*and this is the most important circumstance, and the basis of the whole theory*) the pipe EC may be cut shorter, or may be lengthened to infinity, without making any change in the velocity or expense, so long as the propelling head DE remains the same.

Leaving the whole head DA as it is, if we lengthen the horizontal pipe AB to G, it is evident that we increase the resistance without any addition of force to overcome it. The velocity must therefore be diminished; and it will now be a velocity which is produced by a smaller head than DE: therefore, if we were to put in a pipe of equal length at E, terminating in the horizontal line AG, the water will not run equally in both pipes. In order that it may, we must discover the diminished velocity with which the water now actually runs along AG, and we must make a head DI capable of impressing this velocity at the entry of the pipe, and then insert at I a pipe IH of the same length with AG. The expense and velocity of both pipes will now be the same.¹

Fig. 7.

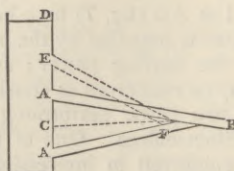


The acceleration and resistance of water in a horizontal tube,

¹ We recommend it to the reader to make this distribution or allotment of the different portions of the pressure very familiar to his mind. It is of the most extensive influence in every question of hydraulics, and will on every occasion give him distinct conceptions of the internal procedure. Obvious as the thought seems to be, it has escaped the attention of all the writers on the subject.

Theory. What has now been said of a horizontal pipe AB would have been equally true of any inclined pipe AB A'B (fig. 8). Drawing the horizontal line CB, we see that DC is the whole head or propelling pressure for either pipe AB or A'B; and if DE is the head necessary for the actual velocity, EC is the head necessary for balancing the resistances; and the pipe EF, of the same length with AB, and terminating in the same horizontal line, will have the same velocity: and its inclination being thus determined, it will have the same velocity and expense whatever be its length.

Fig. 8.



Analogy between these pipes and rivers demonstrated by Du Buat.

Thus we see that the motion in any pipe, horizontal or sloping, may be referred to or substituted for the motion in another inclined pipe, whose head of water, above the place of entry, is that productive of the actual velocity of the water in the pipe. Now, in this case, the accelerating force is equal to the resistance: we may therefore consider this last pipe as a river, of which the bed and the slope are uniform or constant, and the current in a state of permanency; and we now may clearly draw this important conclusion, that pipes and open streams, when in a state of permanency, perfectly resemble each other in the circumstances which are the immediate causes of this permanency. The equilibrium between the accelerating force obtains not only in general, but takes place through the whole length of the pipe or stream, and is predicable of every individual transverse section of either. To make this more palpably evident, if possible, let us consider a sloping cylindrical pipe, the current of which is in a state of permanency. We can conceive it as consisting of two half cylinders, an upper and a lower. These are running together at an equal pace; and the filaments of each immediately contiguous to the separating plane and to each other are not rubbing on each other, nor affecting each other's motions in the smallest degree. It is true that the upper half is pressing on the lower, but in a direction perpendicular to the motion, and therefore not affecting the velocity; and we shall see presently, that although the lower side of the pipe bears somewhat more pressure than the other, the resistances are not changed. Indeed this odds of pressure is accompanied with a difference of motion, which need not be considered at present; and we may suppose the pipe so small or so far below the surface that this shall be insensible. Now let us suppose, that in an instant the upper half cylinder is annihilated: we then have an open stream; and every circumstance of accelerating force and of resistance remains precisely as it was. The motion must therefore continue as it did; and in this state the only accelerating force is the slope of the surface. The demonstration therefore is complete.

Consequence.

From these observations and reasonings we draw a general and important conclusion, "that the same pipe will be susceptible of different velocities, which it will preserve uniform to any distance, according as it has different inclinations; and each inclination of a pipe of given diameter has a certain velocity peculiar to itself, which will be maintained uniform to any distance whatever; and this velocity increases continually, according to some law, to be discovered by theory or experiment, as the position of the pipe changes from being horizontal till it becomes vertical; in which po-

sition it has the greatest uniform velocity possible relative to its inclination, or depending on inclination alone."

Theory.

Let this velocity be called the TRAIN, or the RATE, of each pipe.

It is evident that this principle is of the utmost consequence in the theory of hydraulics; for by experiment we can find the train of any pipe. It is in train when an increase of length makes no change in the velocity. If lengthening the pipe increases the velocity, the slope of the pipe is too great, and *vice versa*. And having discovered the train of a pipe, and observed its velocity, and computed the head productive of this velocity with the contraction at the entry, the remainder of the head, that is, the slope (for this is equivalent to EA), is the measure of the resistance. Thus we obtain the measure of the resistance to the motion with a given velocity in a pipe of given diameter. If we change only the velocity, we get the measure of the new resistance relative to the velocity; and thus discover the law of relation between the resistance and velocity. Then, changing only the diameter of the pipe, we get the measure of the resistance relative to the diameter. This is the aim of a prodigious number of experiments made and collected by Du Buat, and which we shall not repeat, but only give the results of the different parts of his investigation.

Measure of the resistance to the motion with a given velocity. Results of Du Buat's investigation on this subject.

We may express the slope of a pipe by the symbol $\frac{1}{s}$, being an inch, for instance, and s being the slant length of a pipe which is one inch more elevated at one end than at the other. Thus a river which has a declivity of an inch and a half in 120 fathoms or 8640 inches, has its slope $= \frac{1\frac{1}{2}}{8640}$, or $\frac{1}{5760}$. But in order to obtain the hydraulic slope of a conduit-pipe, the height of the reservoir and place of discharge being given, we must subtract from the difference of elevation the height or head of water necessary for propelling the water into any pipe with the velocity V , which it is supposed actually to have. This is $\frac{V^2}{509}$. The remainder d is to be considered as the height of the declivity, which is to be distributed equally over the whole length l of the pipe, and the slope is then $\frac{d}{l} = \frac{1}{s}$.

There is another important view to be taken of the slope, which the reader should make very familiar to his thoughts. It expresses the proportion between the weight of the whole column which is in motion and the weight which is employed in overcoming the resistance; and the resistance to the motion of any column of water is equal to the weight of that column multiplied by the fraction $\frac{1}{s}$, which expresses its slope.

We now come to consider more particularly the resistances which in this manner bring the motion to a state of uniformity. If we consider the resistances which arise from a cause analogous to friction, we see that they must depend entirely on the inertia of the water. What we call the resistance is the diminution of a motion which would have obtained but for these resistances; and the best way we have of measuring them is by the force which we must employ in order to keep up or restore this motion. We estimate this motion by a progressive velocity, which we mea-

Of the resistances which bring the motions to a state of uniformity.

Lecchi, in his *Hydraulics*, published in 1766, ascribes something like it to Daniel Bernoulli; but Bernoulli, in the passage quoted, only speaks of the partition of pressure in the instant of opening an orifice. Part of it, says he, is employed in accelerating the quiescent water, and producing the velocity of efflux, and the remainder produces the pressure (now diminished) on the sides of the vessel. Bernoulli, Bossut, and all the good writers, make this distribution in express terms in their explanation of the motion of water through successive orifices; and it is surprising that no one before the Chevalier du Buat saw that the resistance arising from friction required a similar partition of the pressure; but though we should call this good fortune, we must ascribe to his great sagacity and justness of conception the beautiful use that he has made of it: *sum cuique*.

Theory. sure by the expense of water in a given time. We judge the velocity to diminish when the quantity discharged diminishes; yet it may be otherwise, and probably is otherwise. The absolute velocity of many, if not all, of the particles, may even be increased; but many of the motions being transverse to the general direction, the quantity of motion in this direction may be less, while the sum of the absolute motions of all the particles may be greater. When we increase the general velocity, it is not unreasonable to suppose that the impulses on all the inequalities are increased in this proportion; and the number of particles thus impelling and deflected at the same time will increase in the same proportion. The whole quantity, therefore, of these useless and lost motions will increase in the duplicate ratio of the velocities, and the force necessary for keeping up the motion will do so also; that is, the resistances should increase as the squares of the velocities.

Or if we consider the resistances as arising merely from the curvature of the imperceptible internal motions occasioned by the inequalities of the sides of the pipe, and as measured by the forces necessary for producing these curvilinear motions; then, because the curves will be the same whatever are the velocities, the deflecting forces will be as the squares of the velocities; but these deflecting forces are pressures, propagated from the parts urged or pressed by the external force, and are proportional to these external pressures by the principles of hydrostatics. Therefore the pressures or forces necessary for keeping up the velocities are as the squares of these velocities; and they are our only measures of the resistances which must be considered as following the same ratio. Whatever view therefore we take of the nature of these resistances, we are led to consider them as proportional to the squares of the velocities.

We may therefore express the resistances by the symbol $\frac{V^2}{m}$, m being some number to be discovered by experiment.

Thus, in a particular pipe, the diminution of the motion or the resistance may be the 1000th part of the square of the velocity, and $R = \frac{V^2}{1000}$.

Now if g be the accelerating power of gravity on any particle, $\frac{g}{s}$ will be its accelerating power by which it would urge it down the pipe whose slope is $\frac{1}{s}$. Therefore, by

the principle of uniform motion, the equality of the accelerating force, and the resistance, we shall have $\frac{V^2}{m} = \frac{g}{s}$, and

$V\sqrt{s} = \sqrt{mg}$; that is, the product of the velocity, and the reciprocal of the square root of the slope, or the quotient of the velocity divided by the square root of the slope, is a constant quantity $\sqrt{mg}$ for any given pipe; and the primary formula for all the uniform velocities of one pipe is

$$V = \frac{\sqrt{mg}}{\sqrt{s}}.$$

Experiments and reasoning of Du Buat, respecting these resistances, &c. Du Buat therefore examined this by experiment, but found, that even with respect to a pipe or channel which was uniform throughout, this was not true. We could give at once the final formula which he found to express the velocity in every case whatever; but this would be too empirical. The chief steps of his very sagacious investigation are instructive. We shall therefore mention them briefly, at least as far as they tend to give us any collateral information; and let it always be noted, that the instruction which they convey is not abstract speculation, but experimental truths, which must ever remain as an addition to our stock of knowledge, although Du Buat's deductions from them should prove false.

VOL. XIX.

Theory He found, in the first place, that in the same channel the product of V and $\sqrt{s}$ increased as $\sqrt{s}$ increased; that is, the velocities increased faster than the square roots of the slope, or the resistances did not increase as fast as the squares of the velocities. We beg leave to refer our readers to what we said on the resistance of pipes to the motion of fluids through them, in the article PNEUMATICS, when speaking of bellows. They will there see very valid reasons, we apprehend, for thinking that the resistances must increase more slowly than the squares of the velocities.

It being found, then, that $V\sqrt{s}$ is not equal to a constant quantity $\sqrt{mg}$, it becomes necessary to investigate some quantity depending on $\sqrt{s}$, or, as it is called, some function of $\sqrt{s}$ which shall render $\sqrt{mg}$ a constant quantity. Let X be this function of $\sqrt{s}$, so that we shall always have VX

equal to the constant quantity $\sqrt{mg}$, or $\frac{\sqrt{mg}}{X}$ equal to the

actual velocity V of a pipe or channel which is in train.

Du Buat, after many trials and reflections, the chief of which will be mentioned by and by, found a value of X which corresponded with a vast variety of slopes and velocities, from motions almost imperceptible, in a bed nearly horizontal, to the greatest velocities which could be produced by gravity alone in a vertical pipe; and when he compared them together, he found a very discernible relation between the resistances and the magnitude of the section; that is, that in two channels which had the same slope, and the same propelling force, the velocity was greatest in the channel which had the greatest section relative to its border. This may reasonably be expected. The resistances arise from the mutual action of the water and this border. The water immediately contiguous to it is retarded, and this retards the next, and so on. It is to be expected, therefore, that if the border, and the velocity, and the slope, be the same, the diminution of this velocity will be so much the less as it is to be shared among a greater number of particles; that is, as the area of the section is greater in proportion to the extent of its border. The diminution of the general or medium velocity must be less in a cylindrical pipe than in a square one of the same area, because the border of the section is less.

It appears evident, that the resistance of each particle is in the direct proportion of the whole resistance, and the inverse proportion of the number of particles which receive equal shares of it. It is therefore directly as the border, and inversely as the section. Therefore, in the expression

$\frac{V^2}{m}$ which we have given for the resistance, the quantity m

cannot be constant, except in the same channel; and in different channels it must vary along with the relation of the section to its border, because the resistances diminish in proportion as this relation increases.

Without attempting to discover this relation by theoretical examination of the particular motions of the various filaments, Du Buat endeavoured to discover it by a comparison of experiments. But this required some manner of stating this proportion between the augmentation of the section and the augmentation of its border.

His statement is this: he reduces every section to a rectangular parallelogram of the same area, and having its base equal to the border unfolded into a straight line. The product of this base by the height of the rectangle will be equal to the area of the section. Therefore this height will be a representative of this valuable ratio of the section to its border (we do not mean that there is any ratio between a surface and a line: but the ratio of section to section is different from that of border to border; and it is the ratio of these ratios which is thus expressed by the height of this

Theory.

rectangle). If S be the section, and B the border, $\frac{S}{B}$ is

evidently a line equal to the height of this rectangle. Every section being in this manner reduced to a rectangle, the perpendicular height of it may be called the HYDRAULIC MEAN DEPTH of the section, and may be expressed by the symbol d . Buat calls it the mean radius. If the channel be a cylindrical pipe, or an open half cylinder, it is evident that d is half the radius. If the section is a rectangle,

whose width is w and height h , the mean depth is $\frac{wh}{w+2h}$,

&c. In general, if q represent the proportion of the breadth of a rectangular canal to its depth, that is, if q be made =

$$\frac{w}{h}, \text{ we shall have } d = \frac{w}{q+2}, \text{ or } d = \frac{qh}{q+2}.$$

Now, since the resistances must augment as the proportion of the border to the section augments, m in the formulas

$$\frac{V^2}{w} = \frac{q}{s} \text{ and } V\sqrt{s} = \sqrt{mg}$$

must follow the proportions of d , and the quantity $\sqrt{mg}$ must be proportional to

$\sqrt{d}$, for different channels, and $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant

quantity in every case.

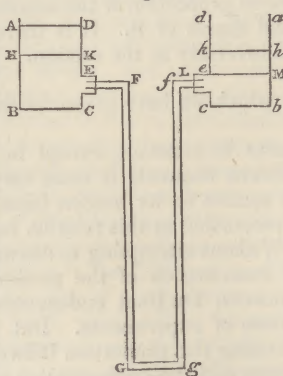
A specious objection

Our author was aware, however, of a very specious objection to the close dependence of the resistance on the extent of the border, and that it might be said that a double border did not occasion a double resistance, unless the pressure on all the parts was the same. For it may be naturally, and it is generally, supposed, that the resistance will be greater when the pressure is greater. The friction, or resistance analogous to friction, may therefore be greater on an inch of the bottom than on an inch of the sides; but M. d'Alembert and many others have demonstrated, that the paths of the filaments will be the same whatever be the pressures. This might serve to justify our ingenious author; but he was determined to rest every thing on experiment. He therefore made an experiment on the oscillation of water in syphons, which we have repeated in the following form, which is affected by the same circumstances, and is susceptible of much greater precision, and of more extensive and important application.

abviated by an experiment on the oscillation of water in syphons.

The two vessels $ABCD$, $abcd$ were connected by the syphon $EFGgf$, which turned round in the short tubes E and e , without allowing any water to escape; the axis of these tubes being in one straight line. The vessels were about ten inches deep, and the branches FG , fg of the syphon were about five feet long. The vessels were set on two tables of equal height, and (the hole e being stopped) the vessel $ABCD$, and the whole syphon, were filled with water, and water was poured into the vessel $abcd$ till it stood at a certain height LM . The syphon was then turned into a horizontal position, and the plug drawn out of e , and the time carefully noted which the water employed in rising to the level HK hh in both vessels. The whole apparatus was now inclined so that the water ran back into $ABCD$. The syphon was now put in a vertical position, and the experiment was repeated. No sensible or regular difference was observed in the time. Yet in this experiment the pressure on the part Gg of the

Fig. 9.



syphon was more than six times greater than before. As it was thought that the friction on this small part (only six inches) was too small a portion of the whole obstruction, various additional obstructions were put into this part of the syphon, and it was even lengthened to nine feet; but still no remarkable difference was observed. It was even thought that the times were less when the syphon was vertical.

Thus Du Buat's opinion is completely justified; and he may be allowed to assert, that the resistance depends chiefly on the relation between the section and its border; and that $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant quantity.

To ascertain this point was the object of the next series of experiments; to see whether this quantity was really constant, and, if not, to discover the law of its variation, and the physical circumstances which accompanied the variations, and may therefore be considered as their causes. A careful comparison of a very great number of experiments, made with the same slope, and with very different channels and velocities, showed that $\sqrt{mg}$ did not follow the proportion of $\sqrt{d}$, nor of any power of $\sqrt{d}$. This quantity $\sqrt{mg}$ increased by smaller degrees in proportion as $\sqrt{d}$ was greater. In very great beds $\sqrt{mg}$ was nearly proportional to $\sqrt{d}$; but in smaller channels, the velocities diminished much more than $\sqrt{d}$ did. Casting about for some way of accommodation, Du Buat considered, that some approximation at least would be had by taking off from $\sqrt{d}$ some constant small quantity. This is evident: for such a diminution will have but a trifling effect when $\sqrt{d}$ is great, and its effect will increase rapidly when $\sqrt{d}$ is very small. He therefore tried various values for this subtraction, and compared the results with the former experiments; and he found, that if in every case $\sqrt{d}$ be diminished by one tenth of an inch, the calculated discharges would agree very exactly with the experiment. Therefore, instead of $\sqrt{d}$, he makes use of $\sqrt{d} - 0.1$, and finds this quantity

always proportional to $\sqrt{mg}$, or finds that $\frac{\sqrt{mg}}{\sqrt{d} - 0.1}$ is a

constant quantity, or very nearly so. It varied from 297 to 287 in all sections, from that of a very small pipe to that of a little canal. In the large sections of canals and rivers it diminished still more, but never was less than 256.

This result is very agreeable to the most distinct notions that we can form of the mutual actions of the water and its bed. We see that when the motion of water is obstructed by a solid body, which deflects the passing filaments, the disturbance does not extend to any considerable distance on the two sides of the body. In like manner, the small disturbances, and imperceptible curvilinear motions, which are occasioned by the infinitesimal inequalities of the channel, must extend to a very small distance indeed from the sides and bottom of the channel. We know, too, that the mutual adhesion or attraction of water for the solid bodies which are moistened by it extends to a very small distance, which is probably the same, or nearly so, in all cases. Du Buat observed, that a surface of twenty-three square inches, applied to the surface of stagnant water, lifted 1601 grains; another of $5\frac{1}{2}$ square inches lifted 365; this was at the rate of sixty-five grains per inch nearly, making a column of about one sixth of an inch high. Now this effect is very much analogous to a real contraction of the capacity of the channel. The water may be conceived as nearly stagnant to this small distance from the border of the section. Or, to speak more accurately, the diminution of the progressive velocity occasioned by the friction and adhesion of the sides decreases very rapidly as we recede from the sides, and ceases to be sensible at a very small distance.

Theory. The writer of this article¹ verified the observation by a very simple and instructive experiment. He was making experiments on the production of vortices, in the manner suggested by Sir Isaac Newton, by whirling a very accurate and smoothly polished cylinder in water; and he found that the rapid motion of the surrounding water was confined to an exceedingly small distance from the cylinder, and it was not till after many revolutions that it was sensible even at the distance of half an inch. We may, by the way, suggest this as the best form of experiments for examining the resistances of pipes. The motion excited by the whirling cylinder in the stagnant water is equal and opposite to the motion lost by water passing along a surface equal to that of the cylinder with the same velocity. Be this as it may, we are justified in considering, with Du Buat, the section of the stream as thus diminished by cutting off a narrow border all round the touching parts, and supposing that the motion and discharge is the same as if the square root of the mean depth of the section were diminished by a small quantity, nearly constant. We see, too, that the effect of this must be insensible in great canals and rivers; so that, fortunately, its quantity is best ascertained by experiments made with small pipes. This is attended with another convenience, in the opinion of Du Buat, namely, that the effect of viscosity is most sensible in great masses of water in slow motion, and is almost insensible in small pipes, so as not to disturb these experiments. We may therefore assume 297 as the

general value of $\frac{\sqrt{mg}}{\sqrt{d}-0.1}^2$.

Since we have $\frac{\sqrt{mg}}{\sqrt{d}-0.1} = 297$, we have also $m = \frac{297^2}{g} (\sqrt{d}-0.1)^2 = \frac{88209}{362} (\sqrt{d}-0.1)^2 = 243.7 (\sqrt{d}-0.1)^2$. This we may express by $n (\sqrt{d}-0.1)^2$. And thus, when we have expressed the quantity of friction by $\frac{V^2}{m}$, the quantity m is variable, and its general value is

$\frac{V^2}{n(\sqrt{d}-0.1)^2}$, in which n is an invariable abstract number equal to 243.7, given by the nature of the resistance which water sustains from its bed, and which indicates its intensity.

And, lastly, since $m = n (\sqrt{d}-0.1)^2$, we have $\sqrt{mg} = \sqrt{ng} (\sqrt{d}-0.1)$, and the expression of the velocity V , which water acquires and maintains along any channel whatever, now becomes $V = \frac{\sqrt{ng} (\sqrt{d}-0.1)}{X}$, or $\frac{297(\sqrt{d}-0.1)}{X}$,

in which X is also a variable quantity, depending on the slope of the surface or channel, and expressing the accelerating force which, in the case of water in train, is in equilibrium with the resistances expressed by the numerator of the fraction.

Law of acceleration investigated. Having so happily succeeded in ascertaining the variations of resistance, let us accompany DuBuat in his investigation of the law of acceleration, expressed by the value of X .

Experience, in perfect agreement with any distinct opinions that we can form on this subject, had already shown him that the resistances increased in a slower ratio than that of the squares of the velocities, or that the velocities increased slower than $\sqrt{s}$. Therefore, in the formula

$V = \frac{\sqrt{ng} (\sqrt{d}-0.1)}{X}$, which, for one channel, we may ex-

press thus, $V = \frac{A}{X}$, we must admit that X is sensibly equal

to $\sqrt{s}$ when the slope is very small or s very great. But, that we may accurately express the velocity in proportion as the slope augments, we must have X less than $\sqrt{s}$;

and, moreover, $\frac{\sqrt{s}}{X}$ must increase as $\sqrt{s}$ diminishes. These

conditions are necessary that our values of V , deduced from

the formula $V = \frac{A}{X}$, may agree with the experiment.

In order to comprehend every degree of slope, we must particularly attend to the motion through pipes, because open canals will not furnish us with instances of exact TRAINS with great slopes and velocities. We can make

pipes vertical. In this case $\frac{1}{s}$ is $\frac{1}{1}$, and the velocity is the

greatest possible for a train by the action of gravity: but we can give greater velocities than this by increasing the head of water beyond what produces the velocity of the train.

Let AB (fig. 10) be a vertical tube, and let CA be the head competent to the velocity in the tube, which we suppose to be in train. The slope is 1, and the full weight of the column in motion is the precise Fig. 10.

measure of the resistance. The value of $\frac{1}{s}$, con-

sidered as a slope, is now a maximum; but, considered as expressing the proportion of the weight of the column in motion to the weight which is in equilibrio with the resistance, it may not be a maximum; it may surpass unity, and s may be less than 1. For if the vessel be filled to E, the head of water is increased, and will produce a greater velocity, and this will produce a greater resistance. The velocity being now greater, the head EF which imparts it must be greater than CA. But it will not be equal to EA, because the uniform



velocities are found to increase faster than the square roots of the pressures. This is the general fact. Therefore F is above A, and the weight of the column FB, now employed to overcome the resistance, is greater than the weight of the column AB in motion. In such cases, therefore, $\frac{1}{s}$

greater than unity, is a sort of fictitious slope, and only represents the proportion of the resistance to the weight of the moving column. This proportion may surpass unity.

But it cannot be infinite: for, supposing the head of water infinite, if this produce a finite velocity, and we deduct from the whole height the height corresponding to this finite velocity, there will remain an infinite head, the measure of an infinite resistance produced by a finite velocity. This does not accord with the observed law of the velocities, where the resistances actually do not increase as fast as the squares of the velocities. Therefore an infinite head would have produced an infinite velocity, in opposition to the resistances: taking off the head of the tube, competent to this velocity, at the entry of the tube, which head would also be infinite, the remainder would in all probability be finite, balancing a finite resistance.

Therefore the value of s may remain finite, although the velocity be infinite; and this is agreeable to all our clearest notions of the resistances.

Adopting this principle, we must find a value of X which will answer all these conditions. 2. It must be sensibly proportional to $\sqrt{s}$, while s is great. It must always be less

¹ The late Professor Robison of Edinburgh.

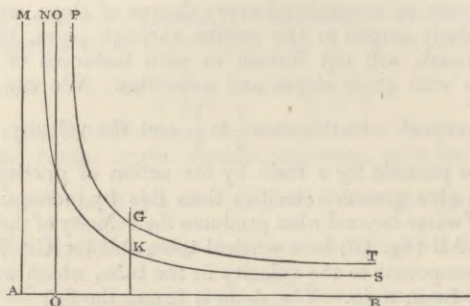
² In this formula, and in the subsequent part of the investigation, French inches are employed. For English inches the constant number is 307.

Theory. than $\sqrt{s}$. 3. It must deviate from the proportion of $\sqrt{s}$ so much the more as $\sqrt{s}$ is smaller. 4. It must not vanish when the velocity is infinite. 5. It must agree with a range of experiments with every variety of channel and of slope.

We shall understand the nature of this quantity X better by representing by lines the quantities concerned in forming it.

If the velocities were exactly as the square roots of the slopes, the equilateral hyperbola NKS (fig. 11) between

Fig. 11.



its asymptotes MA, AB, would represent the equation

$V = \frac{A}{\sqrt{s}}$. The values of $\sqrt{s}$ would be represented by the

abscissæ, and the velocities by the ordinates, and $Vs = A$ would be the power of the hyperbola. But since these ve-

locities are not sensibly equal to $\frac{A}{\sqrt{s}}$ except when $\sqrt{s}$ is very

great, and deviate the more from this quantity as $\sqrt{s}$ is smaller, we may represent the velocities by the ordinates of another curve PGT, which approaches very near to the hyperbola, at a great distance from A along AB; but separates from it when the abscissæ are smaller: so that if AQ represents that value of $\sqrt{s}$ (which we have seen may become less than unity) which corresponds to an infinite velocity, the line QO may be the asymptote of the

new curve. Its ordinates are equal to $\frac{A}{X}$, while those of the

hyperbola are equal to $\frac{A}{\sqrt{s}}$. Therefore the ratio of these

ordinates, or $\frac{\sqrt{s}}{X}$, should be such that it shall be so much nearer to unity as $\sqrt{s}$ is greater, and shall surpass it so much the more as $\sqrt{s}$ is smaller.

To express X , therefore, as some function of $\sqrt{s}$ so as to answer these conditions, we see in general that X must be less than $\sqrt{s}$. And it must not be equal to any power of

$\sqrt{s}$ whose index is less than unity, because then $\frac{\sqrt{s}}{X}$ would

differ so much the more from unity as $\sqrt{s}$ is greater. Nor must it be any multiple of $\sqrt{s}$, such as $q\sqrt{s}$, for the same reason. If we make $X = \sqrt{s} - K$, K being a constant quantity, we may answer the first condition pretty well. But K must be very small, that X may not become equal to nothing, except in some exceedingly small value of $\sqrt{s}$. Now the experiments will not admit of this, because the

ratio $\frac{\sqrt{s}}{\sqrt{s} - K}$ does not increase sufficiently to correspond with the velocities which we observe in certain slopes, unless we make K greater than unity, which again is inconsistent with other experiments. We learn from such canvassing that it will not do to make K a constant quantity. If we should make it any fractionary power of $\sqrt{s}$, it would make $X = 0$, that is, nothing, when $s = 1$, which is also

contrary to experience. It would seem, therefore, that nothing will answer for K but some power of $\sqrt{s}$ which has a variable index. The logarithm of $\sqrt{s}$ has this property. We may therefore try to make $X = \sqrt{s} - \log. \sqrt{s}$. Ac-

cordingly, if we try the equation $V = \frac{A}{\sqrt{s} - \text{hyp. log. } \sqrt{s}}$,

we shall find a very great agreement with the experiments till the declivity becomes considerable, or about $\frac{1}{20}$, which is much greater than any river. But it will not agree with the velocities observed in some mill-courses, and in pipes of a still greater declivity, and gives a velocity that is too small; and in vertical pipes the velocity is not above one half of the true one. We shall get rid of most of these incongruities if we make K consist of the hyperbolic logarithm of $\sqrt{s}$ augmented by a small quantity; and by trying various values for this constant quantity, and comparing the results with experiment, we may hit on one sufficiently exact for all practical purposes.

Du Buat, after repeated trials, found that he would have a very great conformity with experiment by making $K = \log. \sqrt{s} + 1.6$, and that the velocities exhibited in his experiments would be very well represented by the formula

$$V = \frac{297(\sqrt{d} - 0.1)}{\sqrt{s} - \log. \sqrt{s} + 1.6}$$

There is a circumstance which our author seems to have overlooked on this occasion, and which is undoubtedly of great effect in these motions, viz. the mutual adhesion of the particles of water. This causes the water which is descending (in a vertical pipe, for example) to drag more water after it, and thus greatly increases its velocity. We have seen an experiment in which the water issued from the bottom of a reservoir through a long vertical pipe having a very gentle taper. It was fifteen feet long, one inch diameter at the upper end, and two inches at the lower. The depth of the water in the reservoir was exactly one foot; in a minute there were discharged $2\frac{9}{10}$ cubic feet of water. It must therefore have issued through the hole in the bottom of the reservoir with the velocity of 8.85 feet per second. And yet we know that this head of water could not make it pass through the hole with a velocity greater than 6.56 feet per second. This increase must therefore have arisen from the cause we have mentioned, and is a proof of the great intensity of this force. We doubt not but that the discharge might have been much more increased by proper contrivances; and we know many instances in water-pipes where this effect is produced in a very great degree.

The following case is very distinct. Water is brought into the town of Dunbar, in the county of Haddington, from a spring at the distance of about 3200 yards. It is conveyed along the first 1100 yards in a pipe of two inches diameter, and the declivity is 12 feet 9 inches; from thence the water flows in a pipe of $1\frac{1}{2}$ inches diameter, with a declivity of 44 feet three inches, making in all 57 feet. When the work was carried as far as the two-inch pipe reached, the discharge was found to be 27 Scotch pints, of 103½ cubic inches each, in a minute. When it was brought into the town, the discharge was 28. Here it is plain that the descent along the second stretch of the pipe could derive no impulsion from the first. This was only able to supply 27 pints, and to deliver it into a pipe of equal bore. It was not equivalent to the forcing it into a smaller pipe, and almost doubling its velocity. It must therefore have been dragged into this smaller pipe by the weight of what was descending along it, and this water was exerting a force equivalent to a head of 16 inches, increasing the velocity from 14 to about 28.

It must be observed, that if this formula be just, there can be no declivity so small that a current of water will not

Theory. take place in it. And accordingly none has been observed in the surface of a stream when this did not happen. But it also should happen with respect to any declivity of bottom. Yet we know that water will hang on the sloping surface of a board without proceeding further. The cause of this seems to be the adhesion of the water, combined with its viscosity. The viscosity of fluid presents a certain force which must be overcome before any current can take place.

A series of important experiments were made by our author in order to ascertain the relation between the velocity at the surface of any stream and that at the bottom. These are curious and valuable on many accounts. One circumstance deserves our notice here, viz. that the differences between the superficial and bottom velocities of any stream are proportional to the square roots of the superficial velocities. From what has been already said on the gradual diminution of the velocities among the adjoining filaments, we must conclude that the same rule holds good with respect to the velocity of separation of two filaments immediately adjoining. Hence we learn that this velocity of separation is in all cases indefinitely small, and that we may, without danger of any sensible error, suppose it a constant quantity in all cases.

We think, with our ingenious author, that on a review of these circumstances, there is a constant or invariable portion of the accelerating force employed in overcoming this viscosity, and producing this mutual separation of the adjoining filaments. We may express this part of the accelerating force by a part $\frac{1}{S}$ of that slope which constitutes the whole of it. If it were not employed in overcoming this resistance, it would produce a velocity which (on account of this resistance) is not produced, or is lost. This would be $\frac{A}{\sqrt{S-L}\sqrt{S}}$. This must therefore be taken from the velocity exhibited by our general formula. When thus corrected, it would become $V = (\sqrt{d}-0.1) \left(\frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}+1.6} - \frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}} \right)$. But as the term $\frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}}$ is compounded only of constant quantities, we may express it by a single number. This has been collected from a scrupulous attention to the experiments (especially in canals and great bodies of water moving with very small velocities, in which case the effects of viscosity must become more remarkable), and it appears that it may be valued at $\sqrt{0.09}$ inch, or 0.3 inch very nearly.

From the whole of the foregoing considerations, drawn from nature, supported by such reasonings as our most distinct notions of the internal motions will admit, and authorized by a very extensive comparison with experiment, we are now in a condition to conclude a complete formula, expressive of the uniform motion of water, and involving every circumstance which appears to have any share in the operation.

Therefore, let V represent the mean velocity, in inches per second, of any current of water, running uniformly, or which is in TRAIN, in a pipe or open channel, whose section, figure, and slope, are constant, but its length indefinite.

d The hydraulic mean depth, that is, the quotient arising from dividing the section of the channel, in square inches, by its border, expressed in linear inches.

s The reciprocal of the slope of the pipe, or of the surface of the current. It is the denominator of the fraction

expressing this slope, the numerator being always unity; and is had by dividing the expanded length of the pipe or channel by the difference of height of its two extremities.

g The velocity (in inches per second) which a heavy body acquires by falling during one second.

n An abstract constant number, determined by experiment to be 243.7.

L The hyperbolic logarithm of the quantity to which it is prefixed, and is had by multiplying the common logarithm of that quantity by 2.3026.

We shall have in every instance

$$V = \frac{\sqrt{ng} (\sqrt{d}-0.1)}{\sqrt{S-L}\sqrt{S}+1.6} - 0.3 (\sqrt{d}-0.1).$$

This, in numbers, and English inches, is

$$V = \frac{307 (\sqrt{d}-0.1)}{\sqrt{S-L}\sqrt{S}+1.6} - 0.3 (\sqrt{d}-0.1);$$

and in French inches,

$$V = \frac{297 (\sqrt{d}-0.1)}{\sqrt{S-L}\sqrt{S}+1.6} - 0.3 (\sqrt{d}-0.1).$$

The following table contains the real experiments from which this formula was deduced, and the comparison of the real velocities with the velocities computed by the formula. It consists of two principal sets of experiments. The first are those made on the motion of water in pipes. The second are experiments made on open canals and rivers. In the first set, column 1st contains the number of the experiment; 2d, the length of the tube; 3d, the height of the reservoir; 4th, the values of s , deduced from columns second and third; 5th gives the observed velocities; and 6th, the velocities calculated by the formula.

In the second set, column 2d gives the area of the section of the channel; 3d, the border of the canal or circumference of the section, deducting the horizontal width, which sustains no friction; 4th, the square root $\sqrt{d}$ of the hydraulic mean depth; 5th, the denominator s of the slope; 6th, the observed mean velocities; and 7th, the mean velocities by the formula. In the last ten experiments on large canals and a natural river, the 6th column gives the observed velocities at the surface.¹

SET I.—EXPERIMENTS ON PIPES.

Experiments by Chevalier du Buat.

Vertical Tube $\frac{2}{3}$ of a Line in Diameter, and $\sqrt{d} = 0.117851$.

No.	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed.	Velocities calculated
	Inch.	Inch.	Inch.	Inch.	Inch.
1	12	16.166	0.75636	11.704	12.006
2	12	13.125	0.9307	9.753	10.576

Vertical Pipe $1\frac{1}{2}$ Line Diameter, and $\sqrt{d} = 0.176776$ Inch.

3	34.166	42.166	0.9062	45.468	46.210
4	do.	38.333	0.9951	43.156	43.721
5	do.	36.666	1.0396	42.385	42.612
6	do.	35.333	1.0781	41.614	41.714

The same Pipe Horizontal.

7	34.166	14.583	2.5838	26.202	25.523
8	do.	9.292	4.0367	21.064	19.882
9	do.	5.292	7.036	14.642	14.447
10	do.	2.083	17.6378	7.320	2.351

Table containing the experiments from which the formula is deduced.

¹ These tables are expressed in French measures. A line is the twelfth part of an inch.

Theory.

SET I.—continued.					
Vertical Pipe 2 Lines Diameter, and $\sqrt{d} = 0.204124$.					
No.	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed.	Velocities calculated.
	Inch.	Inch.	Inch.	Inch.	Inch.
11	36.25	51.250	0.85451	67.373	64.945
12	do.	45.250	0.96338	59.605	60.428
13	do.	41.916	1.03808	57.220	57.838
14	do.	38.750	1.12047	54.186	55.321
Same Pipe with a slope of $\frac{1}{1.3024}$.					
15	36.25	33.500	1.29174	51.151	50.983
Same Pipe horizontal.					
16	36.25	15.292	2.7901	33.378	33.167
17	do.	8.875	4.76076	25.430	24.553
18	do.	5.292	7.89587	19.940	18.313
19	do.	2.042	20.01637	10.620	10.492
Vertical Pipe $2\frac{9}{10}$ Lines Diameter, and $\sqrt{d} = 0.245798$.					
20	36.25	53.250	0.95235	85.769	85.201
21	do.	50.250	1.00642	82.471	82.461
22	do.	48.333	1.0444	81.646	80.698
23	do.	48.333	1.0444	79.948	
24	do.	47.916	1.0529	81.027	80.318
25	do.	44.750	1.1241	76.079	77.318
26	do.	41.250	1.2157	73.811	73.904
The same Pipe with the slope $\frac{1}{1.3024}$.					
27	36.25	37.5	1.3323	70.822	70.138
The same Pipe horizontal.					
28	36.25	20.166	2.4303	51.956	50.140
29	do.	9.083	5.2686	33.577	32.442
30	do.	7.361	6.4504	28.658	28.801
31	do.	5	9.3573	23.401	23.195
32	do.	4.916	9.5097	22.989	22.974
33	do.	4.833	9.6652	22.679	22.754
34	do.	3.708	12.4624	19.587	19.550
35	do.	2.713	16.3135	16.631	16.324
36	do.	2.083	21.6639	14.295	14.003
37	do.	1.625	27.5102	12.680	12.115
38	do.	0.833	52.3427	7.577	8.215
Pipes sensibly horizontal, 1 Inch Diameter, $\sqrt{d} = 0.5$.					
39	117	36	5.6503	84.945	85.524
40	117	26.666	7.48	71.301	72.317
41	138.5	20.950	10.3215	58.808	60.034
42	117	18	10.7880	58.310	58.472
43	138.5	6	33.1962	29.341	29.663
44	737	23.7	33.6658	28.669	29.412
45	do.	14.6	54.2634	21.856	22.056
46	do.	13.7	57.7772	20.970	21.240
47	do.	12.32	64.1573	19.991	19.950
48	do.	8.96	87.8679	16.625	16.543
49	do.	8.96		16.284	
50	do.	7.780	101.0309	15.112	15.232
51	do.	5.93	132.1617	13.315	13.005
52	do.	4.2	186.0037	10.671	10.656
53	do.	4.2		10.441	
54	138.5	0.7	257.8863	8.689	8.824
55	737	0.5	1540.75	3.623	3.218
56	737	0.15	5113.42	1.589	1.647
Experiments by the Abbe Bossut.					
Horizontal Pipe 1 Inch Diameter, $\sqrt{d} = 0.5$					
57	600	12	54.5966	22.282	21.975
58	600	4	161.312	12.223	11.756

Theory.

SET I.—continued.						
Horizontal Pipe $1\frac{1}{3}$ Inch Diameter, $\sqrt{d}=0.5774$.						
No.	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed.	Velocities calculated.	
	Inch.	Inch.	Inch.	Inch.	Inch.	
59	360	24	19.0781	48.534	49.515	
60	720	24	33.6166	34.473	35.130	
61	360	12	37.0828	33.160	33.106	
62	1080	24	48.3542	28.075	28.211	
63	1440	24	64.1806	24.004	24.023	
64	720	12	66.3020	23.360	23.345	
65	1800	24	78.0532	21.032	21.182	
66	2160	24	92.9474	18.896	19.096	
67	1080	12	95.8756	18.943	18.749	
68	1440	12	125.6007	16.128	15.991	
69	1800	12	155.4015	14.066	14.119	
70	2160	12	185.2487	12.560	12.750	
Horizontal Pipe 2.01 Inch Diameter, $\sqrt{d}=0.708946$.						
71	360	24	21.4709	58.903	58.803	
72	720	24	35.8082	43	43.136	
73	360	12	41.2759	40.322	39.587	
74	1080	24	50.4119	35.765	35.096	
75	1440	24	65.1448	30.896	30.096	
76	720	12	70.1426	29.215	28.796	
77	1800	24	79.8487	27.470	26.639	
78	2160	24	94.7901	27.731	24.079	
79	1080	12	99.4979	23.806	23.400	
80	1440	12	129.0727	20.707	20.076	
81	1800	12	158.7512	18.304	17.788	
82	2160	12	188.5172	16.377	16.097	
Mr Couplet's Experiments at Versailles.						
Pipe 5 Inches Diameter, $\sqrt{d}=1.11803$.						
83	84240	25	3378.26	5.323	5.287	
84	do.	24	3518.98	5.213	5.168	
85	do.	21.083	4005.66	4.806	4.887	
86	do.	16.750	5041.61	4.127	4.225	
87	do.	11.333	7450.42	3.154	3.388	
88	do.	5.583	15119.96	2.011	2.254	
Pipe 18 Inches Diameter, $\sqrt{d}=2.12132$.						
89	43200	145.083	304.973	39.159	40.510	
SET. II.—EXPERIMENTS WITH A WOODEN CANAL.						
Trapezium Canal.						
No.	Section of Canal.	Border of Canal.	Values of $\sqrt{d}$.	Values of s .	Mean Velocity observed.	Mean Velocity calcul.
	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
90	18.84	13.06	1.20107	212	27.51	27.19
91	50.60	29.50	1.3096	212	28.92	29.88
92	83.43	26	1.7913	412	27.14	28.55
93	27.20	15.31	1.3329	427	18.28	20.39
94	39.36	18.13	1.4734	427	20.30	22.71
95	50.44	20.37	1.5736	427	22.37	24.37
96	56.43	21.50	1.6201	427	23.54	25.14
97	98.74	28.25	1.8696	432	28.29	29.06
98	100.74	28.53	1.8791	432	28.52	29.23
99	119.58	31.06	1.9622	432	30.16	30.60
100	126.20	31.91	1.9887	432	31.58	31.03
101	130.71	32.47	1.0064	432	31.89	31.32
102	135.32	33.03	1.0241	432	32.32	31.61
103	20.83	13.62	1.2367	1728	8.94	8.58
104	34.37	17	1.4219	1728	9.71	9.98
105	36.77	17.56	1.4471	1728	11.45	10.17
106	42.01	18.69	1.4992	1728	12.34	10.53

Theory.

SET II.—continued.
Rectangular Canal.

No.	Section of Canal.	Border of Canal.	Values of $\sqrt{d}$.	Values of s .	Mean Velocity observed.	Mean Velocity calcul.
	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
107	34.50	21.25	1.27418	458	20.24	18.66
108	86.25	27.25	1.77908	458	28.29	26.69
109	34.50	21.25	1.27418	929	13.56	11.53
110	35.22	21.33	1.28499	1412	9.20	10.01
111	51.75	23.25	1.49191	1412	12.10	11.76
112	76.19	26.08	1.70921	1412	14.17	13.59
113	105.78	29.17	1.90427	1412	15.55	15.24
114	69	25.25	1.65308	9288	4.59	4.56
115	155.25	35.25	2.09868	9288	5.70	5.86

SET III.—EXPERIMENTS ON THE CANAL OF JARD.

No.	Section of Canal.	Border of Canal.	Values of $\sqrt{d}$.	Values of s .	Velocity obs. at Surface.	Velocity calculated.
116	16252	402	6.3583	8919	17.42	18.77
117	11905	366	5.70320	11520	12.17	14.52
118	10475	360	5.3942	15360	15.74	11.61
119	7858	340	4.8074	21827	9.61	8.38
120	7376	337	4.6784	27648	7.79	7.07
121	6125	324	4.3475	27648	7.27	6.55

Experiments on the River Hayne.

No.	Section of River.	Border of River.	Values of $\sqrt{d}$.	Values of s .	Velocity at Surface.	Velocity (mean) calcul.
122	31498	569	7.43974	6048	35.11	27.62
123	38838	601	8.03879	6413	31.77	28.76
124	30905	568	7.37632	32951	13.61	10.08
125	39639	604	8.10108	35723	15.96	10.53

The theory a well-founded probability.

The comparison must be acknowledged to be most satisfactory, and shows the great penetration and address of the author, in so successfully sifting and appreciating the share which each co-operating circumstance has had in producing the very intricate and complicated effect. It adds some weight to the principles on which he has proceeded in this analysis of the mechanism of hydraulic motion, and must give us great confidence in a theory so fairly established on a very copious induction. The author offers it only as a rational and well-founded probability. To this character it is certainly entitled; for the suppositions made in it are agreeable to the most distant notions we can form of these internal motions. And it must always be remembered, that the investigation of the formula, although it be rendered somewhat more perspicuous by thus having recourse to those motions, has no dependence on the truth of the principles. For it is, in fact, nothing but a classification of experiments, which are grouped together by some one circumstance of slope, velocity, form of section, &c. in order to discover the law of the changes which are induced by a variation of the circumstances which do not resemble. The procedure is precisely similar to that of the astronomer when he deduces the elements of an orbit from a multitude of observations. This was the task of the Chevalier du Buat; and he candidly and modestly informs us, that the finding out analytical forms of expression which would exhibit those changes, was the work of Mr Benezec de St Honore, an officer of engineers, and his colleague in the experi-

mental course. It does honour to his skill and address; and we think the whole both a pretty and instructive specimen of the method of discovering the laws of nature in the midst of complicated phenomena. Daniel Bernoulli first gave the rules of this method, and they have been greatly improved by Lambert, Condorcet, and De la Grange. Mr Coulomb has given some excellent examples of their application to the discovery of the laws of friction, of magnetical and electrical attraction, &c. But this present work is the most perspicuous and familiar of them all. It is the empirical method of generalising natural phenomena, and of deducing general rules, of which we can give no other demonstration but that they are faithful representations of matters of fact. We hope that others, encouraged by the success of Du Buat, will follow this example, where public utility is preferred to a display of mathematical knowledge.

Although the author may not have hit upon the precise *modus operandi*, we agree with him in thinking that nature seems to act in a way not unlike what is here supposed. At any rate, the range of experiments is so extensive, and so multifarious, that few cases can occur which are not included among them. The experiments will always retain their value (as we presume that they are faithfully narrated), whatever may become of the theory; and we are confident that the formula will give an answer to any question to which it may be applicable, infinitely preferable to the vague guess of the most sagacious and experienced engineer.

We must however observe, that as the experiments on pipes were all made with scrupulous care in the contrivance and execution of the apparatus, excepting only those of Mr Couplet on the main pipes at Versailles, we may presume that the formula gives the greatest velocities which can be expected. In ordinary works, where joints are rough or leaky, where drops of solder hang in the inside, where cocks intervene with deficient water-ways, where pipes have awkward bendings, contractions, or enlargements, and where they may contain sand or air, we should reckon on a smaller velocity than what results from our calculation; and we presume that an undertaker may with confidence promise four fifths of this quantity without any risk of disappointing his employer. We imagine that the actual performance of canals will be much nearer to the formula.

We have made inquiry after works of this kind executed in Britain, that we might compare them with the formula. But all our canals are locked and without motion; and we have only learned by an accidental information from Mr Watt, that a canal in his neighbourhood, which is eighteen feet wide at the surface, and seven feet at the bottom, and four feet deep, and has a slope of one inch in a quarter of a mile, runs with the velocity of seventeen inches per second at the surface, ten at the bottom, and fourteen in the middle. If we compute the motion of this canal by our formula, we shall find the mean velocity to be $13\frac{1}{2}$.

No river in the world has had its motion so much scrutinized as the Po about the end of the last century. It had been a subject of 100 years' continual litigation between the inhabitants of the Bolognese and the Ferrarese, whether the waters of the Rheno should be thrown into the Tronco de Venezia or Po Grande. This occasioned very numerous measures to be taken of its sections and declivity, and the quantities of water which it contained in its different states of fulness. But, unfortunately, the long-established methods of measuring waters which were in force in Lombardy, made no account of the velocity; and not all the entreaties of Castelli, Grandi, and other moderns, could prevail on the visitors in this process to deviate from the established methods. We have therefore no minute accounts of its velocity, though there are many rough estimates to be met with in that valuable collection published at Flo-

Theory.

Theory. rence in 1723, of the writings on the motion of rivers. From them we have extracted the *only precise observations* which are to be found in the whole work.

Observations on the velocity of the Po.

The Po Grande receives no river from Stellata to the sea, and its slope in that interval is found most surprisingly uniform, namely, six inches in the mile (reduced to English measure). The breadth in its great freshes is 759 feet at Lago Scuro, with a very uniform depth of thirty-one feet. In its lowest state (in which it is called *Po Magra*), its breadth is not less than 700, and its depth about ten and a half.

The Rheno has a uniform declivity from the Ponte Emilio to Vigarano of fifteen inches per mile. Its breadth in its greatest freshes is 189 feet, and its depth nine.

Signor Corrade in his report says, that in the state of the great freshes the velocity of the Rheno is most exactly four fifths of that of the Po.

Grandi says, that, according to many observations of his own, a great fresh in the Rheno employs twelve hours to come from Ponte Emilio to Vigarano, which is thirty miles. This is a velocity of forty-four inches per second. And, by Corrade's proportion, the velocity of the Po Grande must be fifty-five inches per second.

Montanari's observation gives the Po Magra a velocity of thirty-one inches per second.

Let us compare these velocities with the velocities calculated by Du Buat's formula.

The hydraulic mean depths d and D of the Rheno and Po in the great freshes, deduced from the above measures, are 98.6 and 344 inches; and their slopes s and S are $\frac{1}{4223}$ and $\frac{1}{10360}$. This will give

$$\frac{307(\sqrt{D}-0.1)}{\sqrt{S}-L\sqrt{S}+1.6} - 0.3(\sqrt{D}-0.1) = 52.176 \text{ inches, and}$$

$$\frac{307(\sqrt{d}-0.1)}{\sqrt{s}-L\sqrt{s}+1.6} - 0.3(\sqrt{d}-0.1) = 46.728 \text{ inches.}$$

These results differ very little from the velocities above mentioned. And if the velocity corresponding to a depth of thirty-one feet be deduced from that observed by Montanari in the Po Magra ten feet deep, on the supposition that they are in the proportion of $\sqrt{d}$, it will be found to be about fifty-three and a half inches per second.

Highly to the credit of the theory.

This comparison is therefore highly to the credit of the theory, and would have been very agreeable to Du Buat had he known it, as we hope it is to our readers.

We have collected many accounts of water-pipes, and made the comparisons, and we flatter ourselves that these have enabled us to improve the theory. They shall appear in their proper place; and we may just observe here, that the two-inch pipe, which we formerly spoke of as conveying the water to Dunbar, should have yielded only 25½ Scotch pints per minute by the formula, instead of 27; a small error.

We have, therefore, no hesitation in saying, that this single formula of the uniform motion of water is one of the most valuable presents which natural science and the arts have received during the course of this century.

A table containing the values of $\frac{307}{\sqrt{s}-L\sqrt{s}+1.6}$ ready calculated for every declivity that can occur in water-pipes, canals, or rivers, is given in the article WATER-WORKS. Aided by this, which supersedes the only difficult part of the computation, a person can calculate the velocity for any proposed case in less than five minutes.

We have now established in some measure a THEORY OF HYDRAULICS, by exhibiting a general theorem which expresses the relation of the chief circumstances of all such motions as have attained a state of permanency, in so far as

this depends on the magnitude, form, and slope of the channel. This permanency we have expressed by the term TRAIN, saying that the stream is *in train*.

We proceed to consider the subordinate circumstances contained in this theorem; such as, 1st, The forms which nature or art may give to the bed of a running stream, and the manner of expressing this form in our theorem. 2d, The gradations of the velocity, by which it decreases in the different filaments, from the axis or most rapid filament to the border; and the connection of this with the mean velocity, which is expressed by our formula. 3d, Having acquired some distinct notions of this, we shall be able to see the manner in which undisturbed nature works in forming the beds of our rivers, the forms which she affects, and which we must imitate in all their local modifications, if we would secure that permanency which is the evident aim of all her operations. We shall here learn the mutual action of the current and its bed, and the circumstances which insure the stability of both. These we may call the *regimen* or the *Regimen* conservation of the stream, and may say that it is *in regimen*, of streams, or *in conservation*. This has a relation, not to the dimension what. sions and the slope alone, or to the accelerating force and the resistance arising from mere inertia; it respects immediately the tenacity of the bed, and is different from the *train*.

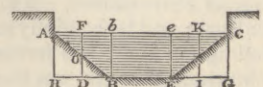
4th, These pieces of information will explain the deviation of rivers from the rectilinear course, the resistance occasioned by these deviations, and the circumstances on which the regimen of a winding stream depends.

§ 1. Of the Forms of the Channel.

The numerator of the fraction which expresses the velocity of a river in train has $\sqrt{d}$ for one of its factors. That form, therefore, is most favourable to the motion which gives the greatest value to what we have called the hydraulic mean depth d . This is the prerogative of the semicircle, and here d is equal to half the radius; and all other figures of the same area are the more favourable, as they approach nearer to a semicircle. This is the form, therefore, of all conduit-pipes, and should be taken for aqueducts which are built of masonry. Ease and accuracy of execution, however, have made engineers prefer a rectangular form; but neither of these will do for a channel formed out of the ground. We shall soon see that the semicircle is incompatible with but incom- a regimen; and if we proceed through the regular polygons, patible we shall find that the half hexagon is the only one which with regi- has any pretensions to a regimen; yet experience shows us, men. that even its banks are too steep for almost any soil. A dry earthen bank, not bound together by grass roots, will hardly stand with a slope of forty-five degrees; and a canal which conveys running waters will not stand with this slope. Banks whose base is to their height as four to three will stand very well in moist soils, and this is a slope very usual- stand best. ly given. This form is even affected in the spontaneous operations of nature, in the channels which she digs for the rills and rivulets in the higher and steeper grounds.

This form has some mathematical and mechanical properties which entitle it to some further notice. Let ABEC (fig. 12) be such a trapezium, and AHGC the rectangle of equal width and depth. Bisect HB and EG by the verticals FD and KI, and draw the verticals bB, eE. Because AH : HB = 3 : 4, we have AB = 5, and BD = 2, and FD = 3, and BD + DF = BA. From these premises it follows, that the trapezium ABEC has the same area with the rectangle FDIK; for HB being bisected in D, the triangles AOF, BOD are equal. Also the border ABEC, which is touched by the passing stream, is equal to FDIK.

Fig. 12.



Theory. Therefore the mean depth, which is the quotient of the area divided by the border, is the same in both; and this is the case, whatever is the width BE at the bottom, or even though there be no rectangle such as bBEe interposed between the slant sides.

Best form of a channel.

Of all rectangles, that whose breadth is twice the height, or which is half of a square, gives the greatest mean depth. If, therefore, FK be double of FD, the trapezium ABEC, which has the same area, will have the largest mean depth of any such trapezium, and will be the best form of a channel for conveying running waters. In this case, we have AC = 10, AH = 3, and BE = 2. Or we may say that the best form is a trapezium, whose bottom width is $\frac{2}{3}$ of the depth, and whose extreme width is $\frac{10}{3}$. This form approaches very near to that which the torrents in the hills naturally dig for themselves in uniform ground, where their action is not checked by stones which they lay bare, or which they deposit in their course. This shows us, and it will be fully confirmed by and by, that the channel of a river is not a fortuitous thing, but has a relation to the consistency of the soil and velocity of the stream.

A rectangle, whose breadth is $\frac{2}{3}$ of the depth of water, will therefore have the same depth with a triangle whose surface width is $\frac{2}{3}$ of its vertical depth; for this is the dimensions when the rectangle bBEe is taken away.

Let A be the area of the section of any channel, w its width (when rectangular), and h its depth of water. Then

what we have called its mean depth, or d, will be $\frac{A}{w + 2h}$
 $= \frac{wh}{w + 2h}$. Or if q expresses the ratio of the width to

the depth of a rectangular bed, that is, if $q = \frac{w}{h}$, we have a very simple and ready expression for the mean depth, either from the width or depth. For $d = \frac{w}{q + 2}$, or $d =$

$$\frac{qh}{q + 2}.$$

Therefore, if the depth were infinite, and the width finite, we should have $d = \frac{w}{2}$; or if the width be infinite, and the

depth finite, we have $d = h$. And these are the limits of the values of d; and therefore in rivers whose width is always great in comparison of the depth, we may without much error take their real depth for their hydraulic mean depth. Hence we derive a rule of easy recollection, and which will at all times give us a very near estimate of the velocity and expense of a running stream, viz. that the velocities are nearly as the square roots of the depths. We find this confirmed by many experiments of Micheliotti.

Also, when we are allowed to suppose this ratio of the velocities and depths, that is, in a rectangular canal of great breadth and small depth, we shall have the quantities discharged nearly in the proportion of the cubes of the velocities. For the quantity discharged d is as the velocity and area jointly, that is, as the height and velocity jointly, because when the width is the same the area is as the height. Therefore, we have $d \propto hv$. But, by the above remark, $h \propto v^2$. Therefore, $d \propto v^3$; and this is confirmed by the experiments of Bossut, vol. ii. 236. Also, because d is as v^3 , when w is constant, and by the above remark (allowable when w is very great in proportion to h) v is as $\sqrt{h}$, we have d as $h\sqrt{h}$, or $h^{\frac{3}{2}}$, or the squares of the discharges proportional to the cubes of the heights in rectangular beds, and in their corresponding trapeziums.

1. Knowing the mean depth and the proportion of the

width and real depth, we can determine the dimensions of the bed, and we have $w = qd + 2d$, and $h = d + \frac{2d}{q}$.

Theory.
Rules for finding the dimensions.

2. If we knew the area and mean depth, we can in like manner find the dimensions, that is, w and h; for $A = wh$,

$$\text{and } d = \frac{wh}{w + 2h}; \text{ therefore } w = \pm \sqrt{\frac{A^2}{4d^2} - 2A} + \frac{A}{2d}.$$

3. If d be known, and one of the dimensions be given, we can find the other; for $d = \frac{wh}{w + 2h}$ gives $w = \frac{2hd}{h - d}$

$$\text{and } h = \frac{wd}{w - 2d}.$$

4. If the velocity V and the slope s for a river in mean train be given, we can find the mean depth; for $V = \text{depth}$.

$$\left(\frac{307}{\sqrt{s} - L\sqrt{s} + 1.6} - 0.3 \right) (\sqrt{d} - 0.1). \text{ Whence we}$$

$$\text{deduce } \sqrt{d} - 0.1 = \frac{V}{\frac{307}{\sqrt{s} - L\sqrt{s} + 1.6} - 0.3},$$

and $\sqrt{d} =$ to this quantity $+ 0.1$.

5. We can deduce the slope which will put in train slope, a river whose channel has given dimensions. We make

$$\frac{307(\sqrt{d} - 0.1)}{V + 0.3(\sqrt{d} - 0.1)} = \sqrt{s}. \text{ This should be } = \sqrt{s} -$$

$L\sqrt{s} + 1.6$, which we correct by trials, which will be exemplified when we apply these doctrines to practice.

Having thus established the relation between the different circumstances of the form of the channel to our general formula, we proceed to consider,

§ 2. The Gradations of Velocity from the middle of the Stream to the sides.

The knowledge of this is necessary for understanding the regimen of a river; for it is the velocity of the filaments in contact with the bed which produces any change in it, and occasions any preference of one to another in respect of regimen or stability. Did these circumstances not operate, the water, true to the laws of hydraulics, and confined within the bounds which have been assigned them, would neither enlarge nor diminish the area of the channel. But this is all that we can promise of waters perfectly clear, running in pipes or hewn channels. But rivers, brooks, and smaller streams, carry along waters loaded with mud or sand, which they deposit wherever their velocity is checked; and they tear up, on the other hand, the materials of the channel wherever their velocity is sufficiently great. Nature, indeed, aims continually at an equilibrium, and works without ceasing to perpetuate her own performances, by establishing an equality of action and re-action, and proportioning the forms and direction of the motions to her agents, and to local circumstances. Her work is slow but unceasing; and what she cannot accomplish in a year she will do in a century. The beds of our rivers have acquired some stability, because they are the labour of ages; and it is to time that we owe those deep and wide valleys which receive and confine our rivers in channels, which are now consolidated, and with slopes which have been gradually moderated, so that they no longer either ravage our habitations or confound our boundaries. Art may imitate nature, Nature to and, by directing her operations (which she still carries on in making artificial streams. according to her own imprescriptible laws) according to our views, we can hasten her progress, and accomplish our purpose, during the short period of human life. But we can do this only by studying the unalterable laws of mechanism. These are presented to us by spontaneous nature. Fre-

Estimate of the expense of a running stream.

Theory.

quently we remain ignorant of their foundation; but it is not necessary for the prosperity of the subject that he have the talents of the senator; he can profit by the statute without understanding its grounds. It is so in the present instance. We have not as yet been able to infer the law of retardation observed in the filaments of a running stream from any sound mechanical principle. The problem, however, does not appear beyond our powers, if we assume, with Sir Isaac Newton, that the velocity of any particular filament is the arithmetical mean between those of the filaments immediately adjoining. We may be assured, that the filament in the axis of an inclined cylindrical tube, of which the current is in train, moves the fastest, and that all those in the same circumference round it are those which glide along the pipe. We may affirm the same thing of the motions in a semicylindrical inclined channel conveying an open stream. But even in these we have not yet demonstrated the ratio between the extreme velocities, nor in the different circles. This must be decided experimentally.

And here we are under great obligations to Du Buat. He has compared the velocities in the axes of a prodigious number and variety of streams, differing in size, form, slope, and velocity, and has computed in them all the mean velocities, by measuring the quantities of water discharged in a given time. His method of measuring the bottom velocity was simple and just. He threw in a gooseberry, as nearly as possible of the same specific gravity with the water. It was carried along the bottom almost without touching it.

Laws of the velocities of different portions of the stream.

He discovered the following laws: 1. In small velocities the velocity in the axis is to that at the bottom in a ratio of considerable inequality. 2. This ratio diminishes as the velocity increases, and in very great velocities approaches to the ratio of equality. 3. What was most remarkable was, that neither the magnitude of the channel, nor its slope, had any influence in changing this proportion, while the mean velocity remained the same. Nay, though the stream ran on a channel covered with pebbles or coarse sand, no difference worth noticing was to be observed from the velocity over a polished channel. 4. And if the velocity in the axis is constant, the velocity at the bottom is also constant, and is not affected by the depth of water or magnitude of the stream. In some experiments the depth was thrice the width, and in others the width was thrice the depth. This changed the proportion of the magnitude of the section to the magnitude of the rubbing part, but made no change on the ratio of the velocities. This is a thing which no theory could point out.

Mean velocity,

Another most important fact was also the result of his observation, viz. that *the mean velocity in any pipe or open stream is the arithmetical mean between the velocity in the axis and the velocity at the sides of a pipe or bottom of an open stream.* We have already observed, that the ratio of the velocity in the axis to the velocity at the bottom diminished as the mean velocity increased. This variation he was enabled to express in a very simple manner, so as to be easily remembered, and to enable us to tell any one of them by observing another.

If we take unity from the square root of the superficial velocity, expressed in inches, the square of the remainder is the velocity at the bottom; and the mean velocity is the half sum of these two. Thus, if the velocity in the middle of the stream be 25 inches per second, its square root is five; from which if we take unity, there remains four. The square of this, or 16, is the velocity at the bottom, and $\frac{25 + 16}{2}$, or $20\frac{1}{2}$, is the mean velocity.

This is a very curious and most useful piece of informa-

tion. The velocity in the middle of the stream is the easiest measured of all, by any light small body floating down; and the mean velocity is the one which regulates the train, the discharge, the effect on machines, and all the most important consequences.

We may express this by a formula of most easy re-expression. Let V be the mean velocity, v the velocity in the axis, and u the velocity at the bottom; we have

$$u = (\sqrt{v} - 1)^2, \text{ and } V = \frac{v + u}{2}.$$

$$\text{Also } v = (\sqrt{V} - \frac{1}{2} + \frac{1}{2})^2, \text{ and } v = (\sqrt{u} + 1)^2.$$

$$V = (\sqrt{v} - \frac{1}{2})^2 + \frac{1}{4}, \text{ and } V = (\sqrt{u} + \frac{1}{2})^2 + \frac{1}{4}.$$

$$u = (\sqrt{v} - 1)^2, \text{ and } u = (\sqrt{V} - \frac{1}{2} - \frac{1}{2})^2.$$

Also $v - u = 2\sqrt{V} - \frac{1}{2}$ and $v - V = V - u = \sqrt{V} - \frac{1}{2}$; that is, the difference between these velocities increases in the ratio of the square roots of the mean velocities diminished by a small constant quantity.¹

This may perhaps give the mathematicians some help in ascertaining the law of degradation from the axis to the sides. Thus, in a cylindrical pipe, we may conceive the current as consisting of an infinite number of cylindrical shells sliding within each other like the draw-tubes of a spy-glass. Each of these is in equilibrio, or as much accelerated by the one within it as it is retarded by the one without; therefore, as the *momentum* of each diminishes in the proportion of its diameter (the thickness being supposed the same in all), the velocity of separation must increase by a certain law from the sides to the axis. The magnitude of the small constant quantity here spoken of seems to fix this law.

The place of the mean velocity could not be discovered with any precision. In moderate velocities it was not more than one fourth or one fifth of the depth distant from the bottom. In very great velocities it was sensibly higher, but never in the middle of the depth.

The knowledge of these three velocities is of great importance. The superficial velocity is easily observed, hence the mean velocity is easily computed. This multiplied by the section gives the expense; and if we also measure the expanded border, and then obtain the hydraulic mean depth (or $\sqrt{d}$), we can, by the formula of uniform motion, deduce the slope, or, knowing the slope, we can deduce any of the other circumstances.

The following table of these three velocities will save the trouble of calculation in one of the most frequent questions of hydraulics.

Velocity in Inches.			Velocity in Inches.		
Sur-face.	Bottom.	Mean.	Sur-face.	Bottom.	Mean.
1	0.000	0.5	16	9.	12.5
2	0.172	1.081	17	9.753	13.376
3	0.537	1.768	18	10.463	14.231
4	1.	2.5	19	11.283	15.141
5	1.526	3.263	20	12.055	16.027
6	2.1	4.050	21	12.674	16.837
7	2.709	4.854	22	13.616	17.808
8	3.342	5.67	23	14.402	18.701
9	4.	6.5	24	15.194	19.597
10	4.674	7.337	25	16.	20.5
11	5.369	8.184	26	16.802	21.401
12	6.071	9.036	27	17.606	22.303
13	6.786	9.893	28	18.421	23.210
14	7.553	10.756	29	19.228	24.114
15	8.254	11.622	30	20.044	25.022

¹ In these formulæ, and in the following table, the velocities are understood to be expressed in French inches.

Theory.

Velocity in Inches.			Velocity in Inches.		
Sur-face.	Bottom.	Mean.	Sur-face.	Bottom.	Mean.
31	20.857	25.924	66	50.751	58.376
32	21.678	26.839	67	51.639	59.319
33	22.506	27.753	68	52.505	60.252
34	23.339	28.660	69	53.392	61.196
35	24.167	29.583	70	54.273	62.136
36	25.	30.5	71	55.145	63.072
37	25.827	31.413	72	56.025	64.012
38	26.667	32.338	73	56.862	64.932
39	27.51	33.255	74	57.790	65.895
40	28.345	34.172	75	58.687	66.843
41	29.192	35.096	76	59.568	67.784
42	30.030	36.015	77	60.451	68.725
43	30.880	36.940	78	61.340	69.670
44	31.742	37.871	79	62.209	70.605
45	32.581	38.790	80	63.107	71.553
46	33.432	39.716	81	64.	72.5
47	34.293	40.646	82	64.883	73.441
48	35.151	41.570	83	65.780	74.390
49	36.	42.5	84	66.651	75.325
50	36.857	43.428	85	67.568	76.284
51	37.712	44.356	86	68.459	77.229
52	38.564	45.282	87	69.339	78.169
53	39.438	46.219	88	70.224	79.112
54	40.284	47.142	89	71.132	80.066
55	41.165	48.082	90	72.012	81.006
56	42.016	49.008	91	72.915	81.957
57	42.968	49.984	92	73.788	82.894
58	43.771	50.886	93	74.719	83.859
59	44.636	51.818	94	75.603	84.801
60	45.509	52.754	95	76.51	85.755
61	46.376	53.688	96	77.370	86.685
62	47.259	54.629	97	78.305	87.652
63	48.136	55.568	98	79.192	88.596
64	49.	56.5	99	80.120	89.56
65	49.872	57.436	100	81.	90.5

The knowledge of the velocity at the bottom is of the greatest use for enabling us to judge of the action of the stream on its bed; and we shall now make some observations on this particular.

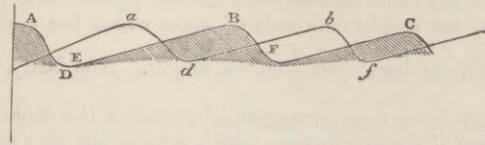
Every kind of soil has a certain velocity consistent with the stability of the channel. A greater velocity would enable the waters to tear it up, and a smaller velocity would permit the deposition of more moveable materials from above. It is not enough, then, for the stability of a river, that the accelerating forces are so adjusted to the size and figure of its channel that the current may be in train: it must also be in equilibrio with the tenacity of the channel.

We learn from observation, that a velocity of three inches per second at the bottom will just begin to work upon fine clay fit for pottery, and however firm and compact it may be, it will tear it up. Yet no beds are more stable than clay when the velocities do not exceed this: for the water soon takes away the impalpable particles of the superficial clay, leaving the particles of sand sticking by their lower half in the rest of the clay, which they now protect, making a very permanent bottom, if the stream does not bring down gravel or coarse sand, which will rub off this very thin crust, and allow another layer to be worn off. A velocity of six inches will lift fine sand; eight inches will lift sand as coarse as linseed; twelve inches will sweep along fine gravel; twenty-four inches will roll along rounded pebbles an inch diameter; and it requires three feet per second at the bottom to sweep along shivery angular stones of the size of an egg.

The manner in which unwearied nature carries on some of these operations is curious, and deserves to be a little noticed. All must recollect the narrow ridges or wrinkles which are left on the sand by a temporary fresh or stream. They are observed to lie across the stream, and each ridge consists of a steep face AD, BF (fig. 13), which looks down the stream, and a gentler slope DB, FC, which connects this

Theory.
how car-
ried on.

Fig. 13.



with the next ridge. As the stream comes over the first steep AD, it is directed almost perpendicularly against the point E immediately below D, and thus it gets hold of a particle of coarse sand, which it could not have detached from the rest had it been moving parallel to the surface of it. It easily rolls it up the gentle slope EB; arrived there, the particle tumbles over the ridge, and lies close at the bottom of it at F, where it is protected by the little eddy, which is formed in the very angle; other particles lying about E are treated in the same way, and, tumbling over the ridge B, cover the first particle, and now protect it effectually from any farther disturbance. The same operation is going on at the bottom of each ridge. The brow or steep of the ridge gradually advances down the stream, and the whole set change their places, as represented by the line *adbf*; and after a certain time the particle which was deposited in F is found in an unprotected situation, as it was in E, and it now makes another step down the stream.

The Abbé Bossut found, that when the velocity of the stream was just sufficient for lifting the sand (and a small excess hindered the operation altogether), a ridge advanced about twenty feet in a day.

Since the current carries off the most moveable matters of the channel, it leaves the bottom covered with the remaining coarse sand, gravel, pebbles, and larger stones. To these are added many which come down the stream while it is more rapid, and also many which roll in from the sides as the banks wear away. All these form a bottom much more solid and immoveable than a bottom of the medium soil would have been. But this does not always maintain the channel in a permanent form, but frequently occasions great changes, by obliging the current, in the event of any sudden fresh or swell, to enlarge its bed, and even to change it altogether, by working to the right and to the left, since it cannot work downwards. It is generally from such accumulation of gravel and pebbles in the bottom of the bed that rivers change their channels.

It remains to ascertain, in absolute measures, the force which a current really exerts in attempting to drag along with it the materials of its channel; and which will produce this effect unless resisted by the inertia of these materials. It is therefore of practical importance to know this force.

Nor is it abstruse or difficult. For when a current is in train, the accelerating force is in equilibrio with the resistance, and is therefore its immediate measure. Now this accelerating force is precisely equal to the weight of the body of water in motion multiplied by the fraction which expresses the slope. The mean depth being equal to the quotient of the section divided by the border, the section is equal to the product of the mean depth multiplied by the border. Therefore, calling the border *b*, and the mean depth *d*, we have the section = *db*. The body of water in motion is therefore *db*s (because *s* was the slant length of a part whose difference of elevation is 1), and the accele-

Operation
of the
stream on
its bed,

Theory.

rating force is $db s \times \frac{1}{s}$, or db . But if we would only consider this resistance as corresponding to an unit of the length of the channel, we must divide the quantity db by s , and the resistance is then $\frac{db}{s}$. And if we would consider

the resistance only for an unit of the border, we must divide this expression by b ; and thus this resistance (taking an inch for the unit) will be expressed for one square inch of the bed by the weight of a bulk of water which has a square inch for its base, and $\frac{d}{s}$ for its height. And lastly, if E

be taken for any given superficial extent of the channel or bed, and F the obstruction, which we consider as a sort of

friction, we shall have $F = \frac{Ed}{s}$.

Thus, let it be required to determine in pounds the resistance or friction on a square yard of a channel whose current is in train, which is ten feet wide, four feet deep, and has a slope of one foot in a mile. Here E is nine feet. Ten feet width and four feet depth give a section of forty

feet. The border is eighteen feet. Therefore $d = \frac{40}{18} =$

2.2222 , and s is 5280. Therefore the friction is the weight of a column of water whose base is nine feet, and height $\frac{2.2222}{5280}$, or nearly $3\frac{6}{10}$ ounces avoirdupois.

§ 3. Settlement of the Beds of Rivers.

Simplicity and wisdom is displayed in the conduct of rivers.

He who looks with a careless eye at a map of the world, is apt to consider the rivers which ramble over its surface as a chance-medley disposition of the drainers which carry off the waters. But it will afford a most agreeable object to a considerate and contemplative mind to take it up in this very simple light; and, having considered the many ways in which the drenched surface might have been cleared of the superfluous waters, to attend particularly to the very way which nature has followed. In pursuing the troubled waters of a mountain torrent, or the pure streams which trickle from their bases, till he sees them swallowed up in the ocean, and in attending to the many varieties in their motions, he will be delighted with observing how the simple laws of mechanism are made so fruitful in good consequences, both by modifying the motions of the waters themselves, and also by inducing new forms on the surface of the earth, fitted for re-acting on the waters, and producing those very modifications of their motions which render them so beneficial. The permanent beds of rivers are by no means fortuitous gutters hastily scooped out by dashing torrents; but both they and the valleys through which they flow are the patient but unceasing labours of nature, prompted by goodness and directed by wisdom.

Whether we trace a river from the torrents which collect the superfluous waters of heaven, or from the springs which discharge what would otherwise be condemned to perpetual inactivity, each feeder is but a little rill, which could not ramble far from its scanty source among growing plants and absorbent earth, without being sucked up and evaporated, did it not meet with other rills in its course. When united, they form a body of water still inconsiderable, but much more able, by its bulk, to overcome the little obstacles to its motion; and the rivulet then moves with greater speed, as we have now learned. At the same time, the surface exposed to evaporation and absorption is diminished by the union of the rills. Four equal rills have only the surface of two when united. Thus the portion which escapes

arrestment, and travels downward, is continually increasing. This is a happy adjustment to the other operations of nature. Were it otherwise, the lower and more valuable countries would be loaded with the passing waters in addition to their own surplus rains, and the immediate neighbourhood of the sea would be almost covered by the drains of the interior countries. But, fortunately, those passing waters occupy less room as they advance, and by this wise employment of the most simple means, not only are the superfluous waters drained off from our fertile fields, but the drains themselves become an useful part of the country by their magnitude. They become the habitation of a prodigious number of fishes, which share the Creator's bounty; and they become the means of mutual communication of all the blessings of cultivated society. The vague ramblings of the rivers scatter them over the face of the country, and bring them to every door. It is not even an indifferent circumstance, that they gather strength to cut out deep beds for themselves. By this means they cut open many springs. Without this, the produce of a heavy shower would make a swamp which would not dry up in many days. And it must be observed, that the same heat which is necessary for the vigorous growth of useful plants will produce a very copious evaporation. This must return in showers much too copious for immediate vegetation, and the overplus would be destructive. Is it not pleasant to contemplate this adjustment of the great operations of nature, so different from each other, that if chance alone directed the detail, it was almost an infinite odds that the earth would be uninhabitable?

But let us follow the waters in their operations, and note the face of the countries through which they flow. Attending to the breadth, the depth, and the slope of the valleys, we shall be convinced that their present situation is extremely different from what it was in ancient days; and that the valleys themselves are the works of the rivers, or at least of waters which have descended from the heights, loaded with all the lighter matters which they were able to bring away with them. The rivers now flow in beds which have a considerable permanency; but this has been the work of ages. This has given stability, both by filling up and smoothing the valleys, and thus lessening the changing causes, and also by hardening the beds themselves, which are now covered with aquatic plants, and lined with the stones, gravel, and coarser sand, out of which all the lighter matters have been washed away.

The surface of the high grounds is undergoing a continual change; and the ground on which we now walk is by no means the same which was trodden by our remote ancestors. The showers from heaven carry down into the valleys, or sweep along by the torrents, a part of the soil which covers the heights and steepes. The torrents carry this soil into the brooks, these deliver part of it into the great rivers, and these discharge this fertilizing fat of the earth into the sea, where it is swallowed up, and for ever lost for the purposes of vegetation. Thus the hillocks lose of their height, the valleys are filled up, and the mountains are laid bare and show their naked precipices, which formerly were covered over with flesh and skin, but now look like the skeleton of this globe. The low countries, raised and nourished for some time by the substance of the high lands, will go in their turn to be buried in the ocean; and then the earth, reduced to a dreary flat, will become an immense uninhabitable mass. This catastrophe is far distant, because this globe is in its youth, but it is not the less certain; and the united labours of the human race could not long protract the term.

But, in the mean time, we can trace a beneficent purpose, and a nice adjustment of seemingly remote circumstances. The grounds near the sources of all our rivers are indeed gradually stripped of their most fertile ingredi-

Theory

Their effect on the countries through which they pass.

Theory.
Benefi-
cence dis-
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ges they
produce.

ents. But had they retained them for ages, the sentient inhabitants of the earth, or at least the nobler animals, with man at their head, would not thence have derived much advantage. The general laws of nature produce changes in our atmosphere which must ever render these great elevations unfruitful. That genial warmth, which is equally necessary for the useful plant as for the animal which lives on it, is confined to the lower grounds. The earth, which on the top of Mount Hæmus could only bring forth moss and dittany, when brought into the gardens of Spalatro produced pot-herbs so luxuriant, that Diocletian told his colleague Maximian that he had more pleasure in their cultivation than the Roman empire could confer. Thus nature not only provides us manure, but conveys it to our fields. She even keeps it safe in store for us till it shall be wanted. The tracts of country which are but newly inhabited by man, such as great part of America, and the newly-discovered regions of Terra Australis, are still almost occupied by marshes and lakes, or covered with impenetrable forests; and they would remain long enough in this state, if population, continually increasing, did not increase industry, and multiply the hands of cultivators along with their necessities. The Author of Nature was alone able to form the huge ridges of the mountains, to model the hillocks and the valleys, to mark out the courses of the great rivers, and give the first trace to every rivulet; but has left to man the task of draining his own habitation and the fields which are to support him, because this is a task not beyond his powers. It was therefore of immense advantage to him that those parts of the globe into which he has not yet penetrated should remain covered with lakes, marshes, and forests, which keep in store the juice of the earth, which the influence of the air and the vivifying warmth of the sun would have expended long ere now in useless vegetation, and which the rains of heaven would have swept into the sea, had they not been thus protected by their situation or their cover. It is therefore the business of man to open up these mines of hoarded wealth, and to thank the Author of all good, who has thus husbanded them for his use, and left them as a rightful heritage for those of after days.

The earth had not in the remote ages, as in our day, those great canals, those capacious voiders, always ready to drain off the rain-waters (of which only part is absorbed by the thirsty ground) and the pure waters of the springs from the foot of the hills. The rivers did not then exist, or were only torrents, whose waters, confined by the gulleys and glens, are searching for a place to escape. Hence arise those numerous lakes in the interior of great continents, of which there are still remarkable relics in North America, which in process of time will disappear, and become champaign countries. The most remote from the sea, unable to contain its waters, finds an issue through some gorge of the hills, and pours over its superfluous waters into a lower basin, which, in its turn, discharges its contents into another, and the last of the chain delivers its waters by a river into the ocean. The communication was originally begun by a simple overflowing at the lowest part of the margin. This made a torrent, which quickly deepened its bed; and this circumstance increasing its velocity, as we have seen, would extend this deepening backward to the lake, and draw off more of its waters. The work would go on rapidly at first, while earth and small stones only resisted the labours of nature; but these being washed away, and the channel hollowed out to the firm rock on all sides, the operation must go on very slowly, till the immense cascade shall undermine what it cannot break off, and then a new discharge will commence, and a quantity of flat ground will emerge all round the lake. The torrent, in the mean time, makes its way down the country, and digs a canal, which may be called the first sketch of a river, which will deepen and widen its bed continually. The water of several basins

united, and running together in a great body, will, according to the principles which we have established, have a much greater velocity, with the same slope, than those of the lakes in the interior parts of the continent; and the sum of them all united in the basin next the sea, after having broken through its natural mound, will make a prodigious torrent, which will dig for itself a bed so much the deeper as it has more slope and a greater body of waters.

The formation of the first valleys, by cutting open many springs which were formerly concealed under ground, will add to the mass of running waters, and contribute to drain off the waters of these basins. In course of time many of them will disappear, and flat valleys among the mountains and hills are the traces of their former existence.

When nature thus traces out the courses of future rivers, it is to be expected that those streams will most deepen their channels which in their approach to the sea receive into their bed the greatest quantities of rain and spring-waters, and that towards the middle of the continent they will deepen their channels less. In these last situations the natural slope of the fields causes the rain-water, rills, and the little rivulets from the springs, to seek their ways to the rivers. The ground can sink only by the flattening of the hills and high grounds; and this must proceed with extreme slowness, because it is only the gentle though incessant work of the rains and springs. But the rivers, increasing in bulk and strength, and of necessity flowing over every thing, form to themselves capacious beds in a more yielding soil, and dig them even to the level of the ocean.

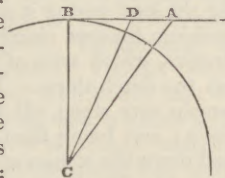
The beds of rivers by no means form themselves in one inclined plane. If we should suppose a canal AB (fig. 14) perfectly straight and horizontal at B, where it joins with the sea, this canal would really be an inclined channel of greater and greater slope as it is farther from B. This is evident; because gravity is directed towards the centre of the earth, and the angle CAB contained between the channel and the plumb-line at A is smaller than the similar angle CDB; and consequently the inclination to the horizon is greater in A than in D. Such a canal, therefore, would make the bed of a river; and some have thought that this was the real form of nature's work; but the supposition is a whim, and it is false. No river has a slope at all approaching to this. It would be eight inches declivity in the mile next the ocean, twenty-four inches in the second mile, forty inches in the third, and so on in the duplicate ratio (for the whole elevation) of the distances from the sea. Such a river would quickly tear up its bed in the mountains (were there any grounds high enough to receive it), and, except its first cascade, would soon acquire a more gentle slope. But the fact is, and it is the result of the imperishable laws of nature, that the continued track of a river is a succession of inclined channels, whose slope diminishes by steps as the river approaches to the sea. It is not enough to say that this results from the natural slope of the countries through which it flows, which we observe to increase in declivity as we go to the interior parts of the continent. Were it otherwise, the equilibrium at which nature aims in all her operations would still produce the gradual diminution of the slope of rivers. Without it they could not be in a permanent train.

That we may more easily form a notion of the manner in which the permanent course of a river is established, let us suppose a stream or rivulet *sa* (fig. 15) far up the country, makes its way through a soil perfectly uniform to the sea, taking the course *s a b c d e f*, and receiving the permanent additions of the stream *g a*, *h b*, *i c*, *k d*, *l e*, and that its velocity and slope in all its parts are so suited to the tenacity

Theory.

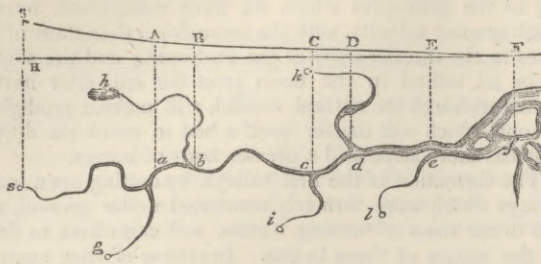
Beds of
rivers not
formed in
one inclin-
ed plane.

Fig. 14.



Theory.

Fig. 15.



of the soil and magnitude of its section, that neither do its waters during the annual freshes tear up its banks or deepen its bed, nor do they bring down from the high lands materials which they deposit in the channel in times of smaller velocity. Such a river may be said to be in a *permanent state*, to be in *conservation*, or to have *stability*. Let us call this state of a river its *REGIMEN*, denoting by the word the proper adjustment of the velocity of the stream to the tenacity of the channel. The velocity of its regimen must be the same throughout, because it is this which regulates its action on the bottom, which is the same from its head to the sea. That its bed may have stability, the mean velocity of the current must be constant, notwithstanding the inequality of discharge through its different sections by the brooks which it receives in its course, and notwithstanding the augmentation of its section as it approaches the sea.

On the other hand, it behoved this exact regimen to commence at the mouth of the river, by the working of the whole body of the river, in concert with the waters of the ocean, which always keep within the same limits, and make the ultimate level invariable. This working will begin to dig the bed, giving it as little breadth as possible: for this working consists chiefly in the efforts of falls and rapid streams, which arise of themselves in every channel which has too much slope. The bottom deepens, and the sides remain very steep, till they are undermined and crumbled down; and being then diluted in the water, they are carried down the stream and deposited where the ocean checks its speed. The banks crumble down anew, the valley or hollow forms; but the section, always confined to its bottom, cannot acquire a great breadth, and it retains a good deal of the form of the trapezium formerly mentioned. In this manner does the regimen begin to be established from *f* to *e*.

With respect to the next part *de*, the discharge or produce is diminished by the want of the brook *le*. It must take a similar form, but its area will be diminished, in order that its velocity may be the same; and its mean depth *d* being less than in the portion *ef* below, the slope must be greater. Without these conditions we could not have the uniform velocity, which the assumed permanency in a uniform soil naturally supposes. Reasoning after the same manner for all the portions *cd*, *bc*, *ab*, *sa*, we see that the regimen will be successively established in them, and that the slope necessary for this purpose will be greater as we approach the river head. The vertical section or profile of the course of the river *sabcd ef* will therefore resemble the line *SABCDEF* which is sketched above, having its different parts variously inclined to the horizontal line *HF*.

This process of nature

confirmed by example.

Such is the process of nature to be observed in every river on the surface of the globe. It long appeared a kind of puzzle to the theorists; and it was this observation of the increasing, or at least this continued velocity with smaller slope, as the rivers increased by the addition of their tributary streams, which caused Guglielmini to have recourse to his new principle, the energy of deep waters. We have now seen in what this energy consists. It is only a greater quantity of motion remaining in the middle of a great stream of water after a quantity has been retarded by the sides and bottom; and we see clearly, that since the addition of a

new and perhaps an equal stream does not occupy a bed of double surface, the proportion of the retardations to the remaining motion must continually diminish as a river increases by the addition of new streams. If therefore the slope were not diminished, the regimen would be destroyed, and the river would dig up its channel. We have a full confirmation of this in the many works which have been executed on the Po, which runs with rapidity through a rich and yielding soil. About the year 1600 the waters of the Panaro, a very considerable river, were added to the Po Grande; and although it brings along with it in its freshes a vast quantity of sand and mud, it has greatly deepened the whole Tronco di Venezia from the confluence to the sea. This point was clearly ascertained by Manfredi about the year 1720, when the inhabitants of the valleys adjacent were alarmed by the project of bringing in the waters of the Rheno, which then ran through the Ferrarese. Their fears were overcome, and the Po Grande continues to deepen its channel every day, with a prodigious advantage to the navigations; and there are several extensive marshes which now drain off by it, after having been for ages under water: and it is to be particularly remarked, that the Rheno is the foulest river in its freshes of any in that country. We insert this remark, because it may be of great practical utility, as pointing out a method of preserving and even improving the depth of rivers or drains in flat countries, which is not obvious, but rather appears improper; but it is strictly conformable to a true theory, and to the operations of nature, which never fails to adjust every thing so as to bring about an equilibrium. Whatever the declivity of the country may have been originally, the regimen begins to be settled at the mouths of the rivers, and the slopes are diminished in succession as we recede from the coast. The original slopes inland may have been much greater; but they will (when busy nature has completed her work) be left somewhat, and only so much greater, that the velocity may be the same notwithstanding the diminution of the section and mean depth.

Freshes will disturb this methodical progress relative Effects of freshes. only to the successive permanent additions; but their effects chiefly accelerate the deepening of the bed, and the diminution of the slope, by augmenting the velocity during their continuance. But when the regimen of the permanent additions is once established, the freshes tend chiefly to widen the bed, without greatly deepening it: for the aquatic plants, which have been growing and thriving during the peaceable state of the river, are now laid along, but not swept away, by the freshes, and protect the bottom from their attacks; and the stones and gravel, which must have been left bare in a course of years, working on the soil, will also collect in the bottom, and greatly augment its power of resistance; and even if the floods should have deepened the bottom some small matter, some mud will be deposited as the velocity of the freshes diminishes, and this will remain till the next flood.

We have supposed the soil uniform throughout the whole course; this seldom happens; therefore the circumstances which insure permanency, or the regimen of a river, may be very different in its different parts and in different rivers. We may say in general, that the farther that the regimen has advanced up the stream in any river, the more slowly will it convey its waters to the sea.

There are some general circumstances in the motion of rivers which it will be proper to take notice of just now, that they may not interrupt our more minute examination of their mechanism; and their explanations will then occur of themselves as corollaries of the propositions which we shall endeavour to demonstrate.

In a valley of small width the river always occupies the lowest part of it; and it is observed, that this is seldom in the middle of the valley, and is nearest to that side on which the slope from the higher grounds is steepest, and this with-

Theory.

Theory. out regard to the line of its course. The river generally adheres to the steepest hills, whether they advance into the plain or retire from it. This general feature may be observed over the whole globe. It is divided into compartments by great ranges of mountains; and it may be observed, that the great rivers hold their course not very far from them, and that their chief feeders come from the other side. In every compartment there is a swell of the low country at a distance from the bounding ridge of mountains; and on the summit of this swell the principal feeders of the great river have their sources.

In narrow valleys rivers adhere to the steepest hills.

The name *valley* is given with less propriety to these immense regions, and is more applicable to tracts of champaign land which the eye can take in at one view. Even here we may observe a resemblance. It is not always in the very lowest part of this valley that the river has its bed: although the waters of the river flow in a channel below its immediate banks, these banks are frequently higher than the grounds at the foot of the hills. This is very distinctly seen in Lower Egypt, by means of the canals which are carried backward from the Nile for accelerating its fertilizing inundations. When the calishes are opened to admit the waters, it is always observed that the districts most remote are the first covered, and it is several days before the immediately adjoining fields partake of the blessing. This is a consequence of that general opinion of nature by which the valleys are formed. The river in its floods is loaded with mud, which it retains as long as it rolls rapidly along its limited bed, tumbling its waters over and over, and taking up in every spot as much as it deposits: but as soon as it overflows its banks, the very enlargement of its section diminishes the velocity of the water; and it may be observed still running in the track of its bed with great velocity, while the waters on each side are stagnant at a very small distance: therefore the water, on getting over the banks, must deposit the heaviest, the firmest, and even the greatest part of its burden, and must become gradually clearer as it approaches the hills. Thus a gentle slope is given to the valley in a direction which is the reverse of what one would expect. It is, however, almost always the case in wide valleys, especially if the great river comes through a soft country. The banks of the brooks and ditches are observed to be deeper as they approach the river, and the merely superficial drains run backwards from it.

We have already observed that the enlargement of the bed of a river, in its approach to the sea, is not in proportion to the increase of its waters. This would be the case even if the velocity continued the same; and, therefore, since the velocity increases in consequence of the greater energy of a large body of water, which we now understand distinctly, a still smaller bed is sufficient for conveying all the water to the sea.

This general law is broken, however, in the immediate neighbourhood of the sea; because in this situation the velocity of the water is checked by the passing flood-tides of the ocean. As the whole waters must still be discharged, they require a larger bed, and the enlargement will be chiefly in width. The sand and mud are deposited when the motion is retarded. The depth of the mouth of the channel is therefore diminished. It must therefore become wider. If this be done on a coast exposed to the force of a regular tide, which carries the waters of the ocean across the mouth of the river, this regular enlargement of the mouth will be the only consequence, and it will generally widen till it washes the foot of the adjoining hills; but if there be no tide in the sea, or a tide which does not set across the mouth of the river, the sands must be deposited at the sides of the opening, and become additions to the shore, lengthening the mouth of the channel. In this sheltered situation, every trivial circumstance will cause the river to work more on particular parts of the bottom, and

deepen the channel there. This keeps the mud suspended in such parts of the channel, and it is not deposited till the stream has shot farther out into the sea. It is deposited on the sides of those deeper parts of the channel, and increases the velocity in them, and thus still farther protracts the deposition. Rivers so situated will not only lengthen their channels, but will divide them, and produce islands at their mouths. A bush, a tree torn up by the roots by a mountain torrent, and floated down the stream, will thus inevitably produce an island; and rivers in which this is common will be continually shifting their mouths. The Mississippi is a most remarkable instance of this. It has a long course through a rich soil, and disembogues itself into the bay of Mexico, in a place where there is no *passing tide*, as may be seen by comparing the hours of high water in different places. No river that we know carries down its stream such numbers of rooted-up trees; they frequently interrupt the navigation, and render it always dangerous in the night-time. This river is so beset with flats and shifting sands at its mouth, that the most experienced pilots are puzzled; and it has protruded its channel above fifty miles in the short period that we have known it. The discharge of the Danube is very similar: so is that of the Nile, for it is discharged into a still corner of the Mediterranean. It may now be said to have acquired considerable permanency; but much of this is owing to human industry, which strips it as much as possible of its subsidence matter. The Ganges, too, is in a situation pretty similar, and exhibits similar phenomena. The Maragnon might be noticed as an exception; but it is not an exception. It has flowed very far in a level bed, and its waters come pretty clear to Para; but, besides, there is a strong transverse tide, or rather current, at its mouth, setting to the south-east both during flood and ebb. The mouth of the Po is perhaps the most remarkable of any on the surface of this globe, and exhibits appearances extremely singular. Its discharge is into a sequestered corner of the Adriatic. Though there be a more remarkable tide in this gulf than in any part of the Mediterranean, it is still but trifling, and it either sets directly in upon the mouth of the river or retires straight away from it. The river has many mouths, and they shift prodigiously. There has been a general increase of the land very remarkable. The marshes where Venice now stands were in the Augustan age everywhere penetrable by the fishing-boats, and in the fifth century could only bear a few miserable huts; now they are covered with crowds of stately buildings. Ravenna, situated on the southernmost mouth of the Po, was, in the Augustan age, at the extremity of a swamp, and the road to it was along the top of an artificial mound, made by Augustus at an immense expense. It was, however, a fine city, containing extensive docks, arsenals, and other massy buildings, being the great military port of the empire, where Augustus laid up his great ships of war. In the Gothic times it became almost the capital of the western empire, and was the seat of government and of luxury. It must therefore be supposed to have every accommodation of opulence, and we cannot doubt of its having paved streets, wharfs, &c.; so that its wealthy inhabitants were at least walking dryfooted from house to house. But now it is an Italian mile from the sea, and surrounded with vineyards and cultivated fields, and is accessible in every direction. All this must have been formed by depositions from the Po, flowing through Lombardy loaded with the spoils of the Alps, which were here arrested by the reeds and bulrushes of the marsh. These things are in common course; but when wells are dug, we come to the pavements of the ancient city, and these pavements are all on one exact level, and they are *eight feet below the surface of the sea at low water*. This cannot be ascribed to the subsiding of the ancient city. This would be irregular, and greatest among the hea

Theory.

Theory. buildings. The tomb of Theodoric remains, and the pavement round it is on a level with all the others. The lower story is always full of water; so is the lower story of the cathedral to the depth of three feet. The ornaments of both these buildings leave no room to doubt that they were formerly dry; and such a building as the cathedral could not sink without crumbling into pieces.

It is by no means easy to account for all this. The depositions of the Po and other rivers must raise the ground; and yet the rivers must still flow over all. We must conclude that the surface of the Adriatic is by no means level, and that it slopes like a river from the Lagoon of Venice to the eastward. In all probability it even slopes considerably outwards from the shore. This will not hinder the alternations of ebb and flow tide, as will be shown in its proper place. The whole shores of this gulf exhibit most uncommon appearances.

Rivers are convex athwart the stream, and the cause of it.

The last general observation which we shall make in this place is, that the surface of a river is not flat, considered athwart the stream, but convex; this is owing to its motion. Suppose a canal of stagnant water; its surface would be a perfect level. But suppose it possible, by any means, to give the middle waters a motion in the direction of its length, they must drag along with them the waters immediately contiguous. These will move less swiftly, and will in like manner drag the waters without them; and thus the water at the sides being abstracted, the depth must be less, and the general surface must be convex across. The fact in a running stream is similar to this; the side waters are withheld by the sides, and every filament is moving more slowly than the one next it towards the middle of the river, but faster than the adjoining filament on the land side. This alone must produce a convexity of surface. But besides this, it is demonstrable that the pressure of a running stream is diminished by its motion, and the diminution is proportional to the height which would produce the velocity with which it is gliding past the adjoining filament. This convexity must in all cases be very small. Few rivers have the velocity nearly equal to eight feet per second, and this requires a height of one foot only. An author quoted by M. Buffon says, that he has observed on the river Aveiron an elevation of three feet in the middle during floods; but we suspect some error in the observation.

§ 4. *Of the Windings of Rivers.*

Winding course of rivers, how formed.

Rivers are seldom straight in their course. Formed by the hand of nature, they are accommodated to every change of circumstance. They wind around what they cannot get over, and work their way to either side according as the resistance of the opposite bank makes a straight course more difficult; and this seemingly fortuitous rambling distributes them more uniformly over the surface of a country, and makes them everywhere more at hand, to receive the numberless rills and rivulets which collect the waters of our springs and the superfluities of our showers, and to comfort our habitations with the many advantages which cultivation and society can derive from their presence. In their feeble beginnings the smallest inequality of slope or consistency is enough to turn them aside and make them ramble through every field, giving drink to our herds and fertility to our soil. The more we follow nature into the minutiae of her operations, the more must we admire the inexhaustible fertility of her resources, and the simplicity of the means by which she produces the most important and beneficial effects. By thus twisting the course of our rivers into ten thousand shapes, she keeps them long amidst our fields, and thus compensates for the declivity of the surface, which would otherwise tumble them with great rapidity into the ocean, loaded with the best and richest of our soil. Without this, the showers of heaven would have little influence

Theory. in supplying the waste of incessant evaporation. But as things are, the rains are kept slowly trickling along the sloping sides of our hills and steepes, winding round every clod, nay, every plant, which lengthens their course, diminishes their slope, checks their speed, and thus prevents them from quickly brushing off from every part of the surface the lightest and best of the soil. The fattest of our holm lands would be too steep, and the rivers would shoot along through our finest meadows, hurrying every thing away with them, and would be unfit for the purposes of inland conveyance, if the inequalities of soil did not make them change this headlong course for the more beautiful meanders which we observe in the course of the small rivers winding through our meadows. Those rivers are in general the straightest in their course which arc the most rapid, and which roll along the greatest bodies of water: such are the Rhone, the Po, the Danube. The smaller rivers continue more devious in their progress, till they approach the sea, and have gathered strength from all their tributary streams.

Every thing aims at an equilibrium, and this directs even the rambling of rivers. It is of importance to understand the relation between the force of a river and the resistance which the soil opposes to those deviations from a rectilinear course; for it may frequently happen that the general procedure of nature may be inconsistent with our local purposes. Man was set down on this globe, and the task of cultivating it was given him by nature, and his chief enjoyment seems to be to struggle with the elements. He must not find things to his mind, but he must mould them to his own fancy. Yet even this seeming anomaly is one of nature's most beneficent laws; and his exertions must still be made in conformity with the general train of the operations of mechanical nature; and when we have any work to undertake relative to the course of rivers, we must be careful not to thwart their general rules, otherwise we shall sooner or later be punished for their infraction. Things will be brought back to their former state, if our operations are inconsistent with that equilibrium which is constantly aimed at, or some new state of things which is equivalent will soon be induced. If a well-regulated river has been improperly deepened in some place to answer some particular purpose of our own, or if its breadth has been improperly augmented, we shall soon see a deposition of mud or sand choke up our fancied improvements; because, as we have enlarged the section without increasing the slope or the supply, the velocity must diminish, and floating matters must be deposited.

It is true, we frequently see permanent channels where the forms are extremely different from that which the waters would dig for themselves in an uniform soil, and which approaches a good deal to the trapezium described formerly. We see a greater breadth frequently compensate for a want of depth; but all such deviations are a sort of constraint, or rather are indications of inequality of soil. Such irregular forms are the works of nature; and if they are permanent, the equilibrium is obtained. Commonly the bottom is harder than the sides, consisting of the coarsest of the sand and of gravel; and therefore the necessary section can be obtained only by increasing the width. We are accustomed to attend chiefly to the appearances which prognosticate mischief, and we interpret the appearances of a permanent bed in the same way, and frequently form very false judgments. When we see one bank low and flat, and the other high and abrupt, we suppose that the waters are passing along the first in peace, and with a gentle stream, but that they are rapid on the other side, and are tearing away the bank; but it is just the contrary. The bed being permanent, things are in equilibrio, and each bank is of a form just competent to that equilibrium. If the soil on both sides be uniform, the stream is most rapid

Theory. on that side where the bank is low and flat, for in no other form would it withstand the action of the stream; and it has been worn away till its flatness compensates for the greater force of the stream. The stream on the other side must be more gentle, otherwise the bank could not remain abrupt. In short, in a state of permanency, the velocity of the stream and form of the bank are just suited to each other. It is quite otherwise before the river has acquired its proper regimen.

Necessity of attending to nature in regulating the course of rivers. A careful consideration therefore of the general features of rivers which have settled their regimen, is of use for informing us concerning their internal motions, and directing us to the most effectual methods of regulating their course.

We have already said that perpendicular brims are inconsistent with stability. A semicircular section is the form which would produce the quickest train of a river whose expense and slope are given; but the banks at B and D (fig. 16) would crumble in, and lie at the bottom, where their horizontal surface would secure them from farther change. The bed will acquire the form GcF, of equal section, but greater width, and with brims less shelving.

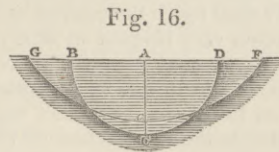


Fig. 16.

The proportion of the velocities at A and c may be the same with that of the velocities at A and C; but the velocity at G and F will be less than it was formerly at B, C, or D; and the velocity in any intermediate point E, being somewhat between those at F and c, must be less than it was in any intermediate point of the semicircular bed. The velocities will therefore decrease along the border from c towards G and F, and the steepness of the border will augment at the same time, till, in every point of the new border GcF, these two circumstances will be so adjusted that the necessary equilibrium is established.

The same thing must happen in our trapezium. The slope of the brims may be exact, and will be retained; it will, however, be too great anywhere below, where the velocity is greater, and the sides will be worn away till the banks are undermined and crumble down, and the river will maintain its section by increasing its width. In short, no border made up of straight lines is consistent with that gradation of velocity which will take place whenever we depart from a semicircular form. And we accordingly see, that in all natural channels the section has a curvilinear border, with the slope increasing gradually from the bottom to the brim.

These observations will enable us to understand how nature operates when the inequality of surface or of tenacity obliges the current to change its direction, and the river forms an elbow.

Conditions necessary for a permanent regimen. Supposing always that the discharge continues the same, and that the mean velocity is either preserved or restored, the following conditions are necessary for a permanent regimen.

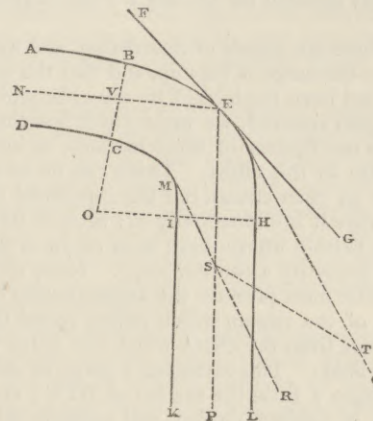
1. The depth of water must be greater in the elbow than anywhere else.
2. The main stream, after having struck the concave bank, must be reflected in an equal angle, and must then be in the direction of the next reach of the river.
3. The angle of incidence must be proportioned to the tenacity of the soil.
4. There must be in the elbow an increase of slope, or of head of water, capable of overcoming the resistance occasioned by the elbow.

Reasonableness of these conditions. The reasonableness, at least, of these conditions will appear from the following considerations.

1. It is certain that force is expended in producing this change of direction in a channel which by supposition diminishes the current. The diminution arising from any

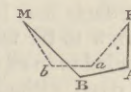
cause which can be compared with friction must be greater when the stream is directed against one of the banks. It may be very difficult to state the proportion, and it would occupy too much of our time to attempt it; but it is sufficient that we be convinced that the retardation is greater in this case. We see no cause to increase the mean velocity in the elbow, and we must therefore conclude that it is diminished. But we are supposing that the discharge continues the same; the section must therefore augment, or the channel increase its transverse dimensions. The only question is, In what manner it does this, and what change of form does it affect, and what form is competent to the final equilibrium and the consequent permanency of the bed? Here there is much room for conjecture. Du Buat reasons as follows: If we suppose that the points B and C (fig 17)

Fig. 17.



continue on a level, and that the points H and I at the beginning of the next reach are also on a level, it is an inevitable consequence that the slope along CMI must be greater than along BEH, because the depression of H below B is equal to that of I below C, and BEH is longer than CMI. Therefore the velocity along the convex bank CMI must be greater than along BEH. There may even be a stagnation and an eddy in the contrary direction along the concave bank. Therefore, if the form of the section were the same as up the stream, the sides could not stand on the convex bank. When therefore the section has attained a permanent form, and the banks are again in equilibrio with the action of the current, the convex bank must be much flatter than the concave. If the water is really still on the concave bank, that bank will be absolutely perpendicular, nay, may overhang. Accordingly, this state of things is matter of daily observation, and justifies our reasoning, and entitles us to say, that this is the nature of the internal motion of the filaments which we cannot distinctly observe. The water moves most rapidly along the convex bank, and the thread of the stream is nearest to this side. Reasoning in this way, the section, which we may suppose to have been originally of the form Mb aE (fig 18), assumes the shape MBAE.

Fig. 18.



2. Without presuming to know the mechanism of the internal motions of fluids, we know that superficial waves are reflected precisely as if they were elastic bodies, making the angles of incidence and reflection equal. In as far, therefore, as the superficial wave is concerned in the operation, M. de Buat's second position is just. The permanency of the next reach requires that its axis shall be in the direction of the line EP (fig. 17), which makes the angle GEP = FEN. If the next reach has the direction EQ, MR, the wave reflected in the line ES will work on the bank at S, and will be

Theory. reflected in the line ST, and work again on the opposite bank at T. We know that the effect of the superficial motion is great, and that it is the principal agent in destroying the banks of canals. So far therefore Du Buat is right. We cannot say with any precision or confidence how the actions of the under filaments are modified; but we know no reason for not extending to the under filaments what appears so probable with respect to the surface-water.

3. The third position is no less evident. We do not know the mode of action of the water on the bank; but our general notions on this subject, confirmed by common experience, tell us that the more obliquely a stream of water beats on any bank, the less it tends to undermine it or wash it away. A stiff and cohesive soil therefore will suffer no more from being almost perpendicularly buffeted by a stream than a friable sand would suffer from water gliding along its face. Du Buat thinks, from experience, that a clay bank is not sensibly affected till the angle FEB is about thirty-six degrees.

4. Since there are causes of retardation, and we still suppose that the discharge is kept up, and that the mean velocity, which had been diminished by the enlargement of the section, is again restored, we must grant that there is provided, in the mechanism of these motions, an accelerating force adequate to this effect. There can be no accelerating force in an open stream but the superficial slope. In the present case it is undoubtedly so; because by the deepening of the bottom where there is an elbow in the stream, we have of necessity a counter slope. Now, all this head of water, which must produce the augmentation of velocity in that part of the stream which ranges round the convex bank, will arise from the check which the water gets from the concave bank. This occasions a gorge or swell up the stream, enlarges a little the section at BVC; and this, by the principle of uniform motion, will augment all the velocities, deepen the channel, and put every thing again into its train as soon as the water gets into the next reach. The water at the bottom of this basin has very little motion, but it defends the bottom by this very circumstance.

Remarks
on these
conditions,
and the
reasons of
them.

Such are the notions which Du Buat entertains of this part of the mechanism of running waters. We cannot say that they are very satisfactory, and they are very opposite to the opinions commonly entertained on the subject. Most persons think that the motion is most rapid and turbulent on the side of the concave bank, and that it is owing to this that the bank is worn away till it has become perpendicular, and that the opposite bank is flat, because it has not been gnawed away in this manner. With respect to this general view of the matter, these persons may be in the right; and when a stream is turned into a crooked and yielding channel for the first time, this is its manner of action. But Du Buat's aim is to investigate the circumstances which obtain in the case of a regimen; and in this view he is undoubtedly right as to the facts, though his mode of accounting for these facts may be erroneous. And as this is the only useful view to be taken of the subject, it ought chiefly to be attended to in all our attempts to procure stability to the bed of a river, without the expensive helps of masonry, &c. If we attempt to secure permanency by deepening on the inside of the elbow, our bank will undoubtedly crumble down, diminish the passage, and occasion a more violent action on the hollow bank. The most effectual mean of security is to enlarge the section; and if we do this on the inside bank, we must do it by widening the stream very much, that we may give a very sloping bank. Our attention is commonly drawn to it when the hollow bank is giving way, and with a view to stop the ravages of the stream. Things are not now in a state of permanency, but nature is working in her own way to bring it about. This may not suit *our* purpose, and we must thwart her. The phenomena which we then observe are frequently very unlike to those

Theory. described in the preceding paragraphs. We see a violent tumbling motion in the stream towards the hollow bank. We see an evident accumulation of water on that side, and the point B is frequently higher than C. This regorging of the water extends to some distance, and is of itself a cause of greater velocity, and contributes, like a head of stagnant water, to force the stream through the bend, and to deepen the bottom. This is clearly the case when the velocity is excessive, and the hollow bank able to abide the shock. In this situation the water thus heaped up escapes where it best can; and as the water obstructed by an obstacle put in its way escapes by the sides, and there has its velocity increased, so here the water gorged up against the hollow bank swells over towards the opposite side, and passes round the convex bank with an increased velocity. It depends much on the adjustment between the velocity and consequent accumulation, and the breadth of the stream and the angle of the elbow, whether this augmentation of velocity shall reach the convex bank; and we sometimes see the motion very languid in that place, and even depositions of mud and sand are made there. The whole phenomena are too complicated to be accurately described in general terms, even in the case of perfect regimen: for this regimen is relative to the consistence of the channel; and when this is very great, the motions may be most violent in every quarter. But the preceding observations are of importance, because they relate to ordinary cases and to ordinary channels.

It is evident from Du Buat's second position, that the proper form of an elbow depends on the breadth of the stream as well as on the radius of curvature, and that every angle of elbow will require a certain proportion between the width of the river and the radius of the sweep. Du Buat gives rules and formulæ for all these purposes, and shows that in one sweep there may be more than one reflection or rebound. It is needless to enlarge on this matter of mere geometrical discussion. It is with the view of enabling the engineer to trace the windings of a river in such a manner that there shall be no rebounds which shall direct the stream against the sides, but preserve it always in the axis of every reach. This is of consequence, even when the bends of the river are to be secured by masonry or piling; for we have seen the necessity of increasing the section, and the tendency which the waters have to deepen the channel on that side where the rebound is made. This tends to undermine our defences, and obliges us to give them deeper and more solid foundations in such places. But any person accustomed to the use of the scale and compasses will form to himself rules of practice equally sure and more expeditious than Du Buat's formulæ.

We proceed, therefore, to what is more to our purpose, **Resistance** the consideration of the resistance caused by an elbow, and caused by the methods of providing a force capable of overcoming it, an elbow, and mode of over-coming it. We have already taken notice of the salutary consequences arising from the rambling course of rivers, inasmuch as it more effectually spreads them over the face of a country. It is no less beneficial by diminishing their velocity. This it does both by lengthening their course, which diminishes the declivity, and by the very resistance which they meet with at every bend. We derive the chief advantages from our rivers when they no longer shoot their way from precipice to precipice loaded with mud and sand, but peaceably roll along their clear waters, purified during their gentler course, and offer themselves for all the purposes of pasturage, agriculture, and navigation. The more a river winds its way round the foot of the hills, the more is the resistance of its bed multiplied; the more obstacles it meets with in its way from its source to the sea, the more moderate is its velocity; and instead of tearing up the very bowels of the earth, and digging for itself a deep trough, along which it sweeps rocks and rooted-up trees, it flows with majestic

Theory. pace even with the surface of our cultivated grounds, which it embellishes and fertilizes.

We may with safety proceed on the supposition, that the force necessary for overcoming the resistance arising from a rebound is as the square of the velocity; and it is reasonable to suppose it proportional to the square of the sine of the angle of incidence, and this for the reasons given for adopting this measure of the general *RESISTANCE of Fluids*. It cannot, however, claim a greater confidence here than in that application; and it has been shown in that article with what uncertainty and limitations it must be received. We leave it to our readers to adopt either this or the simple ratio of the sines, and shall abide by the duplicate ratio with Du Buat, because it appears by his experiments that this law is very exactly observed in tubes in inclinations not exceeding 40° ; whereas it is in these small angles that the application to the general resistance of fluids is most in fault. But the correction is very simple if this value shall be found erroneous. There can be no doubt that the force necessary for overcoming the resistance will increase as the number of rebounds. Therefore we may express the resistance, in general, by the formula $r = \frac{n V^2 \sin^2 I}{m}$;

where r is the resistance, V the mean velocity of the stream, $\sin. I$ the sine of the angle of incidence, n the number of equal rebounds (that is, having equal angles of incidence), and m is a number to be determined by experiment. Du Buat made many experiments on the resistance occasioned by the bendings of pipes, none of which differed from the result of the above formula above one part in twelve; and he concludes, that the resistance to one bend may be estimated at $\frac{V^2 \sin^2 I}{3000}$. The experiment was in this form. A pipe of one

inch diameter, and ten feet long, was formed with ten rebounds of 36° each. A head of water was applied to it, which gave the water a velocity of six feet per second. Another pipe of the same diameter and length, but without any bendings, was subjected to a pressure of a head of water, which was increased till the velocity of efflux was also six feet per second. The additional head of water was $5\frac{9}{10}$ inches. Another of the same diameter and length, having one bend of $24^\circ 34'$, and running eighty-five inches per second, was compared with a straight pipe having the same velocity, and the difference of the heads of water was $\frac{57}{100}$ of an inch. A computation from these two experiments will give the above result, or, in English measure, $r = \frac{V^2 \sin^2 I}{3200}$ very

nearly. It is probable that this measure of the resistance is too great; for the pipe was of uniform diameter even in the bends: whereas, in a river properly formed, where the regimen is exact, the capacity of the section of the bend is increased.

Theory applied to inclined tubes and open streams. The application of this theory to inclined tubes and to open streams is very obvious, and very legitimate and safe. Let AB (fig. 19) be the whole height of the reservoir ABIK, and BC the horizontal length of a pipe, containing any number of rebounds, equal or unequal, but all regular, that is, constructed according to the conditions formerly mentioned. The whole head of water should be conceived as performing, or as divided into portions which perform, three different offices. One portion,

$AD = \frac{V^2}{509}$, impels the water in-

to the entry of the pipe with the velocity with which it really moves in it; another portion EB is in equilibrio with the resistances arising from the mere length of the pipe ex-

Theory. panded into a straight line; and the third portion DE serves to overcome the resistance of the bends. If, therefore, we draw the horizontal line BC, and, taking the pipe BC out of its place, put it in the position DH, with its mouth C in H, so that DH is equal to BC, the water will have the same velocity in it that it had before. For greater simplicity of argument, we may suppose that when the pipe was inserted at B, its bends lay all in a horizontal plane, and that when it is inserted at D, the plane in which all its bends lie slopes only in the direction DH, and is perpendicular to the plane of the figure. We repeat it, the water will have the same velocity in the pipes BC and DH, and the resistances will be overcome. If we now prolong the pipe DH towards L to any distance, repeating continually the same bendings in a series of lengths, each equal to DH, the motion will be continued with the velocity corresponding to the pressure of the column AD; because the declivity of the pipe is augmented in each length equal to DH, by a quantity precisely sufficient for overcoming all the resistances in that length; and the true slope in these cases is BE + ED, divided by the expanded length of the pipe BC or DH.

The analogy which we were enabled to establish between the uniform motion or the train of pipes and of open streams, entitles us now to say, that when a river has bendings, which are regularly repeated at equal intervals, its slope is compounded of the slope which is necessary for overcoming the resistance of a straight channel of its whole expanded length, agreeably to the formula for uniform motion, and of the slope which is necessary for overcoming the resistance arising from its bending alone.

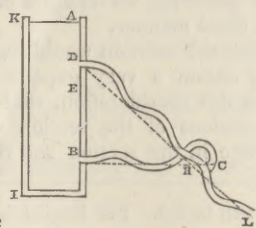
Thus, let there be a river which, in the expanded course of 6000 fathoms, has 10 elbows, each of which has 30° of rebound; and let its mean velocity be 20 inches in a second. If we should learn its whole slope in this 6000 fathoms, we must first find (by the formula of uniform motion) the slope s which will produce the velocity of 20 inches in a straight river of this length, section, and mean depth. Suppose this to be $\frac{1}{21600}$, or 20 inches, in this whole length. We must then find by the formula $\frac{n V^2 \sin^2 I}{3200}$ the

slope necessary for overcoming the resistance of ten rebounds of 30° each. This we shall find to be $6\frac{1}{2}$ inches in the 6000 fathoms. Therefore the river must have a slope of $26\frac{1}{2}$ inches in 6000 fathoms, or $\frac{1}{16200}$; and this slope will produce the same velocity which 20 inches, or $\frac{1}{21600}$, would do in a straight-running river of the same length.

PART II.—PRACTICAL INFERENCES.

Having thus established a theory of a most important part of hydraulics, which may be confided in as a just representation of nature's procedure, we shall apply it to the examination of the chief results of every thing which art has contrived for limiting the operations of nature, or modifying them so as to suit our particular views. Trusting to the detail which we have given of the connecting principles, and the chief circumstances which co-operate in producing the ostensible effect; and supposing that such of our readers as are interested in this subject will not think it too much trouble to make the applications in the same detail; we shall content ourselves with merely pointing out the steps of the process, and showing their foundation in the theory itself; and frequently, in place of the direct analysis which the theory enables us to employ for the solution of the problems, we shall recommend a process of approximation by trial and correction, sufficiently accurate, and more within the reach of practical engineers.

Fig. 19.



Practical Inferences. We are naturally led to consider in order the following articles.

1. The effects of permanent additions of every kind to the waters of a river, and the most effectual methods of preventing or removing inundations.
2. The effects of weirs, bars, sluices, and keeps of every kind, for raising the surface of a river; and the similar effects of bridges, piers, and every thing which contracts the section of the stream.
3. The nature of canals; how they differ from rivers in respect of origin, discharge, and regimen, and what conditions are necessary for their most perfect construction.
4. Canals for draining land, and drafts or canals of derivation from the main stream. The principles of their construction, so that they may suit their intended purposes; and the change which they produce on the main stream, both above and below the point of derivation.

Of the Effects of Permanent Additions to the Waters of a River.

Problems and examples on the effects of permanent additions to the waters of a river. From what has already been said, it appears that to every kind of soil or bed there corresponds a certain velocity of current, too small to hurt it by digging it up, and too great to allow the deposition of the materials which it is carrying along. Supposing this known for any particular situation, and the quantity of water which the channel must of necessity discharge, we may wish to learn the smallest slope which must be given to this stream, that the waters may run with the required velocity. This suggests,

PROB. I. Given the discharge D of a river, and V its velocity of regimen: required the smallest slope s , and the dimensions of its bed.

Since the slope must be the smallest possible, the bed must have the form which will give the greatest mean depth d , and should therefore be the trapezium formerly described; and its area and perimeter are the same with those of a rectangle whose breadth is twice its height h .

These circumstances gives us the equation $\frac{D}{V} = 2h^2$. For the area of the section is twice the square of the height, and the discharge is the product of this area and the velocity. Therefore $\sqrt{\frac{D}{2V}} = h$ and $\sqrt{\frac{2D}{V}} =$ the breadth b .

The formula of uniform motion gives $\sqrt{s} - L\sqrt{s+1.6} = \frac{297(\sqrt{d}-0.1)}{V+0.3(\sqrt{d}-0.1)}$. Instead of $\sqrt{d}-0.1$, put its equal

$\sqrt{\frac{h}{2}} - 0.1$, and every thing being known in the second side of this equation, we easily get the value of s by a few trials after the following manner: Suppose that the second side is equal to any number, such as 9. First suppose that $\sqrt{s}$ is 9, whence $s = 81$. Then the hyperbolic logarithm of $\sqrt{81+1.6}$ or $\sqrt{82.6}$ is 2.21. Therefore we have $\sqrt{s} - L\sqrt{s+1.6} = 9 - 2.21 = 6.79$; whereas it should have been = 9. Therefore say $6.79:9 = 9:11.9$ nearly. Now suppose that $\sqrt{s}$ is 11.9, whence $s = 141.6$. Then $L\sqrt{141.6+1.6} = L\sqrt{143.2} = 2.482$ nearly, and $11.9 - 2.482 = 9.408$, whereas it should be 9. Now we find that changing the value of $\sqrt{s}$ from 9 to 11.9 has changed the answer from 6.79 to 9.408, or a change of 2.9 in our assumption has made a change of 2.618 in the answer, and has left an error of 0.408. Therefore say $2.618:0.408 = 2.9:0.452$. Then taking 0.452 from 11.9, we have, for our next assumption or value of $\sqrt{s}$, 11.448, whence $s = 131.1$. Now 131.1

+ 1.6 = 132.7, and $L\sqrt{132.7} = 2.444$ nearly, and $11.448 - 2.444 = 9.004$ in place of 9, whence it is inferred that this last value of $\sqrt{s} = 11.448$ is sufficiently exact. This may serve as a specimen of the trials by which we may avoid an intricate analysis.

PROB. II. Given the discharge D , the slope s , and the velocity V , of permanent regimen, to find the dimensions of the bed.

Let x be the width and y the depth of the channel, and S the area of the section. This must be $= \frac{D}{V}$, which is therefore $= xy$. The denominator s being given, we may make $\sqrt{s} - L\sqrt{s+1.6} = \sqrt{B}$, and the formula of mean velocity will give $V = \frac{297(\sqrt{d}-0.1)}{\sqrt{B}} - 0.3(\sqrt{d}-0.1)$,

which we may express thus: $V = (\sqrt{d}-0.1)\left(\frac{297}{\sqrt{B}} - 0.3\right)$,

which gives $\frac{V}{\frac{297}{\sqrt{B}} - 0.3} = (\sqrt{d}-0.1)$; and, finally, $\frac{V}{\frac{297}{\sqrt{B}} - 0.3} + 0.1 = \sqrt{d}$.

Having thus obtained what we call the mean depth, we may suppose the section rectangular. This gives $d = \frac{xy}{x+2y}$.

Thus we have two equations, $S = xy$ and $d = \frac{xy}{x+2y}$.

From which we obtain $x = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d}$. And

having the breadth x and area S , we have $y = \frac{S}{x}$. And then we may change this for the trapezium often mentioned.

These are the chief problems on this part of the subject, and they enable us to adjust the slope and channel of a river which receives any number of successive permanent additions by the influx of other streams. This last informs us of the rise which a new supply will produce, because the additional supply will require additional dimensions of the channel; and as this is not supposed to increase in breadth, the addition will be in depth. The question may be proposed in the following problem.

PROB. III. Given the slope s , the depth and the base of a rectangular bed (or a trapezium), and consequently the discharge D , to find how much the section will rise if the discharge be augmented by a given quantity.

Let h be the height after the augmentation, and w the width for the rectangular bed. We have in any uniform

current $\sqrt{d} = \frac{V}{\frac{297}{\sqrt{B}} - 0.3} + 0.1$. Raising this to a square,

and putting for d and V their values $\frac{wh}{w+2h}$ and $\frac{D}{wh}$, and making $\frac{297}{\sqrt{B}} - 0.3 = K$, the equation becomes $\frac{wh}{w+2h} = \left(\frac{D}{whK} + 0.1\right)^2$.

Raising the second member to a square, and reducing, we obtain a cubic equation, to be solved in the usual manner.

But the solution would be extremely complicated. We may obtain a very expeditious and exact approximation from this consideration, that a small change in one of the dimensions of the section will produce a much greater change in the section and the discharge than in the mean

¹ In these problems and examples the measures are expressed in French inches. For English inches the co-efficient 307 must be used in place of 297.

Practical Inferences. Having therefore augmented the unknown dimension, which is here the height, make use of this to form a new mean depth, and then the new equation

$$\sqrt{d} = \frac{D}{w h \left(\frac{297}{\sqrt{B}} - 0.3 \right)} + 0.1 \text{ will give us another value of } h,$$

which will rarely exceed the truth by $\frac{1}{10}$. This serves (by the same process) for finding another, which will commonly be sufficiently exact. We shall illustrate this by an example.

Let there be a river whose channel is a rectangle 150 feet wide and six feet deep, and which discharges 1500 cubic feet of water per second, having a velocity of twenty inches, and slope of $\frac{1}{12660}$, or about $\frac{7}{12}$ of an inch in 100 fathoms. How much will it rise if it receives an addition which triples its discharge? and what will be its velocity?

If the velocity remained the same, its depth would be tripled; but we know by the general formula that its velocity will be greatly increased, and therefore its depth will not be tripled. Suppose it to be doubled, and to become twelve feet. This will give $d = 10.34483$, or 12.138

inches; then the equation $\sqrt{d} - 0.1 = \frac{D}{w h \left(\frac{297}{\sqrt{B}} - 0.3 \right)}$, or

$$h = \frac{D}{w (\sqrt{d} - 0.1) \left(\frac{297}{\sqrt{B}} - 0.3 \right)}, \text{ and in which we have}$$

$\sqrt{B} = 107.8$, $D = 4500 \times 1728 = 7776000$ cubic inches, $w = 1800$ inches, $\sqrt{d} - 0.1 = 11.0417$, will give $h = 159.33$ inches or 13.276 feet; whereas it should have been 12. This shows that our calculated value of d was too small. Let us therefore increase the depth by 0.9, or make it 12.9, and repeat the calculation. This will give us $\sqrt{d} - 0.1 = 11.3927$, and $h = 12.867$, instead of 13.276 . Therefore, augmenting our data, 0.9 changes our answer 0.409. If we suppose these small changes to retain their proportions, we may conclude that if 12 be augmented by the quantity $x \times 0.9$, the quantity 13.276 will diminish by the quantity $x \times 0.409$. Therefore, that the estimated value of h may agree with the one which results from the calculation, we must have $12 + x \times 0.9 = 13.276 - x \times 0.409$. This will give $x = \frac{1.276}{1.309} = 0.9748$; and $x \times 0.9 = 0.8773$; and $h = 12.8773$. If we repeat the calculation with this value of h , we shall find no change.

This value of h gives $d = 131.8836$ inches. If we now compute the new velocity by dividing the new discharge 4500 by the new area 150×12.8773 , we shall find it to be 27.95 inches, in place of 20, the former velocity.

We might have made a pretty exact first assumption, by recollecting what was formerly observed, that when the breadth is very great in proportion to the depth, the mean depth differs insensibly from the real depth, or rather follows nearly the same proportions, and that the velocities are proportional to the square roots of the depths. Call the first discharge d , the height h , and velocity v , and let D , H , and V , express these things in their augmented state. We have $v = \frac{d}{w h}$ and $V = \frac{D}{w H}$, and $v : V = \frac{d}{h} : \frac{D}{H}$,

and $v^2 : V^2 = \frac{d^2}{h^2} : \frac{D^2}{H^2}$. But by this remark $v^2 : V^2 = h : H$.

Therefore $h : H = \frac{d^2}{h^2} : \frac{D^2}{H^2}$, and $\frac{h D^2}{H^2} = \frac{H d^2}{h^2}$, and $h^3 D^2 = H^3 d^2$,

and $d^2 : D^2 = h^3 : H^3$ (a useful theorem), and $H^3 = \frac{h^3 D^2}{d^2}$

and $H = \sqrt[3]{\frac{h^3 D^2}{d^2}} = 12.48$.

Or we might have made the same assumption by the **Practical Inferences.** mark also formerly made on this case, that the squares of the discharges are nearly as the cubes of the heights, or $1500^2 : 4500^2 = 6^3 : 12.48^3$.

And in making these first guesses, we shall do it more exactly, by recollecting that a certain variation of the mean depth d requires a greater variation of the height, and the increment will be to the height nearly as half the height to the width, as may easily be seen. Therefore, if we add

to 12.48 its $\frac{6.24}{150}$ th part, or its 24th part, viz. 0.52, we have

13 for our first assumption, exceeding the truth only an inch and a half. We mention these circumstances, that those who are disposed to apply these doctrines to the solution of practical cases may be at no loss when one occurs of which the regular solution requires an intricate analysis.

It is evident that the inverse of the foregoing problems will show the effects of enlarging the section of a river, that is, will show how much its surface will be sunk by any proposed enlargement of its bed. It is therefore needless to propose such problems in this place. Common sense directs us to make these enlargements in those parts of the river where their effect will be greatest, that is, where it is shallowest when its breadth greatly exceeds its depth, where it is narrowest (if its depth exceed the breadth, which is a very rare case), or, in general, where the slope is the smallest for a short run.

The same general principles direct us in the method of and directs embankments for the prevention of floods, by enabling us to ascertain the heights necessary to be given to our banks. This will evidently depend, not only on the additional quantity of water which experience tells us a river brings down during its freshes, but also on the distance at which we place the banks from the natural banks of the river. This is a point where mistaken economy frequently defeats its own purpose. If we raise our embankment at some distance from the natural banks of the river, not only will a smaller height suffice, and consequently a smaller base, which will make a saving in the duplicate proportion of the height; but our works will be so much the more durable nearly, if not exactly, in the same proportion. For by thus enlarging the additional bed which we give to the swollen river, we diminish its velocity almost in the same proportion that we enlarge its channel, and thus diminish its power of ruining our works. Except, therefore, in the case of a river whose freshes are loaded with fine sand to destroy the turf, it is always proper to place the embankment at a considerable distance from the natural banks. Placing them at half the breadth of the stream from its natural banks, will nearly double its channel; and, except in the case here mentioned, the space now detached from our fields will afford excellent pasture.

The limits of such a work as ours will not permit us to enter into any detail on the method of embankment. It would require a volume to give instructions as to the manner of founding, raising, and securing the dikes which must be raised, and a thousand circumstances which must be attended to. But a few general observations may be made, which naturally occur while we are considering the manner in which a river works in settling or altering its channel.

It must be remarked, in the first place, that the river will rise higher when embanked than it does while it was allowed to spread; and it is by that means easy to conclude to what height it will rise from the greatest height to which it has been observed to rise in its floods. When at liberty to expand over a wide valley, then it could only rise till it overflowed with a thickness or depth of water sufficient to produce a motion backwards into the valley

Practical
Inferences.

quick enough to take off the water as fast as it was supplied; and we imagine that a foot or two would suffice in most cases. The best way for a prudent engineer will be to observe the utmost rise remembered by the neighbours in some gorge, where the river cannot spread out. Measure the increased section in this place, and at the same time recollect that the water increases in a much greater proportion than the section; because an increase of the hydraulic mean depth produces an increase of velocity in nearly the duplicate proportion of the depth. But as this augmentation of velocity will also obtain between the embankments, it will be sufficiently exact to suppose that the section must here be increased nearly in the same proportion as at the gorge already mentioned. Neglecting this method of information, and regulating the height of our embankments by the greatest swell that has been observed in the plain, will assuredly make them too low, and render them totally useless.

A line of embankment should always be carried on by a strict concert of the proprietors of both banks through its whole extent. A greedy proprietor, by advancing his own embankment beyond that of his neighbours, not only exposes himself to risk by the working of the waters on the angles which this will produce, but exposes his neighbours also to danger, by narrowing the section, and thereby raising the surface and increasing the velocity, and by turning the stream athwart, and causing it to shoot against the opposite bank. The whole should be as much as possible in a line; and the general effect should be to make the course of the stream straighter than it was before. All bends should be made more gentle, by keeping the embankment farther from the river in all convex lines of the natural bank, and bringing it nearer where the bank is concave. This will greatly diminish the action of the waters on the embankment, and insure their duration. The same maxim must be followed in fencing any brook which discharges itself into the river. The bends given at its mouth to the two lines of embankment should be made less acute than those of the natural brook, although by this means two points of land are left out. And the opportunity should be embraced of making the direction of this transverse brook more sloping than before, that is, less athwart the direction of the river.

It is of great consequence to cover the outside of the dike with very compact turf closely united. If it admit water, the interior part of the wall, which is always more porous, becomes drenched in water, and this water acts with its statical pressure, tending to burst the bank on the land side, and will quickly shift it from its seat. The utmost care should therefore be taken to make it and keep it perfectly tight. It should be a continued fine turf, and every bare spot should be carefully covered with fresh sod and rat-holes must be carefully closed up.

Of Straightening or Changing the Course of Rivers.

Of the
slope re-
quired at
the bend of
a river, and
the conse-
quences.

We have seen that every bending of a river requires an additional slope in order to continue its train, or enable it to convey the same quantity of water without swelling in its bed. The effect of taking away any of these bends must be to sink the waters of the river. It is proper, therefore, to have it in our power to estimate these effects. It may be desirable to gain property by taking away the sweeps of a very winding stream; but this may be prejudicial, by destroying the navigation on such a river. It may also hurt the proprietors below, by increasing the velocity of the stream, which will expose them to the risk of its overflowing, or of its destroying its bed, and taking a new course. Or this increase of velocity may be inconsistent with the regimen of the new channel, or at least require larger dimensions than we should have given it if ignorant of this effect.

Our principles of uniform motion enable us to answer

every question of this kind which can occur; and Du Buat proposes several problems to this effect. The regular solutions of them are complicated and difficult; and we do not think them necessary in this place, because they may all be solved in a manner not indeed so elegant, because indirect, but abundantly accurate, and easy to any person familiar with those which we have already considered.

Practical
Inferences.

We can take the exact level across all these sweeps, and thus obtain the whole slope. We can measure with accuracy the velocity in some part of the channel which is most remote from any bend, and where the channel itself has the greatest regularity of form. This will give us the expense or discharge of the river, and the mean depth connected with it. We can then examine whether this velocity is precisely such as is compatible with stability in the straight course. If it is, it is evident that if we cut off the bends, the greater slope which this will produce will communicate to the waters a velocity incompatible with the regimen suited to this soil, unless we enlarge the width of the stream, that is, unless we make the new channel more capacious than the old one. We must now calculate the dimensions of the channel which, with this increased slope, will conduct the waters with the velocity that is necessary. All this may be done by the foregoing problems; and we may accomplish this most easily by steps. First, suppose the bed the same with the old one, and calculate the velocity for the increased slope by the general formula. Then change one of the dimensions of the channel, so as to produce the velocity we want, which is a very simple process. And in doing this, the object to be kept chiefly in view is not to make the new velocity such as will be incompatible with the stability of the new bed.

Having accomplished this first purpose, we learn, in the very solution, how much shallower this channel with its greater slope will be than the former, while it discharges all the waters. This diminution of depth must increase the slope and the velocity, and must diminish the depth of the river above the place where the alteration is to be made. How far it produces these effects may be calculated by the general formula. We then see whether the navigation will be hurt, either in the old river up the stream, or in the new channel. It is plain that all these points cannot be reconciled. We may make the new channel such, that it shall leave a velocity compatible with stability, and that it shall not diminish the depth of the river up the stream. But having a greater slope, it must have a smaller mean depth, and also a smaller real depth, unless we make it of a very inconvenient form.

The same things viewed in a different light, will show us what depression of waters may be produced by rectifying the course of a river in order to prevent its overflowing. And the process which we would recommend is the same with the foregoing. We apprehend it to be quite needless to measure the angles of rebound, in order to compute the slope which is employed for sending the river through the bend, with a view to supersede this by straightening the river. It is infinitely easier and more exact to measure the levels themselves, and then we know the effect of removing them.

Nor need we follow Du Buat in solving problems for diminishing the slope and velocity, and deepening the channel of a river by bending its course. The expense of this would in every case be enormous; and the practices which we are about to discuss afford infinitely easier methods of accomplishing all the purposes which are to be gained by these changes.

Of Bars, Weirs, and Jetties, for raising the Surface of Rivers.

We propose, under the article WATER-WORKS, to consider in sufficient practical detail all that relates to the construction and mechanism of these and other erections

Practical Inferences. in water; and we confine ourselves, in this place, to the mere effect which they will produce on the current of the river.

Problems, examples, and consequences of raising the surface of rivers. We gave the name of *weir* or *bar* to a dam erected across a river for the purpose of raising its waters, whether in order to take off a draft for a mill or to deepen the channel. Before we can tell the effect which they will produce, we must have a general rule for ascertaining the relation between the height of the water above the lip of the weir or bar, and the quantity of water which will flow over.

First, then, with respect to a weir, represented in fig. 20 and fig. 21. The latter figure more resembles their usual

Fig. 20.

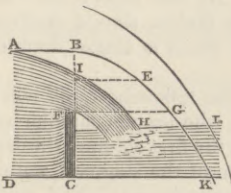
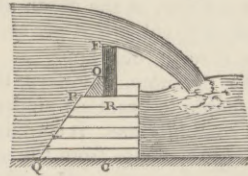


Fig. 21.



form, consisting of a dam of solid masonry, or built of timber, properly fortified with shoars and banks. On the top is set up a strong plank FR, called the wasteboard or waster, over which the water flows. This is brought to an accurate level, of the proper height. Such voiders are frequently made in the side of a mill-course, for letting the superfluous water run off. This is properly the *WASTER*, or *VOIDER*: it is also called an *OFFSET*. The same observations will explain all these different pieces of practice. The following questions occur in course.

PROB. I. Given the length of an offset or wasteboard made in the face of a reservoir of stagnant water, and the depth of its lip under the horizontal surface of the water, to determine the discharge, or the quantity of water which will run over, in a second.

Let AB be the horizontal surface of the still water, and F the lip of the wasteboard. Call the depth BF under the surface h , and the length of the wasteboard l . The water is supposed to flow over into another basin or channel, so much lower that the surface HL of the water is lower, or at least not higher, than F.

If the water could be supported at the height BF, BF might be considered as an orifice in the side of a vessel. In this case, the discharge would be the same as if the whole water were flowing with the velocity acquired from the height $\frac{2}{3}BF$, or $\frac{2}{3}h$. And if we suppose that there is no contraction at the orifice, the mean velocity would be $\sqrt{2g \times \frac{2}{3}h} = \sqrt{772 \times \frac{2}{3}h}$, in English inches, per second. The area of this orifice is lh . Therefore the discharge would be $lh \sqrt{772 \times \frac{2}{3}h}$, all being measured in inches. This is the usual theory; but it is not an exact representation of the manner in which the efflux really happens. The water cannot remain at the height BF; but in drawing towards the wasteboard from all sides it forms a convex surface AIH, so that the point I, where the vertical drawn from the edge of the wasteboard meets the curve, is considerably lower than B. But as all the mass above F is supposed perfectly fluid, the pressure of the incumbent water is propagated, in the opinion of Du Buat, to the filament passing over at F without any diminution. The same may be said of any filament between F and I. Each tends, therefore, to move in the same manner as if it were really impelled through an orifice in its place. Therefore the motions through every part of the line or plane IF are the same as if the water were escaping through an orifice IF, made by a sluice let down on the water, and keeping up the water of the reservoir to the level AB. It is beyond a doubt, says he, that the height IF must depend on the whole

height BF, and that there must be a certain determined proportion between them. He does not attempt to determine this proportion theoretically, but says that his experiments ascertain it with great precision to be the proportion of one to two, or that IF is always one half of BF. He says, however, that this determination was not by an immediate and direct measurement; he concluded it from the comparison of the quantities of water discharged under different heights of the water in the reservoir.

We cannot help thinking that this reasoning is very defective in several particulars. It cannot be inferred, from the laws of hydrostatical pressure, that the filament at I is pressed forward with all the weight of the column BI. The particle I is really at the surface; and considering it as making part of the surface of a running stream, it is subjected to hardly any pressure, any more than the particles on the surface of a cup of water held in the hand, while it is carried round the axis of the earth and round the sun. Reasoning according to his own principles, and availing himself of his own discovery, he should have said that the particle at I has an accelerating force depending on its slope only; and then he should have endeavoured to ascertain this slope. The motion of the particle at I has no immediate connection with the pressure of the column BI; and if it had, the motion would be extremely different from what it is; for this pressure alone would give it the velocity which Du Buat assigns it. Now it is already passing through the point I with the velocity which it has acquired in descending along the curve AI; and this is the real state of the case. The particles are passing through with a velocity already acquired by a sloping current; and they are accelerated by the hydrostatical pressure of the water above them. The internal mechanism of these motions is infinitely more complex than Du Buat here supposes; and on this supposition, he very nearly abandons the theory which he has so ingeniously established, and adopts the theory of Guglielmini, which he had exploded. At the same time, we think that he is not much mistaken when he asserts that the motions are nearly the same as if a sluice had been let down from the surface to I. For the filament which passes at I has been gliding down a curved surface, and has not been exposed to any friction. It is perhaps the very case of hydraulics where the obstructions are the smallest; and we should therefore expect that its motion will be least retarded.

We have therefore no hesitation in saying, that the filament at I is in the very state of motion which the theory would assign to it if it were passing under a sluice, as Du Buat supposes. And with respect to the inferior filaments, without attempting the very difficult task of investigating their motions, we shall just say, that we do not see any reason for supposing that they will move slower than our author supposes. Therefore, though we reject his theory, we admit his experimental proposition in general; that is, we admit that the *whole* water which passes through the plane IF moves with the velocity (though not in the same direction) with which it would have run through a sluice of the same depth; and we may proceed with his determination of the quantity of water discharged.

If we make BC the axis of a parabola BEGK, the velocities of the filaments passing at I and F will be represented by the ordinates IE and FG, and the discharge by the area IEGF. This allows a very neat solution of the problem. Let the quantity discharged per second be D, and let the whole height BF be h . Let $2G$ be the quantity by which we must divide the square of the mean velocity in order to have the producing height. This will be less than $2g$, the acceleration of gravity, on account of the convergency at the sides and the tendency to convergence at the lip F. We formerly gave for its measure 702 inches, instead of 772, and said that the inches discharged per second from an orifice of one inch were 26.49, instead of 27.79.

Practical Inferences. Let x be the distance of any filament from the horizontal line AB. An element of the orifice, therefore (for we may give it this name), is $l dx$. The velocity of this element is $\sqrt{2Gx}$, or $\sqrt{2G} \times x^{\frac{1}{2}}$. The discharge from it is $l \sqrt{2G} x^{\frac{1}{2}} dx$,

and the integral of this differential or $D = \int l \sqrt{2G} x^{\frac{1}{2}} dx$

$= \frac{2}{3} l \sqrt{2G} x^{\frac{3}{2}} + C$. To determine the constant quantity C , observe that Du Buat found by experiment that IF was in all cases $\frac{1}{2}$ BF. Therefore D must be nothing when

$x = \frac{1}{2} h$; consequently $C = -\frac{2}{3} l \sqrt{2G} \left(\frac{h}{2}\right)^{\frac{3}{2}}$, and the com-

plete integral will be $D = \frac{2}{3} l \sqrt{2G} \left[x^{\frac{3}{2}} - \left(\frac{h}{2}\right)^{\frac{3}{2}} \right]$.

Now make $x = h$, and we have

$$D = \frac{2}{3} l \sqrt{2G} \left[h^{\frac{3}{2}} - \left(\frac{h}{2}\right)^{\frac{3}{2}} \right] = \frac{2}{3} l \sqrt{2G} \left[1 - \left(\frac{1}{2}\right)^{\frac{3}{2}} \right] h^{\frac{3}{2}}.$$

But $1 - \left(\frac{1}{2}\right)^{\frac{3}{2}} = 0.64645$, and $\frac{2}{3}$ of this is 0.431. Therefore, finally, $D = 0.431 l \sqrt{2G} h^{\frac{3}{2}}$.

If we now put 26.49 or $26\frac{1}{2}$ for $\sqrt{2G}$, or the velocity with which a head of water of one inch will impel the water over a weir, and multiply this by 0.431, we get the following quantity, 11.4172, or, in numbers of easy recollection, $11\frac{1}{2}$, for the cubic inches of water per second, which runs over every inch of a wasteboard when the edge of it is one inch below the surface of the reservoir; and this must be multiplied by $h^{\frac{3}{2}}$, or by the square root of the cube of the head of water. Thus, let the edge of the wasteboard be four inches below the surface of the water. The cube of this is 64, of which the square root is eight. Therefore a wasteboard of this depth under the surface, and three feet long, will discharge every second $8 \times 36 \times 11\frac{1}{2}$ cubic inches of water, or $1\frac{9}{10}$ cubic feet, English measure.

The following comparisons will show how much this theory may be depended on. The first column shows the depth of the edge of the board under the surface, the second shows the discharge by theory, and the third the discharge actually observed. The length of the board was 18.4 inches. The numbers in Du Buat's experiments are here reduced to English measure.

D.	D. Theor.	D. Exp.	E.
1.778	506	524	28.5
3.199	1222	1218	66.2
4.665	2153	2155	117.1
6.753	3750	3771	204.9

The last column is the cubic inches discharged in a second by each inch of the wasteboard. The correspondence is undoubtedly very great. The greatest error is in the first, which may be attributed to a much smaller lateral contraction under so small a head of water.

But it must be remarked, that the calculation proceeds on two suppositions. The height FI is supposed $\frac{1}{2}$ of BI; and $2G$ is supposed 702. It is evident, that by increasing the one and diminishing the other, nearly the same answers may be produced, unless much greater variations of h be examined. Both of these quantities are matters of considerable uncertainty, particularly the first; and it must be farther remarked, that this was not measured, but deduced from the uniformity of the experiments. We presume that Du Buat tried various values of G , till he found one which gave the ratios of discharge which he observed. We beg leave to observe, that in a set of numerous experiments which we had access to examine, BI was uniformly much less than $\frac{1}{2}$; it was very nearly $\frac{2}{3}$; and the quantity discharged was greater than what would result from Du Buat's calculation. It was further observed that IF depended very

much on the form of the wasteboard. When it was a very thin board of considerable depth, IF was very considerably greater than if the board was thick, or narrow, and set on the top of a broad dam-head, as in fig. 21.

It may be proper to give the formula a form which will correspond to any ratio which experience may discover be-

tween BF and IF. Thus, let IF be $\frac{m}{n}$ BF. The formula

$$\text{will be } D = \frac{2}{3} l \sqrt{2G} \left(1 - \left(\frac{m}{n}\right)^{\frac{3}{2}}\right) h^{\frac{3}{2}}.$$

Meantime this theory of Du Buat is of great value to the practical engineer, who at present must content himself with a very vague conjecture, or take the calculation of the erroneous theory of Guglielmini. By that theory, the board of three feet, at the depth of four inches, should discharge nearly $3\frac{1}{10}$ cubic feet per second, which is almost double of what it really delivers.

We presume, therefore, that the following table will be acceptable to practical engineers, who are not familiar with such computations. It contains, in the first column, the depth in English inches from the surface of the stagnant water of a reservoir to the edge of the wasteboard. The second column is the cubic feet of water discharged in a minute by every inch of the wasteboard.

Depth.	Discharge.	Depth.	Discharge.
1.....	0.403	10.....	12.748
2.....	1.140	11.....	14.707
3.....	2.095	12.....	16.758
4.....	3.225	13.....	18.895
5.....	4.507	14.....	21.117
6.....	5.925	15.....	23.419
7.....	7.466	16.....	25.800
8.....	9.122	17.....	28.258
9.....	10.884	18.....	30.786

When the depth does not exceed four inches, it will not be exact enough to take proportional parts for the fractions of an inch. The following method is exact.

If they be odd quarters of an inch, look in the table for as many inches as the depth contains quarters, and take the eighth part of the answer. Thus, for $3\frac{3}{4}$ inches, take the eighth part of 23.419, which corresponds to 15 inches. This is 2.927.

If the wasteboard is not on the face of a dam, but in a running stream, we must augment the discharge by multiplying the section by the velocity of the stream. But this correction can seldom occur in practice; because in this case the discharge is previously known, and it is h that we want, which is the object of the next problem.

We only beg leave to add, that the experiments which we mention as having been already made in this country, give a result somewhat greater than this table, viz. about $\frac{1}{16}$. Therefore, having obtained the answer by this table, add to it its 16th part, and we apprehend that it will be extremely near the truth.

When, on the other hand, we know the discharge over a wasteboard, we can tell the depth of its edge under the surface of the stagnant water of the reservoir, because we

have $h = \left(\frac{D}{11\frac{1}{2}l}\right)^{\frac{2}{3}}$ very nearly.

We are now in a condition to solve the problem respecting a weir across a river.

PROB. II. The discharge and section of a river being given, it is required to determine how much the water will be raised by a weir of the whole breadth of the river, discharging the water with a clear fall, that is, the surface of the water in the lower channel being below the edge of the weir.

In this case we have $2G = 731$ nearly, because there

Practical will be no contraction at the sides when the weir is the whole breadth of the river. But, further, the water is not now stagnant, but moving with the velocity $\frac{D}{S}$, S being the section of the river.

Therefore let a be the height of the weir from the bottom of the river, and h the height of the water above the edge of the weir. We have the velocity with which the water approaches the weir $= \frac{D}{l(a+h)}$, l being the length

of the weir or breadth of the river. Therefore the height producing the primary mean velocity is $\left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$.

The equation given a little ago will give $h = \left(\frac{D}{0.431 l\sqrt{2G}}\right)^{\frac{2}{3}}$, when the water above the weir is stagnant. Therefore, when it is already moving with the velocity $\frac{D}{l(a+h)}$, we shall

have $h = \left(\frac{D}{0.431 l\sqrt{2G}}\right)^{\frac{2}{3}} - \left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$. It would be

very troublesome to solve this equation regularly, because the unknown quantity h is found in the second term of the answer. But we know that the height producing the velocity above the weir is very small in comparison of h and of a , and, if only estimated roughly, will make a very insensible change in the value of h ; and, by repeating the operation, we can correct this value, and obtain h to any degree of exactness.

To illustrate this by an example. Suppose a river, the section of whose stream is 150 feet, and that it discharges 174 cubic feet of water in a second; how much will the waters of this river be raised by a weir of the same width, and 3 feet high.

Suppose the width to be 50 feet. This will give 3 feet for the depth; and we see that the water will have a clear fall, because the lower stream will be the same as before.

The section being 150 feet, and the discharge 174, the mean velocity is $\frac{174}{150} = 1.16$ feet = 14 inches nearly, which requires the height of $\frac{1}{4}$ of an inch very nearly. This may be taken for the second term of the value of h . Therefore

$h = \left(\frac{D}{0.431 l\sqrt{2G}}\right)^{\frac{2}{3}} - \frac{1}{4}$. Now $\sqrt{2G}$ is, in the present case, 27.03, l is 600, and D is $174 \times 1728 = 300672$. Therefore $h = 12.28 - 0.25 = 12.03$ nearly. Correct this value by substituting a more accurate value of the second term $\left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$, or 0.14. This will give us $h =$

$12.28 - 0.25 = 12.03$ for a more accurate value, differing from the former about $\frac{1}{10}$ of an inch. It is needless to carry the approximation farther. Thus we see that a weir which dams up the whole of the former current of three feet deep, will only raise the waters of this river one foot.

The same rule serves for showing how high we ought to raise this weir in order to produce any given rise of the waters, whether for the purposes of navigation, or for taking off a draft to drive mills, or for any other service; for if the breadth of the river remain the same, the water will still flow over the weir with nearly the same depth. A very small and hardly perceptible difference will indeed arise from the diminution of slope occasioned by this rise, and a consequent diminution of the velocity with which the river approaches the weir. But this difference must always be a small fraction of the second term of our answer; which

term is itself very small; and even this will be compensated, in some degree, by the freer fall which the water will have over the weir. Practical Inferences.

If the intended weir is not to have the whole breadth of the river (which is seldom necessary even for the purposes of navigation), the waters will be raised higher by the same height of the wasteboard. The calculation is precisely the same for this case. Only in the second term, which gives the head of water corresponding to the velocity of the river, l must still be taken for the whole breadth of the river, while in the first term l is the length of the wasteboard.

Also $\sqrt{2G}$ must be a little less, on account of the contractions at the ends of the weir, unless these be avoided by giving the masonry at the ends of the wasteboard a curved shape on the upper side of the wasteboard. This should not be done when the sole object of the weir is to raise the surface of the waters. Its effect is but trifling at any rate, when the length of the wasteboard is considerable, in proportion to the thickness of the sheet of water flowing over it.

The following comparisons of this rule with experiment will give our readers some notion of its utility.¹

Discharge of the Weir per second.	Head producing the velocity at the Weir.	Head producing the velocity above it.	Calculated Height of the River above the Wasteboard.	Observed Height.
Inches.	Inches.	Inches.	Inches.	Inches.
3888	7.302	0.625	6.677	6.583
2462	5.385	0.350	5.035	4.750
1112	3.171	0.116	3.055	3.166
259	1.201	0.0114	1.189	1.250

It was found extremely difficult to measure the exact height of the water in the upper stream above the wasteboard. The curvature AI extended several feet up the stream. Indeed there must be something arbitrary in this measurement, because the surface of the stream is not horizontal. The deviation should be taken, not from a horizontal plane, but from the inclined surface of the river.

It is plain that a river cannot be fitted for continued navigation by weirs. These occasion interruptions; but a few inches may sometimes be added to the waters of a river by a bar, which may still allow a flat-bottomed lighter or a raft to pass over it. This is a very frequent practice in Holland and Flanders; and a very cheap and certain conveyance of goods is there obtained by means of streams which we would think no better than boundary ditches, and unfit for every purpose of this kind. By means of a bar the water is kept up a very few inches, and the stream has free course to the sea. The shoot over the bar is prevented by means of another bar placed a little way below it, lying flat in the bottom of the ditch, but which may be raised up on hinges. The lighterman makes his boat fast to a stake immediately above the bar, raises the lower bar, brings over his boat, again makes it fast, and, having laid down the other bar again, proceeds on his journey. This contrivance answers the end of a lock at a very trifling expense; and though it does not admit of what we are accustomed to call navigation, it gives a very sure conveyance, which would otherwise be impossible. When the waters can be raised by bars, so that they may be drawn off for machinery or other purposes, they are preferable to weirs, because they do not obstruct floating with rafts, and are not destroyed by the ice.

PROB. III. Given the height of a bar, the depth of water

Practical Inferences. part of the arc of the circle. Making this comparison, he found these circumstances to be incompatible. He found that the section and swell at I, corresponding to an arc of a circle, gave a discharge nearly one fourth too great (they were as 405216 to 492142). Therefore the curve is such that AD is greater than DF, and that it is more incurvated at F than at A. He found, that making DA to DF as 10 to 9, and the curve FIA an arc of an ellipse whose longer axis was vertical, would give a very nice correspondence of the sections, velocities, and slopes. The whole extent of the swell, therefore, can never be double of AD, and must always greatly surpass AD; and these limits will do very well for every practical question. Therefore, making DF nine tenths of AD, and drawing the chord AD, and making DI one half of D i, we shall be very near the truth. Then we get the swell with sufficient precision for any point H between F and D, by making $FD^2 : FH^2 = ID : Hh$; and if H is between D and A, we get its distance from the tangent DA by a similar process.

It only remains to determine the swell produced in the waters of a river by the erection of a bridge or cleaning sluice, which contracts the passage. This requires the solution of

PROB. V. Given the depth, breadth, and slope of a river, to determine the swell occasioned by the piers of a bridge or sides of a cleaning sluice, which contract the passage by a given quantity, for a given length of channel.

This swell depends on two circumstances.

1. The whole river must pass through a narrow space, with a velocity proportionably increased; and this requires a certain head of water above the bridge.

2. The water, in passing the length of the piers with a velocity greater than that corresponding to the primary slope of the river, will require a greater slope in order to acquire this velocity.

Let V be the velocity of the river before the erection of the bridge, and K the quotient of the width of the river divided by the sum of the widths between the piers. If the length of the piers, or their dimension in the direction of the stream, is not very great, KV will nearly express the velocity of the river under the arches; and if we suppose for a moment the contraction (in the sense hitherto used) to be nothing, the height producing this velocity will be $\frac{K^2 V^2}{2g}$. But the river will not rise so high, having already

a slope and velocity before getting under the arches, and the height corresponding to this velocity is $\frac{V^2}{2g}$; therefore

the height for producing the augmentation of velocity is $\frac{K^2 V^2}{2g} - \frac{V^2}{2g}$. But if we make allowance for contraction, we must employ a co-efficient 2G less than 2g, and we must multiply the height now found by $\frac{2g}{2G}$. It will then become

$\left(\frac{K^2 V^2}{2g} - \frac{V^2}{2g}\right) \frac{2g}{2G} = \frac{V^2}{2G} (K^2 - 1)$. This is that part of the swell which must produce the augmentation of velocity.

With respect to what is necessary for producing the additional slope between the piers, let p be the natural slope of the river (or rather the difference of level in the length of the piers) before the erection of the bridge, and corresponding to the velocity V; $K^2 p$ will very nearly express the difference of superficial level for the length of the piers, which is necessary for maintaining the velocity KV through the same length. The increase of slope therefore is $K^2 p - p = p(K^2 - 1)$. Therefore the whole swell will be $\left(\frac{V^2}{2G} + p\right) (K^2 - 1)$.

These are the chief questions or problems on this subject which occur in the practice of an engineer; and the solutions which we have given may in every case be depended on as very near the truth, and we are confident that the errors will never amount to one fifth of the whole quantity. We are equally certain, that of those who call themselves engineers, and who, without hesitation, undertake jobs of enormous expense, not one in ten is able even to guess at the result of such operations, unless the circumstances of the case happen to coincide with those of some other project which he has executed, or has distinctly examined; and very few have the sagacity and penetration necessary for appreciating the effects of the distinguishing circumstances which yet remain. The society established for the encouragement of arts and manufactures could scarcely do a more important service to the public in the line of their institution, than by publishing in their transactions a description of every work of this kind executed in the kingdom, with an account of its performance. This would be a most valuable collection of experiments and facts. The unlearned practitioner would find among them something which resembles in its chief circumstances almost any project which could occur to him in his business, and would tell him what to expect in the case under his management; and the intelligent engineer, assisted by mathematical knowledge, and the habit of classing things together, would frequently be able to frame general rules. To a gentleman qualified as was the Chevalier du Buat, such a collection would be inestimable, and might suggest a theory as far excelling his as he has excelled all other writers.

We shall conclude this article with some observations on the methods which may be taken for rendering small rivers and brooks fit for inland navigation, or at least for floatage. We get much instruction on this subject from what has been said concerning the swell produced in a river by weirs, bars, or any diminution of its former section. Our knowledge of the form which the surface of this swell affects will furnish rules for spacing these obstructions in such a manner, and at such distances from each other, that the swell produced by one shall extend to the one above it.

If we know the slope, the breadth, and the depth of a river, in the droughts of summer, and have determined on the height of the floodgates, or keeps, which are to be set up in its bed, it is evident that their stations are not matters of arbitrary choice, if we would derive the greatest possible advantage from them.

Some rivers in Flanders and Italy are made navigable in some sort by simple sluices, which, being shut, form magazines of water, which, being discharged by opening the gates, raises the inferior reach enough to permit the passage of the craft which are kept on it. After this momentary rise the keeps are shut again, the water sinks in the lower reach, and the lighters which were floated through the shallows are now obliged to draw into those parts of the reach where they can lie afloat till the next supply of water from above enables them to proceed. This is a very rude and imperfect method, and unjustifiable at this day, when we know the effect of locks, or at least of double gates. We do not mean to enter on the consideration of these contrivances, and to give the methods of their construction, in this place, but refer our readers to what has been already said on this subject in the article NAVIGATION INLAND, and to what will be said in the article WATER-WORKS. At present we confine ourselves to the single point of husbanding the different falls in the bed of the river, in such a manner that there may be everywhere a sufficient depth of water; and, in what we have to deliver on the subject, we shall take the form of an example to illustrate the application of the foregoing rules.

Suppose then a river forty feet wide and three feet deep

Practical Inferences.
Further attention to the subject recommended.

Practical Inferences. In the droughts of summer, with a slope of one in 4800. This, by the formula of uniform motion, will have a velocity $= 23\frac{1}{2}$ inches per second, and its discharge will be 405216 cubic inches, or $234\frac{1}{2}$ feet. It is proposed to give this river a depth of not less than five feet in any place, by means of floodgates of six feet in height and eighteen feet in width.

We first compute the height at which this body of $234\frac{1}{2}$ cubic feet of water will discharge itself over the floodgates. This we shall find by Prob. II. to be $30\frac{1}{4}$ inches, to which adding 72, the height of the gate, we have $102\frac{1}{4}$ for the whole height of the water above the floor of the gate; the primitive depth of the river being 3 feet, the rise or swell 5 feet $6\frac{1}{4}$ inches. In the next place, we find the range or sensible extent of this swell by Prob. I. and the observations which accompany it. This will be found to be nearly 9177 fathoms. Now, since the primitive depth of the river is three feet, there is only wanted two feet of addition; and the question is reduced to the finding what point of the curved surface of the swell is two feet above the tangent plane at the head of the swell, or how far this point is from the gate. The whole extent being 9177 fathoms, and the deviations from the tangent plane being nearly in the duplicate ratio of the distances from the point of contact, we may institute this proportion, $66\frac{1}{4} : 24 = 9177^2 : 5526^2$. The last term is the distance (from the head of the swell) of that part of the surface which is two feet above the primitive surface of the river. Therefore 9177 — 5526, or 3651 fathoms, is the distance of this part from the floodgate; and this is the distance at which the gates should be placed from each other. No inconvenience would arise from having them nearer, if the banks be high enough to contain the waters; but if they are farther distant, the required depth of water cannot be had without increasing the height of the gates; but if reasons of convenience should induce us to place them nearer, the same depth may be secured by lower gates, and no additional height will be required for the banks. This is generally a matter of moment, because the raising of water brings along with it the chance of flooding the adjoining fields. Knowing the place where the swell ceases to be sensible, we can keep the top of the intermediate floodgate at the precise height of the curved surface of the swell by means of the proportionality of the deviations from the tangent to the distances from the point of contact.

But this rule will not do for a gate which is at a greater distance from the one above it than the 3651 fathoms already mentioned. We know that a higher gate is required, producing a more extensive swell; and the one swell does not coincide with the other, although they may both begin from the same point A. Nor will the curves even be similar, unless the thickness of the sheet of water flowing over the gate be increased in the same ratio. But this is not the case, because the produce of the river, and therefore the thickness of the sheet of water, is constant. But we may suppose them similar without erring more than two or three decimals of an inch; and then we shall have $AF : AL = fF : DL$; from which, if we take the thickness of the sheet of water already calculated for the other gates, there will remain the height of the gate DL.

By following these methods, instead of proceeding by random guesses, we shall procure the greatest depth of water at the smallest expense possible.

Effects of
freshes,

But there is a circumstance which must be attended to, and which, if neglected, may in a short time render all our works useless. These gates must frequently be open in the time of freshes; and as this channel then has its natural slope increased in every reach by the great contraction of

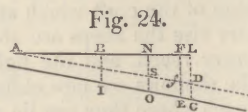


Fig. 24.

the section in the gates, and also rolls along a greater body of water, the action of the stream on its bed must be increased by the augmentation of velocity which these circumstances will produce; and although we may say that the general slope is necessarily secured by the cills of the floodgates, which are paved with stone or covered with planks, yet this will not hinder this increased current from digging up the bottom in the intervals, undermining the banks, and lodging the mud and earth thus carried off in places where the current meets with any check. All these consequences will assuredly follow if the increased velocity is greater than what corresponds to the regimen relative to the soil in which the river holds on its course.

In order therefore to procure durability to works of this and of like kind, which are generally of enormous expense, the local circumstances must be most scrupulously studied. It is not the ordinary hurried survey of an engineer that will free us from the risk of our navigation becoming very troublesome by the rise of the waters being diminished from their former quantity, and banks formed at a small distance below every sluice. We must attentively study the nature of the soil, and discover experimentally the velocity which is not inconsistent with the permanency of the channel. If this be not a great deal less than that of the river when accelerated by freshes, the regimen may be preserved after the establishment of the gate, and no great changes in the channel will be necessary; but if, on the other hand, the natural velocity of the river during its freshes greatly exceeds what is consistent with stability, we must enlarge the width of the channel, that we may diminish the hydraulic mean depth, and along with this the velocity. Therefore, knowing the quantity discharged during the freshes, divide it by the velocity of regimen, or rather by a velocity somewhat greater (for a reason which will appear by and by), the quotient will be the area of a new section. Then taking the natural slope of the river for the slope which it will preserve in this enlarged channel, and after the cills of the floodgates have been fixed, we must calculate the hydraulic mean depth, and then the other dimensions of the channel. And, lastly, from the known dimensions of the channel and the discharge (which we must now compute), we proceed to calculate the height and the distances of the floodgates, adjusted to their widths, which must be regulated by the room which may be thought proper for the free passage of the lighters which are to ply on the river. An example will illustrate the whole of this process.

Suppose then a small river having a slope of two inches in 100 fathoms, or $\frac{1}{5000}$, which is a very usual declivity of such small streams, and whose depth in summer is two feet, but subject to floods which raise it to nine feet. Let its breadth at the bottom be eighteen feet, and the base of its slanting sides four thirds of their height. All of these dimensions are very conformable to the ordinary course of things. It is proposed to make this river navigable in all seasons by means of keeps and gates placed at proper distances; and we want to know the dimensions of a channel which will be permanent in a soil which begins to yield to a velocity of eighty inches per second, but will be safe under a velocity of twenty-four.

The primitive channel having the properties of a rectangular channel, its breadth during the freshes must be $B = 30$ feet, or 360 inches, and its depth h nine feet or 108

inches; therefore its hydraulic mean depth $d = \frac{Bh}{B + 2h}$

$= 61.88$ inches. Its real velocity, therefore, during the freshes, will be 38.9447 inches, and its discharge 1514169 cubic inches or $876\frac{1}{4}$ cubic feet per second. We see therefore that the natural channel will not be permanent, and will be very quickly destroyed or changed by this great velocity. We have two methods for procuring stability, viz.

Practical Inferences. diminishing the slope, or widening the bed. The first method will require the course to be lengthened in the proportion of 24^2 to 38.94^2 , or nearly of 38 to 100. The expense of this would be enormous. The second method will require the hydraulic mean depth to be increased nearly in the same proportion (because the velocities are nearly as $\sqrt{d}$). This will evidently be much less costly and, even to procure convenient room for the navigation, must be preferred.

We must now observe, that the great velocity of which we are afraid obtains only during the winter floods. If therefore we reduce this to 24 inches, it must happen that the autumnal freshes, loaded with sand and mud, will certainly deposit a part of it, and choke up our channel below the floodgates. We must therefore select a mean velocity somewhat exceeding the regimen, that it may carry off these depositions. We shall take 27 inches, which will produce this effect on the loose mud without endangering our channel in any remarkable degree.

Therefore we have, by the theorem for uniform motion,

$$V = 27 = \frac{297(\sqrt{d} - 0.1)}{\sqrt{s} - L\sqrt{s} + 1.6} - 0.3(\sqrt{d} - 0.1). \text{ Calculating the divisor of this formula, we find it} = 55.884. \text{ Hence}$$

$$\sqrt{d} - 0.1 = \frac{27}{\frac{297}{55.884} - 0.3} = 5.3483, \text{ and therefore } d$$

$= 30\frac{1}{2}$. Having thus determined the hydraulic mean depth, we find the area S of the section by dividing the discharge 1514169 by the velocity 27. This gives us 56080.368. Then we get the breadth B by the formula formerly given $B = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d} = 1802.296$ inches,

or 150.19 feet, and the depth $h = 31.115$ inches.

With these dimensions of the section, we are certain that the channel will be permanent; and the sills of the floodgate being all fixed agreeably to the primitive slope, we need not fear that it will be changed in the intervals by the action of the current. The gates being all open during the freshes, the bottom will be cleared of the whole deposited mud.

Station of the floodgates, &c. We must now station the floodgates along the new channel, at such distances that we may have the depth of water which is proper for the lighters that are to be employed in the navigation. Suppose this to be four feet. We must first of all learn how high the water will be kept in this new channel during the summer droughts. There remained in the primitive channel only two feet, and the section in this case had twenty feet eight inches mean width; and the discharge corresponding to this section and slope $\frac{1}{3600}$ is, by the theorem of uniform motion, 130849 cubic inches per second. To find the depth of water in the new channel corresponding to this discharge and the same slope, we must take the method of approximation formerly exemplified, remembering that the discharge D is 130849, and the breadth B is 1760.8 at the bottom (the slant sides being four thirds). These data will produce a depth of water $= 6\frac{1}{2}$ inches. To obtain four feet therefore behind any of the floodgates, we must have a swell of $41\frac{1}{2}$ inches produced by the gate below.

We must now determine the width of passage which must be given at the gates. This will regulate the thickness of the sheet of water which flows over them when shut; and this, with the height of the gate, fixes the swell at the gate. The extent of this swell, and the elevation of every point of its curved surface above the new surface of the river, require a combination of the height of swell at the floodgate, with the primitive slope and the new velocity.

Practical Inferences. These being computed, the stations of the gates may be assigned, which will secure four feet of water behind each in summer. We need not give these computations, having already exemplified them all with relation to another river.

This example not only illustrates the method of proceeding, so as to be insured of success, but also gives us a precise instance of what must be done in a case which cannot but frequently occur. We see what a prodigious excavation is necessary in order to obtain permanency. We have been obliged to enlarge the primitive bed to about thrice its former size, so that the excavation is at least two thirds of what the other method required. The expense, however, will still be vastly inferior to the other, both from the nature of the work and the quantity of ground occupied. At all events, the expense is enormous, and what could never be repaid by the navigation, except in a very rich and populous country.

There is another circumstance to be attended to. The navigation of this river by sluices must be very desultory, unless they are extremely numerous, and of small heights. The natural surface of the swell being concave upwards, the additions made by its different parts to the primitive height of the river decrease rapidly as they approach to the place A (fig. 23), where the swell terminates; and three gates, each of which raises the water one foot when placed at the proper distance from each other, will raise the water much more than two gates at twice this distance, each raising the water two feet. Moreover, when the elevation produced by a floodgate is considerable, exceeding a very few inches, the fall and current produced by the opening of the gate is such that no boat can possibly pass up the river, and it runs imminent risk of being overset and sunk in the attempt to go down the stream. This renders the navigation desultory. A number of lighters collect themselves at the gates, and wait their opening. They pass through as soon as the current becomes moderate. This would not, perhaps, be very hurtful in a regulated navigation, if they could then proceed on their voyage. But the boats bound up the river must stay on the upper side of the gate which they have just now passed, because the channel is now too shallow for them to proceed. Those bound down the river can only go to the next gate, unless it has been opened at a time nicely adjusted to the opening of the one above it. The passage downwards *may*, in many cases, be continued, by very intelligent and attentive lockmen; but the passage up *must* be exceedingly tedious. Nay, we may say, that *while* the passage downwards is continuous, it is but in a very few cases that the passage upward is practicable. If we add to these inconveniences the great danger of passes during the freshes, while all the gates are open, and the immense and unavoidable accumulations of ice, on occasion even of slight frosts, we may see that this method of procuring an inland navigation is amazingly expensive, desultory, tedious, and hazardous. It did not therefore merit, on its own account, the attention we have bestowed on it. But the discussion was absolutely necessary, in order to show what must be done in order to obtain effect and permanency, and thus to prevent us from engaging in a project which, to a person not duly and confidently informed, is so feasible and promising. Many professional engineers are ready, and with honest intentions, to undertake such tasks; and by avoiding this immense expense, and contenting themselves with a much narrower channel, they succeeded: witness the old navigation of the river Mersey. But the work has no duration; and, not having been found very serviceable, its cessation is not matter of much regret. The work is not much spoken of during its continuance. It is soon forgotten, as well as its failure, and engineers are found ready to engage for such another.

It was not a very refined thought to change this imper-

Practical
Inferences.
Introduc-
tion of
locks.

fect mode for another free from most of its inconveniences. A boat was brought up the river, through one of these gates, only by raising the waters of the inferior reach, and depressing those of the upper: and it could not escape observation, that when the gates were far asunder, a vast body of water must be discharged before this could be done, and that it would be a great improvement to double each gate, with a very small distance between. Thus a very small quantity of water would fill the interval to the desired height, and allow the boat to come through; and this thought was the more obvious, from a similar practice having preceded it, viz. that of navigating a small river by means of double bars, the lowest of which lay flat in the bottom of the river, but could be raised up on hinges. We have mentioned this already; and it appears to have been an old practice, being mentioned by Stevinus in his valuable work on sluices, published about the beginning of the seventeenth century; yet no trace of this method is to be found of much older dates. It occurred, however, accidentally, pretty often in the flat countries of Holland and Flanders, which being the seat of frequent wars, almost every town and village was fortified with wet ditches, connected with the adjoining rivers. Stevinus mentions particularly the works of Condé, as having been long employed, with great ingenuity, for rendering navigable a very long stretch of the Scheldt. The boats were received into the lower part of the fossee, which was separated from the rest by a stone batardeau, serving to keep up the waters in the rest of the fossee about eight feet. In this were a sluice and another dam, by which the boats could be taken into the upper fossee, which communicated with a remote part of the Scheldt, by a long canal. This appears to be one of the earliest locks.

In the first attempt to introduce this improvement in the navigation of rivers already kept up by weirs, which gave a partial and interrupted navigation, it was usual to avoid the great expense of the second dam and gate, by making the lock altogether detached from the river, within land, and having its basin parallel to the river, and communicating by one end with the river above the weir, and by the other end with the river below the weir, and having a floodgate at each end. This was a most ingenious thought; and it was a prodigious improvement, free from all the inconveniences of currents, ice, &c. &c. It was called a *schlüssel*, or lock, with considerable propriety; and this was the origin of the word *sluice*, and of our application of its translation *lock*. This practice being once introduced, it was not long before engineers found that a complete separation of the navigation from the bed of the river was not only the most perfect method for obtaining a sure, easy, and uninterrupted navigation, but that it was in general the most economical in its first construction, and subject to no risk of deterioration by the action of the current, which was here entirely removed. Locked canals, therefore, have almost entirely supplanted all attempts to improve the natural beds of rivers; and this is hardly ever attempted except in the flat countries, where they can hardly be said to differ from horizontal canals.

Conclud-
ing obser-
vations.

The attentive reader must have observed our anxiety to render this dissertation worthy of his notice, by making it practically useful. We have on every occasion appealed from all theoretical deductions, however specious and well supported, to fact and observation of those spontaneous phenomena of nature which are continually passing in review before us in the motion of running waters. Resting in this manner our whole doctrines on experiment, on the observation of what really happens, and what happens in a way which we cannot or do not fully explain, these spontaneous operations of nature came insensibly to acquire a particular value in our imagination. It has also happened in the course of our reflections on these subjects, that these

phenomena have frequently presented themselves to our view in groups, not less remarkable for the extent and the importance of their consequences, than for the simplicity, and frequently the seeming insignificance, nay frivolity, of the means employed. Our fancy has therefore been sometimes warmed with the view of a something, an

Practical
Inferences.

Ens agitans molem, et magno se corpore miscens.

This has sometimes made us express ourselves in a way that is susceptible of misinterpretation, and may even lead into a mistake of our meaning.

We therefore find ourselves obliged to declare, that by the term *NATURE*, which we have so frequently used *con amore*, we do not mean that indescribable idol which the self-conceit and vanity of some philosophers or pretended philosophers have set up and ostentatiously worshipped, that *ens rationis*, that creature of the imagination, which has long been the object of cool contemplation in the closet of the philosopher, and has shared his attention with many other playthings of his ever-working fancy. By *Nature* we mean that admirable system of general laws, by which the adored Author and Governor of the universe has thought fit to connect the various parts of this wonderful and goodly frame of things, and to regulate all their operations.

We are not afraid of continually appealing to the laws of nature; and, as we have already observed in the article *PHILOSOPHY*, we consider these general laws as the most magnificent displays of Infinite Wisdom, and the contemplation of them as the most cheering employment of our understandings.

*Ignis est illis vigor et cælestis origo
Seminibus.*

At the same time we despise the cold-hearted philosopher who stops short here, and is satisfied, perhaps inwardly pleased, that he has completely accounted for every thing by the laws of unchanging nature; and we suspect that this philosopher would analyse with the same frigid ingenuity, and explain by irresistible *στοργή*, the tender attachment of her whose breast he sucked, and who by many anxious and sleepless nights preserved alive the pining infant. But let us rather listen to the words of him who was the most sagacious observer and the most faithful interpreter of nature's laws, our illustrious countryman Sir Isaac Newton.

“Elegantissima hæcce rerum compages non nisi consilio et *dominio* entis sapientissimi et potentissimi oriri potuit. Omnia, simili constructa consilio, suberunt *unius* dominio. Hic omnia regit, non ut *anima mundi*, sed ut universorum dominus. Propter dominium suum, dominus deus *παντοκράτωρ* nuncupatur. Deus ad servientes respicit, et *deitas* est dominatio dei, non in corpus proprium, uti sentiunt quibus deus est natura seu anima mundi, sed in servos. Deus summus est ens eternum, infinitum, absolute perfectum. Ens utcunque perfectum, at sine dominio, non est dominus deus. Hunc cognoscimus, solummodo per proprietates ejus et attributa. Attribuuntur ut ex phenomenon dignoscuntur. Phenomena sunt sapientissimæ et optimæ rerum structuræ, atque causæ finales. Hunc admiramur ob perfectiones; hunc veneramur et colimus ob dominium.”

Our readers will probably be pleased with the following list of authors who have treated professedly of the motions of rivers: Guglielmini *De Fluviiis et Castellis Aquarum—Danubius Illustratus*; Grandi *De Castellis*; Zendrini *De Motu Aquarum*; Frisius *De Fluviiis*; Lecchi, *Idrostatica i Idraulica*; Michelotti, *Sperienze Idrauliche*; Belidor, *Architecture Hydraulique*; Bossut, *Hydrodynamique*; Du Buat, *Hydraulique*; Silberschlag, *Théorie des Fleuves*; *Lettres de M. L'Épinasse au P. Frisi touchant sa Théorie des Fleuves*; *Tableau des Principales Rivières du Monde*, par

Genetté; Stevins *Sur les Ecluses; Traité des Ecluses*, par Boulard, *qui a remporté le Prix de l'Acad. de Lyons*; Bleiswyck, *Dissertatio de Aggeribus*; Bossut et Viallet *Sur la Construction des Dignes*; Stevin, *Hydrostatica*; Tielman van der Horst, *Theatrum Machinarum Universale*; De la Lande *Sur la Canaux de Navigation*. Racolta di Autori chi trattano del Moto dell' Acque, 3 tom. 4to, Firenze, 1723. This most valuable collection contains the writings of Archimedes, Albizi, Galileo, Castelli, Michelini, Borelli, Montanari, Viviani, Cassini, Guglielmini, Grandi, Manfredi, Picard, and Narduci; and an account of the numberless works which have been carried on in the embankment of the Po. A continuation of this collection, containing many important papers, was published at Bologna in 1823, in six volumes. Coulomb, *Expériences sur la*

Cohérence des Fluides, &c., in volume iii. of the Memoirs of the Institute, Class of Physical and Mathematical Sciences; Girard, *Essai sur le Mouvement des Eaux courantes*, *Mémoires sur le Canal de l'Oureq*, and *Mémoires sur les Canaux de Navigation*; Prony, *Nouvelle Architecture Hydraulique*, and *Recherches Physico-Mathématiques sur la Théorie des Eaux courantes*; Venturi *Sur la Communication latérale du Mouvement des Fluides*; Eytelwein, *Handbuch der Mechanik und der Hydraulik*; De Fontaine, *Travaux du Fleuve du Rhin*; Bidone, *Expériences sur la Dépense des Réservoirs*, in volume xxviii. of the Memoirs of the Academy of Turin; Rennie's two Reports on Hydraulics, in the Transactions of the third and fourth meetings of the British Association. (J. R.)

RIVOLI, a town of the Sardinian kingdom, in the division and 10 miles W. of Turin, with which it is connected by a broad, straight avenue of elms. It stands in a beautiful position, in a rich plain, intersected by canals, at the foot of the lowest slopes of the Alps. On a height above the town rises a large but unfinished royal palace; and there are churches, schools, an hospital, and a court of justice. Many villas stud the country round about, as the climate is very healthy. Woollen fabrics, linen, and macaroni are made here. Pop. 5195. This town is not to be confounded with another of the same name in Austrian Italy, 14 miles N.W. of Verona. It was at the latter place the French under Massena defeated the Austrians in 1797.

RIZI, FRANCISCO, a talented Spanish painter, was born at Madrid in 1608, and studied under Vicencio Carducho. He was one of those whose very precocity proved a misfortune. His easy dexterity of hand led him to despise all care and elaboration. The most difficult subjects were dashed off without any great regard to truth or accuracy. His appointment to the office of painter to the king, and the many commissions that in consequence pressed in upon him, only confirmed him in his careless habits. He covered whole acres of canvas under the stimulus of no higher motive than that of making money. The result was, that after his death in 1685, his innumerable pictures in the churches of Madrid began to fall into neglect, and at the present day they are scarcely considered worthy of the notice of the art-critic. Rizi's elder brother Juan was also an artist. He was born at Madrid in 1595, became a Benedictine friar as well as a painter, and died at Monte Cassino in 1675.

RJEV, or RSHEV, a town of European Russia, capital of a circle in the government of Twer, on the Volga, 74 miles S.W. of Twer. It has several churches, schools, and benevolent institutions. Horticulture and ship-building are carried on; and there is a considerable trade in fish, hemp, linseed, and other articles. Pop. 13,621.

ROAD, a bay or place of anchorage, at some distance from the shore, whither vessels occasionally repair to receive intelligence, orders, or necessary supplies, or to wait for a fair wind. The excellence of a road consists chiefly in its being protected from the reigning winds and the swell of the sea, in having a good anchoring-ground, and being at a competent distance from the shore. Those which are not sufficiently protected are termed *open roads*.

ROAD-MAKING. There are few departments of practical mechanics in which every individual, at some period or other of his life, is more immediately interested than in the management of roads and pavements. The mechanical theory of the motions of wheel-carriages, and of the nature of the frictions and resistances that they have to overcome, as relating to the ultimate objects for

which roads are constructed, may naturally constitute the first section of an essay on this subject; the second will naturally comprehend the best arrangement of the means for attaining those objects, by the form and construction of such roads and pavements as appear to be the most eligible under various circumstances; and the third may be devoted to some historical illustrations of the principal roads which exist, or which have existed, in various parts of the world.

SECT. I.—Of the Objects of Roads.

The grand object of all modern roads is the accommodation of wheel carriages. The construction of footpaths and of bridle-roads is so simple as to require very little separate consideration; except that, in cities and towns, the convenience of the inhabitants requires that some pains should be taken to avoid dust, and has generally been a reason for employing pavements in preference to gravel roads, which might in some other respects be more eligible.

For facilitating the motion of carriages, the most essential requisite is to have the road as smooth, and as hard, and as level as possible. The wheels of carriages are principally useful in diminishing the friction of the materials; a dray sliding without wheels, even on a railroad of greased and polished iron, would have to overcome a friction as much greater than that of the wheel on its axle as the diameter of the wheel is greater than that of the axle. The wheels assist us also in drawing a carriage over an obstacle; for the path which the axis of the wheel describes is always smoother and less abrupt than the surface of a rough road on which the wheel rolls, and so much the smoother as the wheel is larger, since the portions of larger circles, which constitute the path in question, are less curved than those of smaller ones.

But in all common cases of roads not extremely hard, by far the greater part of the resistance actually exhibited by a road to the motion of a carriage, is that which depends on the continual displacement of a portion of the materials from their inelasticity, which causes them to exert a continual pressure on the fore part of the wheel, without rising behind it to propel it forwards by its re-action, as an elastic substance would do. Hence, in a soft sand, although the axles of the wheels may move in a direction perfectly horizontal, the draught becomes extremely heavy. The more the wheel sinks, the greater is the resistance; and if we suppose the degree of elasticity of the materials, and their immediate resistance at different depths, to be known, we may calculate the whole effect of their action on the wheel, and the force that is required to displace them, in the progressive motion of the carriage. Thus, if the materials were perfectly inelastic, acting only on the preceding half of the immersed portion of the wheel, and their immediate

Road-
Making.

pressure or resistance were simply proportional to the depth, like that of fluids, or that of elastic substances compressed, the horizontal resistance would be to the weight nearly as two-fifths of the length of the part immersed at once, in the newly-formed rut, to the diameter of the wheel; or on a still more probable supposition respecting the greater resistance of the more deeply-seated parts of the rut, about half as much as this, or as about one-fifth of the length of the part immersed in the rut to the diameter. Thus, if a coach or waggon, weighing 60 hundredweight, supported by wheels 4 feet in diameter, formed a new rut an inch deep, in a smooth road, the length of the part immersed being about 14 inches, the resistance would, upon the lowest supposition that is at all admissible, be about one-seventeenth of the weight, and more probably about one-ninth or from 6 to 7 hundredweight at least; and if the rut were 2 inches deep, the resistance would be half as much more. But, on any supposition, the increased height, and even the increased breadth, of the wheel, is calculated to diminish the resistance, by diminishing the depth of the part immersed; thus, if a wheel were made four times as high, the length of that part immersed, considering the road as an imperfect fluid, would be doubled, and the resistance would be diminished, theoretically speaking, to about half of its former magnitude; and if the breadth were increased from one to eight, the length of the part immersed would be diminished to about a half, and the resistance would in this case also be reduced to a half.

In soft and boggy soils, as well as in sandy roads, this consideration is of great importance; and the wheels employed for removing heavy weights, in such cases, ought to be as high and as broad as possible consistently with sufficient lightness and economy. But whether a broad, and, at the same time, a low roller, possesses any advantages above a narrow coach-wheel, is a matter much more questionable: it must be remembered that a narrow wheel may often run between stones, where a broader would have to pass over them; and there appears to be no theoretical reason for preferring a low roller, except with respect to a single pair of wheels, as affording a more convenient attachment for the shafts in a moderate inclination, which is both more favourable to the exertion of the horses, and more effective in overcoming the friction; since it has been demonstrated that the angle affording the most advantageous line of draught is exactly the same as the inclination of a plane along which the carriage would just begin to descend by its own weight on the same kind of surface. In fact, however, there is no necessity for fixing the axle-tree precisely in the line of draught; and the principal reason for having the fore wheels lower than the others is for the convenience of turning the carriage more abruptly. A practical road-maker has observed that a good road never suffers from narrow wheels with moderate weights not in rapid motion, but that it is equally worn by the rapid driving of heavy stage-coaches, and by the slow grinding of the conical rollers of overloaded, broad-wheeled waggons.

Such being the operations of the wheels of carriages on sandy or on rough roads, it is easy to perceive how much the hardness and smoothness of the surface must facilitate the draught; it is obvious also that the same qualities must be equally conducive to the durability of the road, since the inequalities will always cause the carriage to fall on it with a certain impetus after being elevated by the irregularities, and the same shock which strains the carriage will also tend to wear away the road still more where it is lowest; and, on the other hand, the resistance of the soft materials before the wheel will tend to tear up the road, as it causes the wheel to thrust them before it.

Details respecting roads have lost much of their interest since the general introduction of railroads; but in places

where common roads are still much used it will be found now, as formerly, that the interests of the traveller and of the postmaster are somewhat at variance with respect to the qualities of a road. The French postilion keeps to the rough pavement as long as the aching limbs of the ladies in the carriage will allow them to be silent, except when, in going down hill, he saves himself the trouble of locking the wheel by bringing it to the soft edge of the ditch or kennel; and the horses of the Parisian cabriolets, in their excursions to the suburbs, have sagacity enough to incline always to the pavement, when their drivers allow them to have a will of their own; while a single horseman, on the contrary, more commonly finds his steed on the gravel road, if he happen to leave him to his own direction. In Great Britain the roads are commonly managed by commissioners, who have no community of interest with the innkeepers; on the Continent they are under the immediate direction of the different governments, who also appoint the postmasters, while the carriages are almost as uniformly the property of particular individuals, who have no immediate influence on the management of the roads; and this diversity may perhaps explain in some measure the different systems of road-making which prevail on the opposite sides of the Channel. But it may be said of roads as of governments, "that which is best administered is best;" whether a very smooth pavement not too slippery, or a very hard gravel road not worn into great inequalities.

Road-
Making.

SECT. II.—Of the Mechanical Formation of Roads.

The only strongly-marked division of the different kinds of roads depends on their being paved or gravelled; but each of these classes admits of considerable diversity in the principles on which the road is constructed. The theory of pavement appears to be extremely simple; the stones, however, may be either small or large; the former being understood to be employed without previous preparation of their shape, as in the inferior kind of work which is called "pitching" in the west of England; the latter being more or less cut to fit each other, whether in the form of thick, rough blocks, not very remote from cubes, or of flat and smooth flagstones. In the cities of Great Britain the former are commonly used for horse-pavements, and the latter for foot-passengers; but in Florence the whole breadth of the streets is paved with flagstones placed diagonally, and in Naples the surfaces are nearly as smooth; in both these cases it is necessary to roughen the stones frequently with chisels wherever there is a hill or a bridge, in order to prevent the horses slipping, but in both cities the horses, from habit, are sufficiently sure-footed, even when running with some rapidity. In Milan both kinds of pavements are mixed in the same streets; the smooth in two double lines, for the wheels of carriages coming and going, and the rougher in the intermediate parts, for the feet of the horses, as in the British railroads. But in none of these cities is there much heavy traffic to wear these well-arranged surfaces into such inequalities as would soon be observed in the streets of London if they were so delicately formed; although, until this deterioration actually took place, the locomotion would be luxurious both for the horses and for the passengers, and only ruinous to the coachmakers. The Romans used large and heavy blocks for their roads, cutting them on the spot into such forms as enabled them to be best adjusted to those of the neighbouring stones, though seldom exactly rectangular in their surfaces; and even at Pompeii, where the ruts are worn half through the depth of the blocks, the bottom remains tolerably even, in a longitudinal direction, at least as much so as would be required for carts and other carriages of business.

Our more particular object, however, is, first, the consideration of gravel-roads rather than of pavements; the

Road-Making.

word gravel being here understood to mean in general all stone broken small, whether by nature or by art. The improvement of such roads has long been a subject of great interest with the agricultural and commercial inhabitants of Great Britain. It was soon after the year 1700 that a part of the charge of repairing roads was taken off the respective parishes through which they pass, and levied on the general traveller by means of turnpike-gates; but it was for many years a complaint that the roads were little, if at all, fundamentally improved by the expenditure of the money so raised. This complaint is very energetically advanced in a "Dissertation concerning the present State of the High Roads of England, especially of those near London, wherein is proposed a new Method of Repairing and Maintaining them;" read before the Royal Society in the winter of 1736-37, by Robert Philips, and printed in a small separate volume. The author's great object is to recommend washing the roads by a constant stream, if possible, and at any rate, washing the materials of which they are composed. In this respect, notwithstanding the existence of single roads so situated that the effects of water upon them have been very beneficially introduced, his plans for the universal employment of water have been altogether superseded by later experience; but he remonstrates, with greater propriety, against the practice, which has, however, continued to prevail so generally till of late years, of laying down large heaps of unprepared gravel, to be gradually consolidated into a harder mass, at the expense of the intolerable labour of the poor animals that are obliged to grind it down. As an illustration of the good effect of water, he mentions that even the sediment deposited by it at the bottom of Fleetditch, which was supposed to be a soft mud, and to require removal when the ditch was filled up, proved in fact to be a hard gravelly substance, which afterwards afforded an excellent foundation for the roads and buildings supported by it.

The attention of the public was afterwards directed to the subject of roads and carriages, by several essays which appeared in the *Communications to the Board of Agriculture*, and also in a separate form, under the names of Beatson, Wright, Jessop, Hall, Wilkes, Erskine, Ellis, Cumming, Whetley, Amos, and Booth. We may also refer to Sir Henry Parnell's *Treatise on Roads*; Telford's *Reports*; The Art of *Constructing and Repairing Common Roads*, by Henry Law, and Professor Mahan's *Essay on Road-Making*.

But the suggestions of these writers were in a great measure superseded by the success of Mr Loudon Macadam, a gentleman whose practice was marked by simplicity and economy, though he also had the merit of discovering that the simplest and cheapest methods, in particular cases, especially in that of boggy soils, are also the most effectual. The practical observations which are to be here inserted cannot therefore be so well expressed in any other form as in that of an abstract of Mr Macadam's own directions.

Mr Macadam's leading principles are (*Remarks*, p. 37), "that a road ought to be considered as an artificial flooring, forming a strong, smooth, solid surface, at once capable of carrying great weights, and over which carriages may pass without meeting any impediment."

He proceeds to give directions for repairing an old road and for making a new one, in the form of a communication to a committee appointed by the House of Commons, in the year 1819, with some subsequent corrections.

No additional materials, he observes, are to be brought upon a road, unless in any part of it there be not a quantity of clean stone equal to 10 inches in thickness. The stone already in the road, supposing it to have been made in the usual manner, is to be loosened, and broken so that no piece may exceed SIX OUNCES in weight; the road is

then to be laid as flat as possible, leaving only a fall of 3 inches from the middle to the sides when the road is 30 feet wide. The stones, thus loosened, are to be dragged to the side by a strong heavy rake, with teeth $2\frac{1}{2}$ inches in length, and there broken; but the stones are never to be broken on the road itself. When the great stones have been removed, and none are left exceeding six ounces in weight, the surface is to be made smooth by a rake, which will also settle the remaining materials into a better consistency, bringing up the stone, and letting the dirt fall down into its place. The road being so prepared, the stone that has been broken by the side is then to be carefully spread over it: this operation requires particular attention, and the future quality of the road will greatly depend on the manner in which it is performed: the stone must not be laid on in shovelful, but scattered over the surface, one shovelful following another, and being spread over a considerable space. Only a small part of the length of the road should be *lifted* in this manner at once; that is, about 2 or 3 yards; five men in a gang should be employed to *lift* it all across, two continually digging up and raking off the large stones, and preparing the road for receiving them again, and the other three breaking them at the side of the road. It may, however, happen that the surveyor may see cause to distribute the labour in a proportion somewhat different. The only proper method of breaking stones, in general, both for effect and for economy, is in a sitting posture. The stones are to be placed in small heaps, and women, boys, and old men past hard labour, may sit down and break them with small hammers into pieces not exceeding *six ounces* in weight.

In some cases it would be unprofitable to lift and relay a road, even if the materials should have been originally too large; for example, the road between Bath and Cirencester was made of large stones, but so friable that in lifting they would have fallen into sand; in this case Mr Macadam merely had the higher parts cut down, and replaced when sifted, and the surface kept smooth, until those materials were gradually worn out; and they were afterwards replaced by stone of a better quality, properly prepared. At Egham it was necessary to remove the whole road, in order to separate the small portion of valuable materials from the mass of soft matter in which they were enveloped, and which was carried away, at a considerable expense, before a good road could be made. But although freestone is by no means calculated to make a durable road, yet by judicious management it may be made to form a good road as long as it lasts. Whenever new stone is to be laid on a road already consolidated, the hardened surface is to be loosened with a pick, in order to enable the fresh materials to unite with the old. A new road, however well it may have been made, will always receive the impressions of the carriage-wheels until it is hardened; a man must therefore attend the road for some time, in order to rake in the tracks made by the wheels; that is, as long as any loose materials are left that can be so employed.

It is always superfluous, and generally injurious, to add to the broken stone any mixture of earth, clay, chalk, or any other matter that will imbibe water and be affected by frost, or to lay anything whatever on the clean stone for the purpose of binding it; *for good stone, well broken, will always combine by its own roughness into a solid substance* with a smooth surface, that will not be affected by the vicissitudes of weather, or disfigured by the action of wheels, which, as they pass over it without a jolt, will consequently be incapable of doing it any considerable injury. The experience of the year 1820 strongly confirmed the inutility and inconvenience of employing chalk with the stone. In January, when a hard frost was succeeded by a sudden thaw, a great number of roads broke up, and the wheels of the carriages penetrated into the original soil;

Road-Making.

Road-Making.

in particular, it was observed that all the roads of which chalk was a component part became nearly impassable; and even roads made over chalky soils gave way in most places. But not one of the roads that had been thoroughly made after these directions was observed to give way.

The tools required for lifting roads are—1. Strong *picks*, but short from the handle to the point; 2. Small *hammers*, weighing about a pound, with a face the size of a shilling, well steeled, and with a short handle; 3. *Rakes* with wooden heads, ten inches in length, and with iron teeth about two and a half inches long, and very strong, for raking out the large stones when the road is broken up, and for keeping it smooth after it has been finished, and while it is consolidating; 4. Very light, broad-mouthed *shovels*, to spread the broken stones and to form the road.

Mr Macadam argues strongly against the old opinion of the necessity of placing a quantity of large stones as a foundation, in order to carry the road over a wet subsoil. He says, that whatever be the nature of the soil, if it be previously "made quite dry," and a covering impenetrable to rain placed over it, the thickness of the covering needs only to depend on its own capability of becoming impervious. Large stones, he says, will constantly work up by the agitation of the traffic on the road, and leave vacuities for the reception of water; and the only way of keeping the stones in their places is to have them of a uniform size. A rocky bottom causes a road to wear out much the faster [acting, probably, as a lower millstone in facilitating the operation of grinding]. "It is a known fact, that a road lasts much longer over a morass than when made over rock. In the neighbourhood of Bridgewater, for example, the materials consumed on a rocky road, when compared with those which are required for a similar road made over the naked surface of the soil, are in the proportion of seven to five." In the summer of 1819, upon some new roads made in Scotland, more than three feet of materials, of various dimensions, were laid down; and more than two-thirds of them, according to our author, were worse than wasted. In such an arrangement the water generally penetrates to the bottom of the trench made to receive the road, and remains there, to do mischief upon every change of weather. To prevent such inconveniences, it is necessary, in wet soils, either to make drains to lower ground, or to raise the road above the general level, instead of making a trench to receive the stones; and from the penetration of rain the solidity of the road itself must protect it. A well-made road, not quite four inches in thickness, was found to have kept the earth below it dry, in the parish of Ashton, near Bristol; but six, eight, or ten inches of materials are generally required to make a firm road, being laid on in successive layers of about two inches in thickness, all well broken, well cleaned, and well sized. Sometimes, indeed, a much greater depth of stone than this is required; in a road, for example, which was made from Lewes to East Bourn entirely upon Mr Macadam's principles, as much as three feet of materials were required in many parts before the road could be sufficiently consolidated; it was, however, ultimately so made, though at an expense of not much less than a thousand pounds a mile.

Mr Macadam maintains that the quantity of stone required for paving is fully sufficient to make an excellent gravel road in any part of the world; and in almost every case materials equally good can be obtained for roads at a still cheaper rate; commonly, indeed, at one-tenth of the expense of pavements. It is, however, in steep ascents that pavements are most objectionable.

The operation of washing gravel Mr Macadam has not found eligible, because it is more expensive than screening or sifting, and less effectual; for about London the common gravel is not capable of being cleaned by any ordinary washing, though the Thames gravel, where it can be pro-

cured, is generally clean and serviceable. Coarse gravel broken, he says, is preferable to fine, as it consolidates more perfectly into a single mass. The old practice of putting a heap of unprepared gravel along the middle of the road, and letting it work its own way gradually to the sides, he thinks every way reprehensible.

The objection to a very convex road is, that travellers only use the middle of it, which is therefore worn into three furrows by the string of horses and by the wheels; if the road is flatter, it becomes worn more equally. Ditches, he observes, only require to be so deep that the surface of the water in them may be a few inches below the level of the road; the farmer often makes them dangerously deep, on account of the value of the mould that is dug out of them. Mr Macadam would prefer a bog to any other foundation for a road, provided that it would allow a man to walk over it; and he observes, that the resistance to the motion of a carriage would not be materially affected by the foundation, if the road were well made. From Bridgewater to Cross, a part of the road shakes when a carriage passes over it; yet the consumption of materials is stated to be less there than on the limestone rock in the neighbourhood. He does not use any faggots in such cases, nor any stones larger than six ounces in weight; and these never sink in the bog, but unite into one mass like a piece of timber, which rests on it. He makes such a road generally at three different times; and he always prefers working in weather not very dry. The surveyors are directed to carry a pair of scales and a six-ounce weight in their pockets, as a check upon the workmen.

Mr Macadam has generally found reason to approve the usual regulation respecting carriage-wheels; but he thinks broad wheels less advantageous to roads than is commonly supposed. He suggests that the tolls might always be fairly made proportional to the exact number of horses employed; except that the waggoners should be encouraged to harness them in pairs rather than in a line. The conical form of broad wheels he thinks very injurious. Clean flints from the sea-side are among the best materials for roads, and might often be procured cheap by canals; granite chip-pings also, brought as ballast, are excellent; and when the middle of the road has been well made with good stones, the sides may often be left for a few feet less abundantly provided with them, as they are naturally much less exposed to wear.

We have given details of Macadam's plan at considerable length, in order that the reader interested in the subject may form his judgment on a method of constructing roads which was at one time so popular as to threaten to supersede every other. Macadam's great rival in the art of road-making was Telford, whose method was directly opposed to that of Macadam, in requiring that every road should be laid down upon a hard, solid, carefully-prepared foundation; whereas Macadam, as it will have been seen, was indifferent whether the substratum were soft or hard, but of the two he rather preferred the former. Telford was accustomed to regard as the real road, not the surface upon which animals and vehicles moved, but the foundation or sub-road, which, if properly preserved, would last for ever; and in order to preserve it properly, it was covered with suitable materials, renewed from time to time, on which were expended the action of the horses' feet and carriage-wheels, as well as of the weather. This method was adopted with great success on the Holyhead road, the Glasgow and Carlisle road, &c.; and the public had abundant opportunity of testing the merits of the two rival schemes. It is scarcely necessary to say which eventually prevailed. Considerable credit, however, is due to Macadam for improved details and economy in the art of road-making; and we now proceed to describe some of the more important features of Telford's practice. In the first place, the road

Road-Making.

Road-Making.

having been properly levelled, and, where necessary, drained, a regular bottoming of close-set pavement was constructed. The object was to secure the greatest degree of hardness consistent with the materials at hand; and this method is stated to be less expensive than a thick coating of broken stones, while six inches of broken stones is sufficient when laid on pavement. Any kind of common stone may be used for the pavement; and if the stones are laid with their broadest faces downwards, and stone chips be well driven into the interstices, the earthy bed of the road will not be pressed up so as to mix with the coating of broken stones. When this coating is consolidated it will form a solid, uniform mass of stone, and will be very superior in hardness to one of broken stones mixed with the earth of the substratum. On a road of this kind the power required to draw a wagon was 46 lb., while on a road made with a thick coating of broken stone laid on earth it was 65 lb., and with a thick coating of gravel laid on earth it was 147 lb. In places where stone is scarce, but gravel and lime are abundant, concrete may be used for the solid foundation of the road: it should be spread to the depth of 6 inches, and upon this, 6 inches of good hard gravel may be placed in two courses, 3 inches at a time. By using concrete, a good solid road may be formed with round, pebbly gravel, and other materials not well adapted to road-making. The gravel should be free from clay and dirt, and consist of stones and sand, the latter sufficiently abundant to fill up the spaces in the former. Five or six parts of the gravel are to be mixed with ground, unslaked lime, when sufficient water must be added to slack the lime. It is to be well mixed up, and thrown at once into its place and trimmed to the proper form. Just as the concrete is about to set, the first layer of broken stones or screened gravel is to be put on. The broken stones on the surface will quickly wedge together, but round and pebbly gravel stones must be mixed with some binding material, to fill up the interstices and prevent them from rolling about. This binding material is useful in making the road solid; but it makes it spongy in wet weather, and serves to break it up after a thaw. In chalk districts that material may be used for the foundation, but it should be placed at such a depth as to be out of reach of frost. In soft and boggy ground, the foundation should be laid with bushes or bundles of faggots. The best road-metal for the surface should be hard and tough, for which purpose whin-stones, basalts, granite, and beach pebbles are well adapted. Flint is hard but brittle, and is easily crushed; and so also, for a contrary reason, the softer sandstones. The limestones are retentive of water, and are apt to split during a thaw, but the harder and more compact varieties may be used. When gravel is the only road material, it should be screened, and the fine stuff or *hoggin* be reserved for footpaths. The larger stones should be broken, and the screened gravel be spread to the depth of 6 inches. When new roads are opened, men should be employed to keep every rut raked in as soon as it is formed, and guards or fenders should be placed so as to make the carriages pass over every part of the road in turn.

In every road provision must be made for drainage. Surface-drainage is assisted by a gently-convex transverse section. There should be a ditch on each side to carry off all the water that may fall upon the road. Between the footpath and the road, at distances of about 60 feet, drains of tiles or pipes should be formed under the footpath for conveying the water into the ditch. If the surface be properly drained, very little water will find its way to the substratum unless this be a strong clay or wet peat, in which case a system of under-drainage must be adopted, and trenches or drains be formed across the road at distances of 20 or 30 feet.

In improving an old road, it is often desirable to straighten

Road-Making.

its course by cutting off corners and bends, or to improve the level by avoiding or lowering hills, and embanking valleys. It is also desirable to increase the width and make it uniform throughout: the transverse section must be corrected, ruts filled up, and the side ditches cleaned and deepened; trees and hedges too near the road must be cut down, and mud-banks removed. In improving an old road by the common method of heaping on new materials, there is a wasteful expenditure of means; for most old roads usually contain abundant material if properly lifted and applied. Roads should be scraped clean in wet weather, and watered in dry; the fences should be as low as possible, and placed far on the sides of the road, so as not to intercept the sun and wind.

In forming roads through the streets of a busy town, it is even more important than in the country to secure a good foundation. This may be of concrete or of broken stone, or the old road may itself be the foundation, for which purpose the stones must be taken up and laid down again to the proper cross section; and upon this, stone pavement may be laid, some kind of coarse mortar being used. Granite is the best paving-stone, especially that from Guernsey and Aberdeen, as it does not become polished by wear. Next to this the hardest varieties of limestone and freestone may be used. The stones should be in rectangular blocks from 8 to 15 inches in depth, about 18 inches in length, and 3 or 4 inches in width. Narrow stones are found to wear better than wide ones. The courses should break joint, and should abut against a firm kerb on each side of the road. The courses should be commenced on each side and worked towards the centre; the joints between the stones should be thin, and the last stone should fit tightly so as to form a key to the whole. The stones should be well rammed down with a heavy *punner*, and a thin grouting of sand and lime should be poured over the surface, unless the superior plan be adopted of bedding the stones in mortar. Where the road is inclined, the pavement should be laid so as to give horses a hold for their feet; for which purpose the stones may be sloped so as to form a series of ledges or steps, or a course of slate about an inch less in depth than the stones may be inserted between the courses.

Roads have been paved with wooden blocks, but they have in many cases failed for want of a solid foundation, the absence of which caused them to form numerous pits and cavities, and they were also found to be very slippery in wet weather. Some years ago, wooden pavements were in such favour in London, that most of the great thoroughfares were so paved. A large number of patents were taken out for new forms of blocks, and machinery for preparing them, and also for combining and laying them down. Contracts were also entered into for terms of years; so that long after wooden pavements had fallen into disfavour they continued to be used. When these roads were new and in good condition, they were easy to the horses, pleasant to the travellers, and especially so to the inhabitants of crowded thoroughfares, from the cessation of noise. After the wooden roads had been given up, a noiseless wheel was attempted,—that is, a wheel with a band of vulcanized india-rubber let into the tire. Asphaltum roads have also been tried, for which purpose the soft earth is well rammed, and a coarse concrete laid; upon this a finer concrete; and lastly, the asphaltum applied in a liquid state, and before it is quite set covered with sand, slate-dust, plaster of Paris, or powdered chalk, rubbed in with a flat heavy tool of wood; or, for a rough pavement, a clean, sharp grit is used. This kind of road answers tolerably well where the traffic is not considerable, but it is liable to soften under a hot sun, and to exhale a very disagreeable odour.

SECT. III.—Of the Roads of different Ages and Countries.

The ancient Incas of Peru seem to have been the greatest road-makers in the world. The story told by Montaigne (iii. vi., p. 206) of a road in Peru, from Quito to Cuzco, 300 leagues long and 25 paces broad, made of stones 10 feet square, with a running stream and a row of trees on each side, seems to have been literally true. "It was conducted," says Prescott in his *History of Peru*, "over pathless sierras covered with snow; galleries were cut for leagues through the living rock; rivers were crossed by means of bridges that swung suspended in the air; precipices were scaled by stairways hewn out of the native bed; and ravines of hideous depth were filled up with solid masonry." In Italy only, the Romans are said to have made more than 14,000 miles of road, which was generally executed with great care and labour; and many of their roads still remain as the foundation of the most favourite routes of Italian travellers. The more than Roman despot of modern times was as much a Roman in his road-making as in the selfish character of his general policy; and in proportion to the duration of his destiny he performed more than all the Appii and Flamini of antiquity. Whatever his merits may have been, the beneficial effects of his measures remain; and those who have profited by his improvements have no right to criticise his motives with too great severity.

Of the great roads diverging from the gates of ancient Rome, about twelve have been enumerated by antiquaries, and twelve more branched off from these at a small distance from the city; eighteen others commenced in different parts of Italy, and in the whole there are at least fifty, which have been distinguished by appropriate names, without including the military roads through the distant provinces; such, for example, as in England were distinguished by the name of streets, of which many traces yet remain in different parts of the country.

Directly to the sea the Romans travelled by the Ostian Road; along its shores to the north-west by the Aurelian, and to the south-east by the Appian. Next within the Aurelian was the Flaminian, then the Salarian, the Nomentanian, the Tiburtine, the Prænestine, the Lavican, and the Latin; and then the Appian, which was the most ancient of all, having been made as far as Capua, in the 442d year of the city, accompanied to a considerable distance by an aqueduct. The Aurelian road was made in the year 512; the Flaminian about 533.

I. The *Flaminian* Road still affords the great northern approach to Rome by the Porta del Popolo; it led to Foligno, Ancona, and Rimini, and was continued by the *Æmilian* to Bologna, and thence to Aquilegia, near Venice; the present mountain route from Bologna to Rome is still facilitated by the remains of the ancient structures. Besides the *Æmilian* Road, the Flaminian was also connected with the *Cassian*, leading to Modena; the *Claudian* to Arezzo, Florence, and Lucca: there were also six other branches of less note, each named after its founder.

II. III. The *Salarian* and the *Nomentanian* roads lay to the east of the Flaminian; the former, from the Porto Salaria, led through the country of the Sabines by Rieti to Hadria; the latter, from the Porta San' Agnese, went north-eastwards to Nomentum.

IV. The *Tiburtine* Road led from the Porta Tiburtina, now San Lorenzo, to Tivoli, with a branch on the right called the Gabian. The large blocks which were employed to form this road, near the town of Tivoli, in ascending from the river, are still in their ancient places; they are accurately fitted together, and present a surface sufficiently smooth, after having been in use for about 2000 years.

V. VI. VII. The three next in order all met at Anagnia, 24 miles beyond Præneste or Palestrina. The *Prænestine*, from the Esquiline gate, now called Porta Maggiore, on account of the magnitude of the ruins of the aqueduct of Clodius, with which it is incorporated, led by Aquinum to Præneste; the *Lavican* led from the same gate, more to the right, by way of Beneventum; and the *Latin* road, from the Porta Latina, went first to Compitum, and from Anagnia proceeded to join the Appian near Capua.

VIII. The *Appian* Road is well known, from the minute description of Horace's progress in his journey to Brundisium, as from the eagerness with which a modern traveller reckons the stages that he has completed on his way to Naples, without a visit from the banditti that infest it. The original extent of this road, from the Colosseum to Capua, was 142 Roman miles; and it was continued 238 miles farther to Brundisium by Julius Cæsar. It was constructed with large stones, or rather rocks, joined together with great care; and it is said to have had a foot-pavement, 2 feet wide on each side, besides the agger, or principal mass of stones in the middle, and the two marginal parts, which were probably unpaved.

IX. The *Ostian* Road led from the Porta di San Paolo, near the Tiber, in a straight line to the mouth of that river.

X. The *Aurelian*, from the Porta Aurelia, a gate which was near the Moles Adriani, or Castle of Sant' Angelo, led by Laurentum to Centumcellæ, or Civita Vecchia to Genoa, and thence by Susa, across the Montcenis, as far as Arles in Provence. This seems to have been the oldest passage into the Gauls; it was improved by Pompey the Great under the name of the *Strata Romana*. Several other passages over the Alps are also particularized in the *Itinerary* of Antonine on the roads from Milan to Arles; from Milan to Vienne in Dauphiné, either by the Grecian or by the Cottian Alps, the former north, the latter south of Montcenis; from Milan to Strasburg; and from Milan to Mentz.

XI. XII. The *Triumphal* Road began from the Capitol, and went over the Tiber into the country beyond the present site of the Vatican. We may consider as the last of the twelve great roads, originating from Rome, the *Collatine*, leading due north from the Porta Pinciana on the Monte Pincio.

Among the less remarkable roads about the metropolis of the ancient world were also the Campanian, the new and the old Valerian, both leading by Tivoli to the Adriatic; the Tusculan, the Alban, the Ardentine, on the right of the Appian; the Laurentine, a little more to the right, Pliny's villa being mentioned as accessible from either of these last; the Portuensis, from the Porta Portuense, Trasteverina, leading to Ostia; and the Aureli Nova, beginning from the Porta Janiculi, now Porta San Pancrazio, and leading towards Civita Vecchia.

Whether on the foundations of the ancient roads, or in any new lines that have been prepared in modern times by the magnificence of the pontiffs or of the princes, the great roads of Italy are at present almost universally well made and well repaired. In Lombardy, indeed, and throughout the immense plain that extends from the Alps to the Apennines, they are quite as good, in summer at least, as those in England. The cross roads of Italy are, however, greatly neglected; for it is in fact almost exclusively in Great Britain that private and individual exertion supersedes the necessity of public munificence. The intercourse of Italy with the rest of Europe has been greatly facilitated by the improvements made in the two great passages over the Alps by the authority of Bonaparte. The more useful of these improvements are probably those which have been effected on the southern side of Montcenis, since they enable the traveller to pass with little danger or difficulty at all seasons of the year; the more magnificent are the works at the Simplon, which, however, are not completely secure from the danger of *avalanches*, whenever fresh snow is lying on the ground. The Apennine portion of the Aurelian road has also been greatly improved by some still more recent operations, so that carriages may now pass with comparative ease and safety from Lucca to Genoa; though, for one stage near Sestri, it is not thought advisable for the travellers to retain their seats within them.

The general declivity of the new road over Montcenis is 1 inch in 15 or 20; and it is never greater in the steepest part,—that is, in the fourth and fifth turns that wind up over Lanslebourg,—than 1 in 12. (Derrien, *Notice Historique et Descriptive sur la Route de Montcenis*.) The road over the Simplon was executed jointly by the French and Italians, under the government of Bonaparte, from 1801 to 1805. The greatest declivity is 1 inch in 29; so that an English stage coachman might trot his horses up almost the whole way. The longest gallery or tunnel is about 500 feet under ground.

Roanne
||
Robert.

The roads in France are generally rough in their original formation, and still rougher from want of care in repairing them, as the traveller feels to his cost in passing over the primitive mountains in the south of that country, where the roads are certainly very different from those which are made by Macadam across a bog; although some of the more recent French and Flemish pavements, as long as they remain unimpaired, are truly excellent. In Germany they have few pavements; and the roads, except in sandy countries, are generally kept in good repair,—that is, in the south and the west of Germany. Mr Cripps informs us that the great roads in Sweden are beautiful; they are very slightly convex, and made of granite broken to the size of a walnut. The roads of the British Islands are excellent, and in most cases still retain their utility as feeders to railways.

(T. Y.) (C. T.)

ROANNE, a town of France, capital of an arrondissement in the department of Loire, on the left bank of the Loire, here crossed by a stone bridge, 30 miles N. of Montbrison. It is a straggling but well-built place, with broad streets and many handsome houses. The most remarkable buildings are an ancient church, public library, and college buildings. There are also a theatre, hospital, court of law, and chamber of manufactures. Muslin, calico, woollen cloth, leather, porcelain, and other articles, are made here; dyeing and boat-building are also carried on. A considerable transit trade is pursued in the manufactures of Lyons and the south-east of France, as well as in corn, wine, flour, cloth, coal, timber, &c. The Loire is navigable up as far as Roanne, and there is a good quay. By canals and railways this place is connected with the principal towns in the country. Some ancient remains have been discovered in the vicinity. Pop. (1856) 14,952.

ROBERT, King of France, surnamed *Le Sage* ("The Wise"), and *Le Dévot* ("The Devout"), succeeded his father Hugues Capet in A.D. 996, and died in 1031. (See FRANCE.)

ROBERT, the name of three kings of Scotland. Robert I., or "The Bruce," was born in 1274, was crowned at Scone in 1306, and died in 1329. (See BRUCE.) Robert II., the first of the Stuart dynasty, and the grandson of the preceding, was born in 1316, succeeded David II. in 1371, and died in 1390. Robert III., whose original name was John, succeeded his father Robert II. in 1390, and died in 1400. (See SCOTLAND.)

ROBERT of Gloucester, a monk who flourished in the latter half of the thirteenth century, left behind him a rhyming chronicle. The subject is the history of England from the time of Brutus to the close of the reign of Henry III. The facts are chiefly taken from Geoffrey of Monmouth, and other old annalists. The verse consists of long lines of fourteen syllables, and abounds in Saxonisms. There is little of art or of spirit in the execution. The rhyme seems to cramp the verse, and to make it limp along at a duller pace than even ordinary prose. The Chronicle of Robert of Gloucester was printed by Hearne, in 2 vols. 8vo, Oxford, 1724, and reprinted at London in 1810.

ROBERT, *Léopold*, a distinguished French painter, was born in 1794, at Chaux-de-Fonds in Neuchâtel. From his earliest years a strong love for design characterized him. The commercial profession, to which he was apprenticed, was given up in disgust. He was not content until he was sent to Paris to study art. There he laboured with unwearying assiduity under Girardet the engraver and David the painter. Nor did his ardour abate when he found himself a poor and solitary student at Rome. The prosecution of his art was the only subject that he allowed to engross his mind. He patiently employed all the advantages of the place to perfect himself both in theory and in execution. He especially laboured to catch the traits of

Italian scenery, life, and character. The consequence of these devoted efforts was, that the connoisseurs in Paris were soon charmed with the fresh and faithful sketches which Robert sent home to the yearly exhibitions in the *salon* of the Louvre. Among others, his "Neapolitan Improvisator," in 1824; his "Madonna dell' Arco," in 1827; and his "Reapers," in 1831, continued to increase his reputation. He had attained the highest place in his own particular walk, and his latest work, "The Fishermen," was exciting great admiration in Paris, when the intelligence arrived that he had committed suicide at Venice in a fit of melancholy on the 20th March 1835.

ROBERTSON, WILLIAM, one of the most eminent of British historians, was born in the manse or parsonage of Borthwick, county of Edinburgh, on the 19th of September 1721. He was the eldest son of the Rev. William Robertson, minister of Borthwick, and of Eleanor, daughter of David Pitcairn, Esq. of Dreghorn. After nineteen years' ministry in the beautiful rural parish of Borthwick, Mr Robertson was appointed one of the ministers of Old Greyfriars church, Edinburgh, and, removing thither with his family, his son William was placed in the university at the early age of twelve. He had previously attended the popular grammar school of Dalkeith, then taught by a Mr Leslie. At the university William Robertson was distinguished for diligent and methodical study. He laid down for himself a strict plan of reading, and inscribed on his earliest note-books the motto *Vita sine litteris mors* ("life without letters is death"),—a remarkable instance of literary ambition in a youth of fourteen. He was also a conspicuous member of a society of his fellow-collegians, who met to cultivate elocution and extempore discussion. In his twentieth year Robertson was licensed to preach; and two years afterwards (1743) he was presented by the Earl of Hopetoun to the living of Gladsmuir, a country parish in Haddingtonshire. The presentation came at a fortunate time; for the same year the historian's parents died, within a few days of each other, of fever, leaving six daughters and one son almost wholly without provision. William removed the family to his manse at Gladsmuir, and renounced all idea of forming any matrimonial connection until he had seen them respectably settled in the world. This result was happily accomplished ere he had completed his thirtieth year; and in 1751 he married his cousin, Miss Nesbit, daughter of one of the ministers of Edinburgh. If we consider that the living of Gladsmuir was not worth more than L.100 per annum, the filial piety and generosity of Robertson in this critical period of his life must be held as constituting a moral claim on the regard and admiration of posterity, scarcely inferior to that of his literary renown. A similar principle of self-sacrifice and duty led him in the second year of his ministry at Gladsmuir to enrol himself in a body of volunteers formed to resist the Jacobite rising of 1745. He soon became known as an able preacher and debater in the church courts, his exertions being strenuously devoted to the maintenance of order and authority. "Having," as Lord Brougham remarks, "a very strong and clear opinion in favour of lay patronage, the great question which divided the Church of Scotland in that day, he assumed the lead of its advocates. At first they formed a small minority of the Assembly; but by degrees, reason, enforced by eloquence, had its course, and he gained ultimately a complete victory over his adversaries." In other words, the moderate party in the church obtained the ascendant, and this they maintained, though often assailed, for about ninety years. During the same time, however, dissent was gaining ground among the people; and at length the popular aversion to lay patronage led to the memorable disruption of 1843. The great merit of Robertson as an ecclesiastical leader was the regularity and order which he established in the church courts, en-

Robertson.

Robertson. forcing the exercise of the judicial power of the church, and investing the proceedings of the General Assembly with an interest and importance which they had never before possessed. He was a man of sagacity, penetration, and address,—active, intrepid, and eloquent,—“designed by nature, as well as formed by study, for a great practical statesman and orator.” These qualities were further displayed at the meetings of the “Select Society,” an association founded in 1754 by Allan Ramsay the painter and some of his friends, with the view of promoting philosophical inquiry, and the improvement of its members in public speaking. Adam Smith, David Hume, Wedderburn (Lord Loughborough), Lord Kames, John Home, Dr Carlyle, and other eminent and accomplished men were members of this society; and its friendly meetings, often terminating in small social supper parties, bound together the *litterati* of Edinburgh, and gave a peculiar freedom and geniality to their intercourse. The evening meal—the Roman banquet—was long a favourite in Edinburgh. Men of study and men of business loved to relax over these familiar and inexpensive meetings; and the late Lord Cockburn has recorded that, “so far as he had seen social life, its brightest sunshine had been on the last repast of the day.” The modern late dinner in some degree occupies its place; but it is more costly, more cumbrous and formal, and infinitely less social and inspiring. Whatever the present generation may have gained in wisdom or in the minor morals of life, the art of conversation has certainly declined amongst us. Before Robertson had become one of the celebrities of the Scottish capital, he had engaged in historical researches, sitting in his quiet manse at Gladsmuir. In October 1753, we find him writing to Lord Hailes for information and books relative to the history of Scotland, as he intended to employ some of the idle time of that winter in making diligent inquiry into the period between the death of King James V. and the death of Queen Mary. In 1755 he published his only printed sermon, a discourse preached before the Society for promoting Christian Knowledge, and entitled *The Situation of the World at the time of Christ's Appearance, and its connection with the Success of his Religion Considered*. The historical bias of the author is thus manifested, and the sermon is as carefully and finely written, and as well reasoned, as any of his subsequent great works. In 1757 Robertson took an active part in defending some of his clerical friends from the persecution raised against them by the high Calvinistic party of the church, on account of Home's tragedy of *Douglas*. That a Presbyterian clergyman should write a play, was held to be a glaring scandal and outrage, and the offence was aggravated by the circumstance, that several of his brother ministers had been present at the representation of the tragedy in Edinburgh. Robertson was not of the number. He had early promised to his father that he would never enter a play-house; and though he rejoiced in the success of his friend's drama, and was delighted with private exhibitions of the genius of Garrick and Henderson, he faithfully kept his promise. Home bent before the clerical storm, by resigning his living at Athelstaneford, and most of the other clergymen having apologised and explained, were sentenced by their various presbyteries to short periods of suspension, or were only subjected to a rebuke. The pleas of alleviation put in by some of the offending ministers are amusingly characteristic. Mr White of Libberton owned the charge, but pleaded that he had gone to the play-house only once, and *endeavoured to conceal himself in a corner to avoid giving offence*. The presbytery suspended him from the 12th of January to the 2d of February. Mr Steel, minister of Stair, urged in extenuation that the play-house was at a great distance from his parish, and he had no reason to apprehend that he would be known! Not one of the ministers dared to justify his conduct in attending the

theatre, and all were much indebted to Robertson for the judgment and eloquence with which he conducted their defence. The incident is both an interesting and important one in the history of the Scottish Church; and it served to bring more prominently into notice the talents and principles of the rising minister of Gladsmuir. He was honoured with the degree of Doctor of Divinity by the university of Edinburgh; and in 1758 was appointed incumbent of Lady Yester's parish in Edinburgh. By this time he had brought his Scottish historical labours to a close, and he repaired to London to make arrangements for the publication of his work. Parts of it, while passing through the press, were shown to influential friends and patrons,—to the Duke of Argyle, Lord Royston, Horace Walpole, and others. The work was thus made the topic of conversation, and the author was enabled to obtain a satisfactory settlement with his publisher, Andrew Millar, who gave L.600 for the copyright. In February 1759 appeared this first great work of Robertson in two quarto volumes, bearing the title of *The History of Scotland during the reigns of Queen Mary and James VI., till his accession to the Crown of England*. The most sanguine anticipations of the author and his friends were realized. Congratulations poured in upon the historian from all quarters. The London authors, he says, were astonished. Mr Doddington, Horace Walpole, Lady Hervey, and the Speaker of the House of Commons (the pompous Onslow), became his sworn friends. Lord Bute thought the work the first history in the English tongue. Lord Chesterfield compared Robertson to Livy. “Lord Lyttelton,” says David Hume, “seems to think that since the time of St Paul there scarce has been a better writer than Dr Robertson.” That want of idiomatic English which is now charged upon the historian was not discovered by the best masters of English of that day. Hume himself, though his own history had been far from successful, and though he was fully conscious of the powers and more popular qualities of his new rival, cordially recommended the work, and exerted himself to procure a good translation of it into French. All parties, political and literary, joined in the loud applause, and church preferment soon followed. Two months after the publication of the history, the office of chaplain of the garrison at Stirling fell vacant, and the historian received the appointment. In 1761 he was made one of the deans of the chapel-royal. In March 1762, on the death of Dr Gowdie, he was chosen principal of the university of Edinburgh and minister of the Old Greyfriars; and in 1764 the sinecure office of historiographer for Scotland was revived in his favour, with a salary of L.200 per annum. The influence and nationality of Lord Bute are no doubt visible in these appointments, but they were all ratified by public opinion. The *History of Scotland*, both for what it did and what it promised, was well worthy of honour and reward. As a narrative, clear, luminous, and picturesque, of a most interesting and complicated portion of history, it has perhaps never been excelled. The style is too uniformly stately and measured, and a few Scotticisms may be detected; but in the delineation of character and the arrangement of incidents,—in moral reflection, acute remark, and sustained dignity of thought, and chaste embellishment, the work must ever rank in the first class of historical compositions, and will ever enchain the attention of the reader. The story of Mary, Queen of Scots, is told with inimitable grace and pathos; and although the views of Robertson have been assailed by eager and determined controversialists, no substantial deviation from the truth of history has been discovered in his work. The investigation of state papers, and the collection of Mary's letters and despatches by Prince Labanoff, have since added to our stock of information; yet they have made no material alteration in the facts or deductions given by the Scottish

Robertson. historian.¹ Hume differs from Robertson in believing that Mary was accessory to the Babington conspiracy, including the intended assassination of Elizabeth; yet even this point is still only a matter of opinion or conjecture. The copy of the letter of Mary, on which the accusation is founded, is generally believed to have been altered from the original, and passages in it to have been interpolated by command of Walsingham, and no new evidence has been adduced. The same remark applies to the case of Mary and Darnley. What was obscure in the last century is obscure still. Ten years elapsed ere Robertson again appeared as an author. It had been suggested to him by the king, through the medium of Lord Bute, that he should undertake a History of England; and in the event of his compliance, every source of information which the government could command would be thrown open to him, with the addition of such a pecuniary provision as would enable him to bestow undivided attention on the work. The historian seems to have at first entertained the project, although declining to sever his connection with the Church of Scotland; but the retirement of Lord Bute and other causes led to the abandonment of the scheme. It is as well for Robertson's fame that he did not come into direct competition with his friend Hume, whose History was completed in 1761. In the most defective portion of Hume's history—the early period—Robertson would have been found equally deficient, in consequence of his ignorance of the northern languages; and though his diligence would have enabled him to avoid some of the palpable errors into which Hume fell, he would probably have entertained similar prejudices as to the Puritans and the Commonwealth, while he could hardly have hoped to excel his contemporary in philosophical analysis or grace of style. He more prudently selected a field still unoccupied; and in 1769 appeared, in three quarto volumes, *The History of the Reign of the Emperor Charles V., with a View of the Progress of Society from the Subversion of the Roman Empire to the beginning of the Sixteenth Century*. For the copyright of the work the historian received L.3600. "The character of Charles," as Dugald Stewart has observed, "was singularly adapted to Dr Robertson's purpose, not only as the ascendant it secured to him in the political world, marks him out indisputably as the principal figure in that illustrious group which then appeared on the theatre of Europe, but as it everywhere displays that deep and sagacious policy, which, by systematizing his counsels and linking together the great events of his reign, inspires a constant interest, if not for the personal fortunes of the man, at least for the magnificent projects of the politician. Nor is the character of Charles, however unamiable, without a certain species of attraction. The reader who is previously acquainted with the last scenes of his enterprising and brilliant life, while he follows him through the splendid

career of his ambition, can scarcely avoid to indulge occasionally those moral sympathies which the contrast awakens, and to borrow from the solitude of the cloister some prophetic touches, to soften the sternness of the warrior and statesman." It may be remarked, however, that the cloister life of Charles, as related by the historian, has been drawn from authorities of little value, and various errors have been pointed out in a recent work expressly devoted to this subject.² In the days of Robertson, minute research and collation of facts were held more subordinate than they are at present to the art of composition, and especially to the production of an interesting and glowing narrative; and the historian's account of Charles fully answered the public expectation, high as that had been raised by his previous History. The first volume of the work contains a view of the progress of society, and is an admirable philosophical dissertation on that important period of the world's history, when, as the author himself observes, "the several powers of Europe were formed into one great political system, in which each took a station, wherein it has since remained with less alteration than could have been expected, after the shocks occasioned by so many internal revolutions and so many foreign wars."

After an interval of eight years, Dr Robertson published, in 1777, his *History of America*, in two volumes quarto. His popularity was still undiminished, and his publisher was glad to secure the work by a payment of L.2400 for the copyright, being in the same proportion as the sum given for the *History of Charles V.* The narrative portion of the *America* contains perhaps the finest passages in all Robertson's works. He has nowhere else shown the same power of picturesque and striking description. His imagination was excited by the great event of Columbus's voyage, the simple majestic character of the adventurous discoverer, and the landing and meeting with the natives, who regarded their new guests "as a superior order of beings, children of the sun, who had descended to visit the earth." The elements of the highest order of poetry are comprised in the incidents and general character of this great discovery of the New World; and Robertson has produced a series of grand historical paintings to which only the writings of Macaulay can furnish a parallel.³ One blemish in Robertson's work has been justly censured by his biographer, Dugald Stewart, though it is unfelt by the reader while carried along by the deep interest of the narrative. We refer to the disposition which the historian has shown to palliate or to veil the enormities of the Spaniards in their American conquests. The acquisition of the New World, it is calculated, was effected by the murder of 10,000,000 of the human species; and the accounts of this enormous carnage are authenticated beyond the possibility of dispute. "Millions died that Cæsar might be great," says the poet;

Robertson.

¹ In one small point, a personal feature of Mary—and the Queen's person is a circumstance not to be disregarded, as Robertson has said, in the history of a female reign—a correction may be noted. The historian states that Mary's hair was *black*; in reality it was *auburn*, inclining to a dark red. The portraits of Mary of Guise have often been mistaken and engraved for those of her daughter Mary, Queen of Scots.

² *The Cloister Life of the Emperor Charles the Fifth*, by William Stirling, London, 1852. Mr Stirling has derived his materials from the *History of the Order of St Jerome*, by Joseph de Siguença, who was born in 1545,—a work of which Robertson does not seem to have heard,—and from MSS. in the archives of the French Foreign Office. Mr Stirling's volume is a curious and valuable contribution to history.

³ Lord Brougham—the grandson of Dr Robertson's sister—has instituted a parallel, or rather contrast, between parts of Robertson's History and parts of Mr Washington Irving's work, *The Life and Voyages of Columbus*. In chaste simplicity of style, combined with dramatic effect, the superiority undoubtedly rests with the Scottish historian. We give one of Lord Brougham's passages of comparison:—"About two hours before midnight, Columbus, standing on the fore-castle, observed a light at a distance, and presently pointed it out to Pedro," &c. Thus Robertson. Irving says:—"Wrapped from observation in the shades of night, he maintained an intense and unrelenting watch, ranging his eye along the dusky horizon. Suddenly about ten o'clock he thought he beheld a light glimmering at a distance." Lord Brougham (who remarks that Robertson had never thought of saying "suddenly," as knowing that light must of necessity be sudden), triumphantly asks, "Can any one doubt which of the two passages is the most striking—the chaste and severe, or the ornamented and gaudy and meretricious? The account of Robertson makes the ships lie-to all night. Irving either makes them lie-to, and afterwards go on sailing rapidly, or the lying-to was the night before, and they sailed quicker the nearer they came to land, and in the dusk. The one makes them only see the shore after dawn; the other makes them see it two leagues off, in a dark night, at two in the morning, within the tropics." (Brougham's *Lives of Men of Letters*, London, 1845, page 296.) This minute verbal criticism is worthy of Johnson. Lord Brougham's own writings would ill stand such a test.

Robertson. and every conqueror from Nimrod to Napoleon has been equally careless of the death, desolation, and misery occasioned by wars of ambition. Robertson should have branded the inhuman excesses of the Spaniards with his eloquent indignation. In his own nature and sentiments he was humane and enlightened; but he appears, like others, to have been captivated and blinded by the romance of his theme, and by the grand poetical enterprise of discovering and securing a new hemisphere. Shortly after the publication of his American history Robertson evinced his sense of justice and his principles of enlightened toleration by supporting the repeal of part of the penal laws against the Roman Catholics, which had been abolished in England, but were still in force in Scotland. The statute conferred no political rights on the Roman Catholics; from these they were debarred until half a century more had elapsed. The Papist, as Robertson said, "had not acquired the privileges of a citizen; he was only restored to the rights of a man." He was rendered capable of inheriting property by succession or conveyance, of transmitting it to others, or of acquiring it by purchase; and the Roman Catholic ecclesiastics who should take upon them the instruction of youth were freed from the dreadful penalty of perpetual imprisonment. This mild relaxation of the persecuting laws was resisted by a large body of the clergy and people of Scotland. Riots took place in Glasgow and Edinburgh; in the latter a house supposed to contain a Popish chapel was burned to the ground, and another house occupied by a Roman Catholic clergyman was destroyed. At night an attack upon the residence of Dr Robertson was meditated, but by that time some troops of dragoons had arrived, and a military party was posted in the college court, which prevented further violence. This disgraceful outburst of fanaticism (which cost the city of Edinburgh a sum of £1650 by way of indemnification) probably hastened the intention of Robertson to retire from public life. He was now verging on his sixtieth year, and incessant study, as well as public business, had impaired the vigour of his robust constitution. His literary labours, however, were not terminated until the year 1791, when he published *An Historical Disquisition concerning the Knowledge which the Ancients had of India*. The perusal of Major Rennell's Memoir for illustrating his map of Hindustan suggested this inquiry, which is marked by the author's wonted diligence in collecting and arranging materials, and by his skill in perspicuous narrative and illustration. The old age of the historian was cheerful and happy. There had been no death in his family. One son had adopted the legal profession (he afterwards rose to be a judge of the Court of Session), and two other sons had entered and distinguished themselves in the army. His eldest daughter was married to Mr Brydone, author of the well-known *Tour through Sicily and Malta*; and at Mr Brydone's residence of Lennel, on the southern border, the historian, we are told, delighted to pass a few weeks of summer or autumn. Later he resided at Grange House, near Edinburgh; and Lord Cockburn, in his *Memorials of his Time*, has given a graphic account of the "Principal," as he was usually styled from his office in the university:—

"Many a happy summer day had his grandson John Russell and I in that house (the Grange). The doctor used to assist us in devising schemes to prevent the escape of our rabbits; and sometimes, but this was rarely, and with strict injunctions to us to observe that moderation which Mrs Robertson could never make himself practise, he permitted us to have a pull at his favourite cherry-tree. He was a pleasant-looking old man, with an eye of great vivacity and intelligence, a large projecting chin, a small hearing-trumpet fastened by a black ribbon to a button-hole of his coat, and a rather large wig, powdered and curled. He struck us boys, even from the side-table, as being evidently fond of a good din-

ner; at which he sat with his chin upon his plate, intent upon the real business of the occasion. This appearance, however, must have been produced partly by his deafness; because when his eye told him that there was something interesting, it was delightful to observe the animation with which he instantly applied his trumpet; when, having caught the scent, he followed it up, and was leader of the pack."

This familiar sketch, like a Dutch painting, brings the domestic scene and its leading figure distinctly before us. Lord Brougham gives a few additional touches. The historian always wore his cocked hat even in the country; he had a stately gait, a slight guttural accent in his speech, which gave it a peculiar fulness; and he retained some old-fashioned modes of address, as using the word "Madam" at full length; and when he drank wine with any woman, adding "My humble service to you." Johnson thought Robertson a poor talker; but the sage of Bolt Court had exaggerated ideas as to the standard of good conversation, which with him was a species of intellectual gladiatorship. By all his familiar friends the historian was esteemed as an agreeable and instructive companion, and Dugald Stewart mentions the "splendid variety of his conversation." Until within a few months of his decease Dr Robertson continued to preach; and his sermons, delivered with the aid only of a few notes, are described as having been at once simple, correct, and impressive. He was no deep evangelical divine, and doubts have even been hazarded as to his orthodoxy, to which his long and intimate friendship with David Hume may have first given rise. That friendship, he said, he always considered as one of the most fortunate and honourable circumstances of his life. "It is a felicity of the age and country in which we live, that men of letters can enter the same walk of science, and go on successfully, without feeling one sentiment of envy or rivalry. In the intercourse between Mr Hume and me (he writes to Gibbon), we always found *something to blame* as well as *something to commend*. I have received frequently very valuable criticisms on my performances from him; and I have sometimes ventured to offer him my strictures on his works. Permit me to hope for the same indulgence from you." The style of Robertson's letters to Gibbon is more open to censure than any uncharitable inference which can be drawn from his intimacy with Hume. His position in the church and in the university demanded that he should at least have remonstrated against the two memorable and insidious chapters in the *Decline and Fall* on the subject of Christianity. But his language to Gibbon is uniformly complimentary; and instead of joining with Lord Hailes and Bishop Watson in denouncing the tone and spirit of the English historian, he speaks of the bigotry and fierce Christianity of parties who opposed him. The explanation is, that Robertson was a man of the world as well as a man of letters. In the former character he was apt to be over-complaisant, and in the latter he regarded literary success as the great business and absorbing pursuit of life. The historian at times overpowered the *divine*. He was also reserved and reticent—an admirer of the school of Stoics. His deepest feelings lay hid from common observation. He would not, like Swift, have read prayers before his stranger guests had risen from their beds, but he would have importuned none of them to be present. There is not, however, a shadow of evidence to prove that Robertson ever disbelieved the faith of his fathers. His pastoral duties were discharged with exemplary care and regularity; and he preserved through life the confidence and regard of several of his brother divines, the most eminent for piety and strictness of Presbyterian doctrine and discipline. The health of Dr Robertson began to fail in the end of the year 1791, when symptoms of jaundice appeared, and a long and lingering illness succeeded. "While he was able to walk

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abroad," says Dugald Stewart, "he commonly passed a part of the day in a small garden, enjoying the simple gratifications it afforded with all his wonted relish. Some who now hear me will long remember, among the trivial yet interesting incidents which marked these last weeks of his memorable life, his daily visits to the fruit-trees (which were then in blossom), and the smile with which he, more than once, contrasted the interest he took in their progress with the event which was to happen before their maturity." He died on the 11th of June 1793, in the seventy-second year of his age. His funeral sermon was preached by his colleague in the church, Dr Erskine, who, though opposed to Robertson in his views of ecclesiastical government and policy, bore ample testimony to the talents and virtues of his friend, and who has left this record of his moral qualities:—"He enjoyed the bounties of Providence without running into riot; was temperate without austerity; condescending and affable without meanness; and in expense neither sordid nor prodigal. He could feel an injury, and yet bridle his passions; was grave, not sullen; steady, not obstinate; friendly, not officious; prudent and cautious, not timid." (R. C.—S.)

ROBERVALLIAN LINES, a name given to certain lines used for the transformation of figures, so called from Roberval, the inventor of them. These lines are the boundaries of lines infinitely extended in length, yet equal to other spaces which are terminated on all sides. It is observed by the Abbé Gallois, that the method of transforming figures, which is explained at the end of Roberval's treatise of Indivisibles, was the same with that afterwards published by James Gregory in his *Geometria Universalis*, and also by Dr Barrow in his *Lectiones Geometricæ*; and that it appears from Torricelli's letter that Roberval was the inventor of this method of transforming figures, by means of certain lines called by Torricelli, for that reason, Robervallian lines. The same author adds that J. Gregory probably first learned this method at Padua in the year 1668; for the method was known in Italy in 1646, although the book was not published till 1692. David Gregory endeavoured to refute this account, in vindication of his uncle James. His answer appeared in the *Philosophical Transactions* for 1694, and Gallois rejoined in the *Memoirs* of the French Academy for 1703; so that it remains in a state of uncertainty to which of the two we are to ascribe the invention.

ROBESPIERRE, FRANÇOIS-MAXIMILIEN-JOSEPH-ISIDORE DE, a political fanatic of the French Revolution, was born in the town of Arras in 1758. His family is reported to have come from Ireland at a very early period, and, according to a plausible conjecture of his biographer G. H. Lewes, the original name was in all probability Spiers. His father was a successful advocate at Arras, who seems to have deserted his four children in infancy, shortly after the death of their mother. Maximilien was the eldest of this household; and at the age of ten or eleven he found himself the guardian of his brother and sisters. Having given marks of ability at the college of Arras, the bishop placed him on the foundation of the college of Louis-le-Grand. Robespierre repaired to Paris in 1770. Here he had for his class-fellows the fierce, vehement, and generous Danton, the witty, prompt, and reckless Desmoulins, afterwards destined to run the same terrible race with himself, and whom by his craft he was to overthrow; besides Fréron, who was one day to become the people's orator. Heedless as yet of Jacobin or Gironde, these generous boys played beneath the dismal college walls, and made the whole region echo to their loud and happy voices. The sunlight was slow to welcome them behind those high, dingy buildings; but could not they dispense with this privilege, when they could illuminate their inclosure with the rosy laughter of health and youth? Robespierre, who was bilious and

melancholy, was more given to study than play. Especially did he devote great attention to the languages and history of Greece and Rome. His master Hérivaux called him "the Roman." After spending eight years at this institution, he commenced the study of jurisprudence at L'Ecole de Droit. Here he led a life of honourable poverty, seclusion, and study, heedless of the aristocracy, who danced there far into the morning, and whose ladies "violated," according to Sydney Smith, "all the common duties of life, and gave very pleasant little suppers;" heedless of the atheists, with their endless jargon about "eternal progress;" heedless, likewise, of the sceptics, with their wild enthusiasm about charity, fraternity, and equality.

The *Contrat Social* of Rousseau (1762) was the bible of the Revolution. Assumed at first as the richer field for displaying "eloquence and philosophy," Rousseau gradually consummated his metaphysical paradox, and appeared in this work as the earnest expounder of a thoroughly earnest creed. Its fundamental idea, that society is a contract made by all for the good of all, is probably the most revolutionary dogma ever enounced. Yet this was the dogma which Robespierre, and thousands with him, embraced with enthusiasm; this was the major premiss which he spent his life in ardently evolving. His was not a circumspect mind; once he had satisfied himself of the truth of his preliminaries, he afterwards held on his course with the most logical and even fatal pertinacity. His term completed, Robespierre returned to Arras, and began practice. In 1783 a landed proprietor had erected a lightning-conductor on his property, much to the scandal of the discreet citizens of Arras. "Deistical philosophy; away with it." Robespierre was chosen the advocate to plead this case; and he had the gratification, when the trial came on, to find himself completely triumphant. This cause tended materially to extend the fame of the young advocate. He was admitted a member of a poetical society called "Les Rosatis;" actually aspired to be a poet, and seems to have fallen (not very desperately) in love. Meanwhile he became a member of the criminal court, an office which he shortly afterwards resigned from opposition to capital punishment; took a very decided part against the clergy and the lords of Artois concerning the Artesian Third Estate; chose rather to lose the friendship of the Bishop of Arras than prove false to Rousseau and his own blind logic. The peasantry already came to him as to the friend of the people. The Tiers-Etat of Artois chose him as their deputy to the States-General. In 1789 he again betook himself to the French capital, and enjoyed the pleasure of beholding the poor, feeble, good-natured king enter the States-General emblazoned in all the splendour of royalty. Robespierre even ventured to make a motion before this assembly of the notables; but who could listen to this obscure individual, with his cracked voice and uncongenial aspect? He had neither the advantages of birth, of genius, or of exterior, to arrest men's notice. His figure was small; his limbs feeble and angular; he walked with an irresolute step; bore himself with affected attitudes and ungraceful gestures; his forehead was small and projecting; his blue eyes were soft, sinister, and sunken; his complexion "sea-green;" and his temperament "atrabiliar." His whole features, like the whole of his mind, converged incessantly on a point. It was on this point, and around this point, that his faculties ceaselessly played; and, as his career subsequently proved, he was ready to sacrifice heaven and earth to his convictions. He was the very embodiment of the Revolution in principles, in passions, and in impulses. The States-General would not at present listen to his shrill logic; but the day was not far distant when its harsh sounds should reach their ears. Meanwhile Robespierre was a royalist, as indeed were the whole of the Assembly. The Third Estate gained its point; the States-General became the National Assembly; and all men ran to

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and fro in the streets of Versailles the whole of the last night of June with shouts and jubilation.

From the date of Robespierre's speech on the declaration of the rights of man we may date his republicanism. Rousseau's philosophy was now beginning to operate; and in pursuing its conclusions, Robespierre found that it carried him quite beyond the bounds which time and circumstance had assigned to royalty. The eagle eye of Mirabeau had already scanned him, and seized upon the ruling element in his character. "He will go far," says Mirabeau, "for he believes all he says."

On the 19th of October the Assembly was transferred from Versailles to Paris; and "Le Club Breton," of which Robespierre was a member, on taking up its abode in the convent of the Jacobins, was henceforth known as the Jacobin Club. Some 1300 chosen patriots, among whom were Barnave, Mirabeau, and the two Lameths, here met to deliberate. This was the theatre on which the peculiar power of Robespierre was subsequently to be displayed. Meanwhile his speeches are by no means striking. His language, unrelieved by any play of fancy, was pedantic and heavy; he was a logician and not an orator; what he said has the merit of consistency, and it hangs well together. He gradually, in his stern advocacy of justice, had constituted himself the protector of the oppressed. His great vanity was immensely flattered by the congratulatory letters which followed his endeavour to do away with the celibacy of the clergy. Speaking of those letters, he remarked to Villiers, "People talk of there being no poets; you see I can make some." This thirst for popular applause was fatal to him. It led him to flatter the mob; it led him to spice his convictions to the taste of his auditory; it led him to cringe when he ought to have ruled, and to deal in adroit enigmas when he should have enlightened. The Jacobin newspapers, those journals that daily bespattered him so thickly with praise, styled him "the incorruptible;" but they forgot that there was even a worse, because a more subtle, corruption than that engendered by the love of gold,—the corruption which consists in not having courage to be true. Robespierre was very frugal, and had scarcely money enough to purchase clothes. When the Assembly decreed a general mourning for the death of Franklin, he was obliged to borrow a black stuff coat, which was so large for him that "it dragged on the ground."

Mirabeau was now dead. A vacancy was left for Robespierre in the Assembly, which he no sooner occupied than he addressed himself to its members in a tone that was new, audacious, and almost imperious. "Here is the essential *instruction* which I lay before the Assembly," was the authoritative language adopted by the timid deputy. Robespierre had now become what Foucoud, in the earlier stages of his career, had sarcastically called him,—"the tribune of the people." On the 10th of May he proposed, and caused to be decreed, that "the members of the present Assembly cannot be elected for the next legislature." Shut out by his own act from the National Assembly, he directed his sole attention to the Jacobin Club. The tribune of the people knew well where the life and strength of the legislature rested,—where the thunders of the populace securely lay. Robespierre is now a rising man, and he must of course walk warily. A curious discussion took place in the National Assembly on the 30th of May regarding the momentous question, the punishment of death, where Robespierre made a very important speech, in which he tried to prove that such an institution was essentially unjust. And let it not be supposed that in so doing he played the hypocrite; it was a serious conviction with him, dating pretty far back. And when such are the patriot's opinions,—nay convictions,—can it be wrong in an assembly to appoint him public accuser? Dupont and Bigot refused office under Robespierre, assigning as their reason that he

was a violent man (*un homme sans mesure*). But is he not an "incorruptible" patriot, firm in his principles, and deaf to all considerations? So reasoned Brissot.

The work of the Constituent Assembly finished, and its successor, the Legislative Assembly, chosen, Robespierre, in the month of October 1791, resolved to improve the interval by a visit to his native town of Arras. His entry was an ovation. Old men with civic crowns, attended by maidens robed in spotless white, and troops of children scattering flowers, stood ready to receive the cortège. Thus rode the proud and bilious patriot into his natal city, from which, not many years ago, he had gone forth an obscure provincial lawyer. On his return to the Jacobin Club, he had a disagreeable quarrel with the Girondins, to whom he, from that hour to the day of their fall, entertained the very strongest dislike. Men began now to be painfully aware of his ambition, and accused him of aspiring to a dictatorship. The 10th of August closed with the dethronement of the king, and the formation of the National Convention. A revolutionary tribunal was formed, and Robespierre was appointed one of the judges. He was not, however, as he has been constantly accused of being, a sharer in the horrors of that fearful massacre. Robespierre was essentially a timid man, and ventured on no occasion to oppose a riot, however he might choose to oppose an idea. All that he can be charged with on that September massacre is, that he withheld his enormous influence with the people to arrest that terrible riot of blood and vengeance. Robespierre could flatter the people to fury; but when it came to action, he skulked out of sight, and allowed Danton to control them. On the 29th of October Louvet hurled his tremendous philippic at the head of Robespierre. "I accuse you," said Louvet, "of having constantly put yourself forward as an object of idolatry; of having suffered yourself to be designated, in your own presence, as the only virtuous man in France who could save the people, and of having said so yourself; I accuse you of having aspired to supreme power," &c. But Robespierre, who had the mob on his side, could as yet afford to smile at such charges, and accordingly his reply was a triumph. "What is virtue," said Camille Desmoulins, "if Robespierre be not its image?"

The poor king, meanwhile, is dragging out his few remaining days in solitary walks about the Temple garden. France loudly demands his trial; and what France really wants, is it to be supposed Robespierre will refuse? On the 21st of January 1793 the head of "the tyrant" accordingly falls; and Robespierre trumpets his own praises loud in the ears of men. Shortly afterwards the Gironde fell; the Committee of Public Salvation was established; and Robespierre was chosen one of the decemvirs. He will now have to act rather than declaim,—to do rather than to criticise. He has now become a minister, almost a dictator; and men are now to see whether he who has theorized so well has any faculty in him for action. "No," he says subsequently, and very significantly, "I was not made to rule; I was made to combat the enemies of the people." Marie Antoinette and Philippe Egalité were among the foremost victims of the Reign of Terror. The guillotine was literally lubricated with human blood. Innocent women, simple boys, and feeble men, all were dragged to satisfy the vehemence of the blood-thirsty populace. Hébert was got rid of at the Commune; Danton, that man of gigantic powers, at the Convention; and Camille Desmoulins had to give over for ever his *Vieux Cordelier*. Robespierre is now master of the Revolution; but were not these last three who have fallen men also popular? Times are becoming rather critical now even for incorruptible patriots. On the 7th of May 1794 Robespierre gained for himself immense applause by his address on the relation between religious and moral ideas and republican principles. With him the idea of "*l'Etre Suprême*" had always been

Robes-
pierre.

Robins. fundamental; and now, on the 8th of June, was transacted that piece of colossal folly, so essentially French, known as the *Fête de l'Etre Suprême*. His part in that feast was very godlike; but it ruined him with the Convention. He became, meanwhile, weary of the Terror, and would have it repealed; but the Convention saw through his policy. Robespierre ceased to frequent their committees, and directed all his efforts towards the Jacobins. The conspiracy of the "Thermidorians," as it was called, meanwhile, made progress; but Robespierre's language was vague, obscure, and ambiguous. He vacillated between secret suspicion and open accusation; his mind was evidently ill at ease; but the question was, how could he evade their wrath? He vehemently declaimed against them at the Convention; but it would not do. Again he strove to obtain a hearing, but to no purpose. The Mountain treated him with contempt, the Girondins with bitter scorn. He yelled till he grew hoarse, when some one called out, "The blood of Danton chokes you!" He shrieked, "President of Assassins! will you let me speak?" But his doom was sealed; they would no longer hear him. The decree for his arrest was voted amid shouts of "*Vive la République!*" He was borne, together with Lebas, St Just, and Couthon, to the Hotel de Ville. Bourdon and Doulac, with gendarmes and soldiers, penetrated during the night to where the prisoners lay, when Meda (so goes the story) levelled his pistol at the tyrant, and shot away the left side of his face. In the afternoon of the following day the prisoners were borne on carts to the Place de la Revolution. Robespierre mounted the ladder with a firm step; down clanked the axe, as was its wont; his head rolled into the basket; and thus, on the 28th of July 1794, in his thirty-fifth year, this singular mystery of a man passed away into eternity.

In 1832 Lapponeiraie published the *Œuvres Choiesies* of Robespierre. Among the numerous biographies and histories which represent the character of this strange being, we may cite the histories of Carlyle, Michelet, Thiers, Mignet, Alison, Louis Blanc, and Lamartine. Probably the most unbiassed account of him will be found in the *Life of Maximilien Robespierre*, by G. H. Lewes, 1849. (J. D.—s.)

ROBINS, BENJAMIN, an ingenious mathematician, was born at Bath in 1707. His parents were Quakers of humble condition, and consequently were unable to give him much instruction; but his own propensity to science having procured him a recommendation to Dr Pemberton in London, he acquired from him the higher parts of mathematical knowledge. He for some time taught mathematics; but not finding it suitable to his taste, he gave it up, and engaged in various interesting and laborious experiments in gunnery. While thus occupied, he was led to consider the mechanical arts that depend on mathematical principles, as the construction of mills, the building of bridges, the draining of fens, the rendering of rivers navigable, and the making of harbours. Fortification much engaged his attention; and he met with opportunities of perfecting himself in this branch of knowledge by viewing the principal strong places of Flanders, in some tours which he made with persons of distinction. Upon his return from one of these excursions, he found the learned amused with Dr Berkeley's work entitled *The Analyst*, in which an attempt was made to explode the method of fluxions. Robins was therefore advised to clear up this subject by giving a distinct account of Sir Isaac Newton's doctrines, so as to obviate all the objections that had been made without naming them. Accordingly he published in 1735 *A Discourse concerning the Nature and Certainty of Sir Isaac Newton's Method of Fluxions*; and, some exceptions being made to his manner of defending Newton, he afterwards wrote two or three additional discourses. In 1738 he defended the same great philosopher against an objection contained in a

note at the end of Baxter's *Matho, sive Cosmotheoria puerilis*; and the following year printed *Remarks on Euler's Treatise of Motion*, on Dr Smith's *System of Optics*, and on Dr Jurin's *Discourse of distinct and indistinct Vision*, annexed to Smith's work. In the meanwhile, Robins did not solely confine himself to mathematical subjects; for in 1739 he published, without his name, three pamphlets on political affairs. Two of them, relating to the convention and negotiation with Spain, were so highly esteemed as to occasion his being employed in a very honourable post; on a committee being appointed to examine into the past conduct of Sir Robert Walpole, he was chosen their secretary.

In 1742 Robins published a small treatise entitled *New Principles of Gunnery*, containing the result of many experiments; and a discourse being published in the *Philosophical Transactions*, in order to invalidate some of his opinions, he thought proper, in an account which he gave of his book in the same *Transactions*, to take notice of those experiments. In consequence of this discussion, several of his Dissertations on the resistance of Air were read, and the experiments exhibited before the Royal Society, for which he was presented by that honourable body with a gold medal.

In 1748 appeared Lord Anson's *Voyage round the World*, which, though Walter's name is in the title, has been generally thought to be the work of Robins. Walter, chaplain on board the Centurion, had brought it down to his departure from Macao for England, when he proposed to print the work by subscription. It was, however, it is said, thought proper that an able judge should review and correct it, and Robins was appointed; when, upon examination, it was resolved that the whole should be rewritten by Robins, and that Walter's papers should only serve as materials. Hence the introduction entire, and many dissertations in the body of the work, it is said, were composed by him, without receiving the least assistance from Walter's manuscript, which chiefly related to the wind and the weather, the currents, courses, bearings, distances, the qualities of the ground on which they anchored, and such particulars as generally fill up a sailor's account. No production of this kind ever met with a more favourable reception; four large impressions were sold within a twelvemonth, and it has been translated into most of the languages of Europe. The fifth edition, printed at London in 1749, was revised and corrected by Robins himself. In the corrigenda and addenda to the first volume of the *Biographia Britannica*, printed in the beginning of the fourth volume of that work, it is, however, stated that Robins was only consulted with respect to the disposition of the drawings, and that he had left England before the book was printed. Whether this be the fact, as it is asserted to be by the widow of Walter, it is not for us to determine.

Robins was soon afterwards desired to compose an apology for the unfortunate affair at Prestonpans. It was prefixed as a preface to *The Report of the Proceedings of the Board of General Officers on their Examination into the conduct of Lieutenant-General Sir John Cope*; and this preface was esteemed a masterpiece in its kind. He afterwards, through the interest of Lord Anson, contributed to the improvements made in the Royal Observatory at Greenwich. Having thus established his reputation, he was appointed engineer-general to the East India Company. He arrived in the East Indies in 1750; but the climate not agreeing with his constitution, he died there the year following.

ROBINS, or Robyns, John, an old English astronomer, was born in Staffordshire about the beginning of the sixteenth century, and was educated at Oxford for the church. His almost unrivalled excellence in "the pleasant

Robins.

Robinson. studies of mathematics and astrology" introduced him in course of time to the favour of royalty itself. Henry VIII. made him canon of his college in 1532, and canon of Windsor in 1543. Queen Mary also appointed him her chaplain, and continued to hold him in great respect till his death in 1558. Robins is now known by several treatises in manuscript. His *De Portentosis Cometis* may be seen in the British Museum; and his *De Culminatione Stellarum Fixarum*, his *De Ortu et Occasu Stellarum Fixarum*, and a part of his *Annotationes Astrologicæ* are preserved in the Bodleian Library. (Wood's *Athenæ Oxonienses*.)

ROBINSON, ROBERT, an eminent minister of the Baptist denomination in the last century, was born at Swaffham in Norfolk, January 8, 1735. His father, Michael Robinson, was an officer in the excise, and led a profligate life. His mother, whose maiden name was Mary Wilkin, was a woman of superior intelligence and piety. In her early days she must have possessed much personal beauty, for her son describes her as "having at ninety the complexion and vivacity proper to seventeen." She endured with exemplary patience her father's harshness and her husband's dissoluteness, and was thrown by both on her own resources to support herself and her family. Robert was her youngest son, and, to use her own words, "grew up a pretty scholar." His parents left Swaffham when he was seven years old, and he had then been learning Latin a year and a half, much to his master's satisfaction, who declared that he never knew a child with such a capacity. At Scarning, their next place of residence, was an endowed grammar school, to which Mary Robinson, by taking in needle-work and keeping a lodging-house (her worthless husband having absconded), was enabled to send her son: among his school-fellows was Thurlow, afterwards lord chancellor. Robert's attainments in classical learning and French were above the average, but unfortunately the mathematics, and even common arithmetic, were not taught. As he had not the means of going to college, or entering a profession, he was apprenticed at the age of fourteen to a hair-dresser in London, who took him without a premium. We are told of him at this time that he was more employed in reading than in working, in hearing noted preachers than in attending customers; but his master treated him with liberality and kindness, and having the sense to perceive that he was fitted for a higher calling, returned his indentures before his apprenticeship expired. He was in the practice of early rising to pursue his studies,—an invaluable habit which he inherited from his mother, who at the age of eighty and upwards rose regularly at four. In later life he injured himself by night studies, and boasted that he was master of the twenty-four hours. Nature, however, resented this infringement of her rights, and his constitution was broken and hastening to decay at the comparatively early age of fifty-four.

Dr Gill among the Dissenters, and Mr Romaine in the Established Church, were his favourite preachers: but he always regarded George Whitefield as his spiritual father, and in the early part of his religious profession ranked himself among his followers. He appears to have entertained the idea of being a preacher when only nineteen, and, in order to acquire fluency of expression, used occasionally to preach for an hour together in his own room to himself. He preached to a numerous auditory in the Tabernacle at Norwich, and at other places in the neighbourhood. After a while, he left the Calvinistic Methodists, and with thirteen other persons formed a congregational church in the parish of St Paul, Norwich, and became their settled pastor. Having renounced Pædobaptism, he was invited to a Baptist congregation at Cambridge in 1759, and, after a trial of two years, became their pastor in the spring of 1761. In a worldly point of view, his prospects were the reverse of flattering. He had not received above ten guineas from his own family for some years; his maternal grandfather had cut him off with a legacy of half-a-guinea; his wife (for he was now a married man) brought him only £100, and his first half-year's salary was under £4. Besides, the congregation, through the misconduct of many of its

former members, had acquired a bad character. "These," he said, Robinson. "would have been insurmountable difficulties to an elder and a wiser man; but he was a boy, and the love of his flock was a million to him." He preached twice, sometimes three times, every Sunday at Cambridge, and during the week at one or other of sixteen villages in the neighbourhood. In a few years a new and commodious meeting-house was erected; members of the university were attracted to it, and attendance at the dissenting chapel became a pleasant lounge for the under-graduates; some of them, however, behaved so indecorously as seriously to annoy the congregation, and on one occasion obliged it to disperse without concluding the service. A memorial was addressed to their tutor, and an acknowledgment was inserted by the chief offender in the newspapers. But a still severer chastisement was inflicted by Robinson himself in "A Lecture on Becoming Behaviour in Religious Assemblies," delivered on Sunday evening, January 10, 1783, and afterwards published. His "speech" on this occasion certainly did not "distil as the dew," but fell on the head of the culprits like a shower of molten lead. Take this sentence as a specimen:—"Should that question, sometimes put up in the schools, be ever put up in a circle of ladies, *Detur vacuum* (is there an empty place in nature?) they would be provoked to answer, *Detur*. It is in the brain of him who behaves ill at divine worship." In 1773 he removed from the village of Hauxton—where, before he left, he had nine children, a wife, and an aged mother to support—to Chesterton, 2 miles from Cambridge. Here he at first hired, and in 1775 purchased a house; gradually he acquired land enough to carry on the business of a farmer and coal-merchant: these purchases he was enabled to make partly by the proceeds of his literary labours, and partly by the generous aid of one or two ardent admirers. He scouted the notion of its being a violation of clerical propriety to engage in secular pursuits:—"Godly boobies," he would say, "too idle many of them to work, too ignorant to give instruction, and too conceited to study, spending all their time in talking and mischief,—are these the men to direct my conduct, to censure my industry?"

Robinson began his literary career at Hauxton by publishing a specimen of a translation of Saurin's Sermons. The first volume appeared in 1775, and was followed by three others. In 1784 a new edition was published, with an additional volume. His *Plea for the Divinity of our Lord Jesus Christ* was very favourably received, and procured the author many compliments from dignitaries in the Establishment. Offers were made to him of preferment in the church, which he modestly but firmly rejected. When asked by Dr Ogden, "Do the dissenters know the worth of the man?" his answer was, "The man knows the worth of the dissenters." In 1774 he published, anonymously, a series of letters entitled *Arcana, or the Principles of the late Petitioners to Parliament for Relief in the matter of Subscription*, which increased his reputation among the Nonconformists. Two smaller works, *The History and Mystery of Good Friday*, and a *Plan of Lectures on Nonconformity*, were widely circulated, and soon passed through several editions. These were followed by a translation of Claude's *Essay on the Composition of a Sermon*, with a clever dissertation, and a body of very curious notes. For this he received £400. Besides various single sermons and pamphlets, he published a volume of *Seventeen Discourses on several Texts of Scripture, addressed to Christian Assemblies in Villages near Cambridge, to which are added Six Morning Exercises*. They are marked by great originality and ingenuity; and if they have not preserved the popularity which they at first obtained, it may perhaps be accounted for by their ambiguousness and vacillation in doctrinal statement, which became a characteristic of the author, and increased to the close of his life. Symptoms of this may be found even in his *Plea*; and it is the opinion of his biographer, that at the time of writing this treatise he was not clear from embarrassment on the very thesis he had undertaken to defend. In 1781 Robinson was requested by a number of the leading Baptists in London to write a history of the denomination, and arrangements were made for his visiting London every month, in order to consult books and manuscripts at the British Museum, of which Dr Gifford, a Baptist minister, was then sub-librarian; but after making the experiment, he found

Robison. that he could carry on his researches more easily at home. From that time to his death he devoted himself to the undertaking with an intensity of application that no doubt shortened his days. In order to acquire information for this and another historical work, he studied Italian, German, Spanish, and Dutch.

His *History of Baptism*, a quarto volume of above 650 pages, was published a few weeks after his death, and one of his last letters refers to a correction of the proof-sheets. His *Ecclesiastical Researches*, a quarto volume of about the same size, was published by subscription (like the former) in 1792.

For some months previous to his death Robinson had been in a declining state, prostrated both in body and mind. On Wednesday, June 2, 1790, he set off from Cherterton on a visit to Dr Priestley, and, travelling by slow stages, arrived in Birmingham on Saturday evening. In a letter to a friend he had said, "On the 9th I proceed forward; on the 19th I hope to be at home." On reaching Birmingham he said to a person who called upon him, "You are only come to see the shadow of Robert Robinson." Yet he ventured to preach for the dissenters' charity schools twice on the Sunday. Dr Priestley was charmed with his conversation, but confessed himself much disappointed with his preaching. "His discourse," Dr Priestley said, "was unconnected and desultory, and his manner of treating the Trinity favoured rather of burlesque than of serious reasoning. He attacked orthodoxy more pointedly and sarcastically than I ever did in my life." He had often expressed a wish "to die softly, suddenly, and alone." On Tuesday the 9th of June, the very day on which he had intended to "proceed forward," he was found dead in his bed, neither his clothes discomposed nor his features distorted.

A collected edition of his miscellaneous works, with a memoir by Mr Benjamin Flower, was published in 4 vols. 8vo in 1807, and a volume of posthumous works, by the same editor, in 1812; and his *Village Sermons* were reprinted in 1805 and 1808. For the facts in this article we are chiefly indebted to George Dyer's *Memoirs of the Life and Writings of Robert Robinson*, London, 1796. In Coleridge's *Notes, Theological, Political, and Miscellaneous*, London, 1853, are some remarks on Robinson's *Plea*, and other treatises (p. 112-126). (J. E. R.)

ROBISON, JOHN, a distinguished professor of natural philosophy, born in 1739 at Boghall, in the parish of Baldernock and county of Stirling, was a younger son of John Robison, Esq., who had formerly been a merchant at Glasgow, and had retired to live in considerable affluence on his estate at Boghall, not far from that city. He was of a family sufficiently respectable to enable his son at a subsequent period to prove himself, to the satisfaction of the court of St Petersburg, a gentleman born. As a younger brother, that son was originally intended for the church, and went at an early age, according to the custom of Scotland in 1750, to enter as a student in the university of Glasgow, so that he was initiated almost in the rudiments of Grecian literature under the able instruction of Dr Moor, the well-known professor of Greek; and he acquired such a knowledge of the classical languages as served to constitute him a correct scholar through life. He pursued his studies with so much attention as to obtain the approbation of his teachers and the admiration of his contemporaries, who were delighted with the originality and ingenuity of his conversation, though he did not himself reflect with perfect satisfaction upon the degree of application which he had exerted in his academical education. He took the degree of Master of Arts in 1756, having studied mathematics under Dr Robert Simson, and moral philosophy under Dr Adam Smith. The example of so correct and rigid a follower of the ancient methods of

demonstration as Dr Simson, must unquestionably have exercised considerable influence on his yet unformed taste in mathematics; but he seems to have had a natural preference, either from the constitution of his mind or from some previously acquired habits of thinking, for the geometrical method; for we are informed that "he first attracted the regard of Dr Simson by owning his dislike of algebra, and by returning a neat geometrical solution of a problem which had been given out to the class in an algebraical form; with this mode of solution the professor was delighted, though the pupil candidly acknowledged that it had been adopted only because he could not solve the problem in the manner required of the class." In the course of his studies he had imbibed an insuperable aversion to the pursuit of his original objects in the church; not certainly from any want of religious feeling, or from a dislike to the kind of life that was intended for him, but probably from some difficulties that had occurred to him respecting particular points of doctrine or of practice. He was therefore compelled to provide himself with some other occupation; and he readily accepted the offer of some of his friends in 1758, to recommend him to Dr Blair, a prebendary of Westminster, who had formed a scheme for sending Prince Edward, the young Duke of York, to complete his professional education at sea, in company with a son of Admiral Knowles; and Robison was to have instructed his royal highness in mathematics and navigation. On his arrival in London, he was much disappointed to find that the expedition had never been seriously intended; and he readily accepted an engagement to attend young Knowles as a private tutor, when he went as a midshipman on board of the *Neptune* of ninety guns, with Admiral Saunders, who had the command of a force intended to co-operate with General Wolfe in the reduction of Quebec; and upon the appointment of his friend as a lieutenant on board of the *Royal William*, Robison was himself rated as a midshipman in that ship.

The fleet arrived on the coast of America in April 1759; in May they got up the river, and Robison was one of a party of 100 seamen draughted from the *Royal William* into the admiral's ship, under the command of Lieutenant Knowles. In this capacity he had an opportunity of seeing considerable service, and of making some surveys of the river and of the neighbouring country; an employment for which he was perfectly qualified, both as a geometrician and a draughtsman. He also remarked the effect of the aurora borealis on the compass, which had been noticed by Marian and Wargentin some years before, but which was then not commonly known. After the battle which was signalized by the victory and death of the gallant Wolfe, the *Royal William* sailed with his body to Europe, and arrived at Spithead in November. The next year she was sent to cruise off Cape Finisterre; but in six months she was obliged to return home, from having the greater part of the men disabled by the scurvy. He used to consider the two years that he spent on board of the *Royal William* as the happiest of his life; and no inconsiderable part of his gratification was derived from the study of seamanship as he saw it practised under the auspices of Captain Hugh Pigot. He did not, however, acquire any firm attachment to the mode of life which he had temporarily adopted; he was rather disposed to resume his academical pursuits, and he had overcome his earlier objections to the ecclesiastical profession. He could not, however, refuse the kindly invitation of Admiral Knowles to come and live with him in the country, and to assist him in some important experiments which he was making upon mechanical and nautical subjects. In the month of February 1762 Lieutenant Knowles was appointed to the *Peregrine* sloop of twenty guns, and Robison accompanied him with the hope of be-

Robison.

Robison. coming a purser. He visited Lisbon and several other parts of Portugal; but he found a cruise in a small ship much less convenient and agreeable than in a large one; and, fortunately for himself and for mankind, he finally quitted the *Peregrine* and the naval service in June, and returned to live with Admiral Knowles, who soon after recommended him as a proper person to take charge of Harrison's time-keeper, which had been completed by the labour of thirty-five years, after many unsuccessful experiments, and which was now sent out by desire of the Board of Longitude to the West Indies, under the care of young Harrison and of Robison. The rate of the chronometer was ascertained at Portsmouth the 6th of November 1762, and it indicated at Port Royal, in Jamaica, a difference of time amounting to $5^h 2^m 47^s$, which is only four seconds less than the true longitude. After a few days, the observers had a prompt opportunity of returning home by the *Merlin* sloop, which was sent to Europe with dispatches. The voyage was most disastrous with respect to wind and weather, and at last the ship took fire; but she arrived safe at Portsmouth in March, and on the 2d of April the watch gave $11^h 58^m 61\frac{1}{2}^s$, instead of 12^h , for the time of mean noon; so that the error, after six months, was only $1^m 53\frac{1}{2}^s$, amounting to no more than about 20 miles of distance. Robison received, upon his return, the afflicting intelligence of the total loss of the *Peregrine*, which had foundered at sea, with her commander and the whole of the ship's company. He was also greatly disappointed in the failure of some hopes which had been held out to him from the Admiralty and the Board of Longitude; though in fact there is little reason for the public to regret that he was not gratified with the purser-ship which he claimed as the reward of his services. He was indeed afterwards actually made a purser by Lord Sandwich, in 1763; but he then declined accepting the appointment. His biographers very naturally complain of the neglect of those boards which ought to have recompensed him; but certainly the Board of Longitude had no power whatever, and probably not much influence, in the appointment of a purser; and, after all, the delay of a year or two was nothing very uncommon in the navy.

He had now no other resource than to return to Glasgow, and to resume his academical pursuits with renewed energy. It was from this time that he dated his serious application to his studies. He became extremely intimate with Dr Reid and Dr Alexander Wilson; and he had the advantage of being a witness of two of the greatest steps in the improvement of physical science that have been made in modern times, Dr Black's experimental theory of heat, and Watt's invention of a new steam-engine. Dr Black was the first that determined the quantity of heat required for the conversion of ice into water: Watt, who was settled as a mathematical instrument-maker at Glasgow, had been employed in repairing a working model of Newcomen's engine for one of the professors of the university; and it was the difficulty of supplying this model with steam that suggested to Watt the eligibility of having a separate condenser, and that led him, in conjunction with Dr Black, to a knowledge of the quantity of heat consumed in evaporation. Amid the enthusiasm which is always inspired by the progress of scientific discovery and of practical improvement, Robison found every encouragement and every facility for the pursuit of his favourite objects. He was recommended by Dr Black, upon his removal to Edinburgh in 1766, as his successor in the lectureship of chemistry, though without the appointment of a professor. He took charge also of the education of Mr Macdowall of Garthland, and of Mr Charles Knowles, afterwards Sir Charles. Admiral Knowles was soon after recommended by the British government to the Empress of Russia, in order to effect a reformation in her navy, having been employed on

a similar service in Portugal almost fifty years before: he had always been a firm friend to Robison, and now engaged him on this mission, with a salary of L.250 a year; and they proceeded together to St Petersburg in December 1770. Being hospitably entertained on their way by the Prince-Bishop of Liege, whom they found to constitute, with his chapter and all his servants, a lodge of freemasons, Robison was easily persuaded to become one of that fraternity: in a few days he was made an apprentice, and by degrees obtained the rank of Scottish master, as he has himself related in his publication upon the subject. He continued nearly two years at St Petersburg, still acting in the capacity of private secretary to Sir Charles, who was appointed president of the Board of Admiralty, much to the advantage of the Russian navy, though his improvements were frequently retarded by the prejudices of the native officers. Robison was then appointed inspector-general of the corps of marine cadets at Cronstadt, with a double salary, and with the rank of lieutenant-colonel. His duty was to receive the report of about forty teachers and professors respecting the studies of 400 young noblemen who were their pupils, and to class them according to his judgment of their merits; but he had himself nothing to teach, nor could he have had much occasion for "lecturing fluently in the Russian language," though he was introduced by his friend Kutusoff to the Grand Duke Paul as a proficient in that language; but to the empress he was not personally known. At Petersburg he could have lived without regretting his country in the society of such men as Euler and Alpinus, admired by the Russians, and beloved by the British; but Cronstadt in winter was deplorably melancholy; and in 1773 he was induced, without much difficulty, to make some little pecuniary sacrifice in accepting the professorship of natural philosophy at Edinburgh, which had become vacant by the death of Dr Russell, and to which he had been recommended by Dr Robertson, then principal of the university. His determination was not disapproved by the Russian government, who granted him a pension of about L.80 a year for life; but it was only paid as long as three or four young men, who had accompanied him as pupils, continued to reside at Edinburgh; some discontent having been expressed because he did not keep up a correspondence with the academy on the improvement of maritime education.

He arrived at Edinburgh in September 1774. He married soon afterwards, and continued to reside in that city for the remaining thirty years of his life; paying only an annual visit to his native place, where he possessed a part of the paternal estate; not being solicitous to extend it, although "he did not diminish it otherwise than as it had been diminished before," that is, in making provision for younger children. His predecessor had been very judicious and successful as a lecturer, though not a mathematician of the highest order: he had himself more practical knowledge and experience in mechanics, and was better acquainted with the foreign mathematicians, who had naturally fallen under his notice during his residence on the Continent. His lectures were considered by most of his pupils as somewhat too difficult to be followed; a complaint which, if it did not depend on their own want of preparatory information, arose perhaps rather more from the hasty manner of his enunciation than from the abstruseness of his matter. "The singular facility of his own apprehension," says Professor Playfair, "made him judge too favourably of the same power in others. To understand his lectures completely was, on account of the rapidity and the uniform flow of his discourse, not a very easy task, even for men tolerably familiar with the subject. On this account, his lectures were less popular than might have been expected from such a combination of talents as the author of them possessed." This inconvenience was increased

Robison.

"by the small number of experiments he introduced, and a view that he took of natural philosophy, which left but a very subordinate place for them to occupy. An experiment, he would very truly observe, does not establish a general proposition, and never can do more than prove a particular fact;" but he seems to have carried this principle to some little excess; it is, in fact, the *illustration*, and not the *proof*, of general principles that is the object of a public exhibition of experiments; and it is very doubtful whether Archimedes, or Newton, or Leibnitz, or Euler, would have been very successful as *showmen*. With respect, however, to "accuracy of definition, to clearness, brevity, and elegance of demonstration, and even to neatness and precision in experiments," Professor Robison was very successful; his course extended "to every branch of physics and of mixed mathematics," and entered so fully into the detail of each particular division of the subjects, that "a more perfect system of academical instruction is not easily to be imagined." Nothing, in short, was wanting, but so much previous knowledge of mathematics in his pupils as he thought he had a right to expect, though his expectations were too rarely fulfilled. The Philosophical Society of Edinburgh had almost been suffered to sink into oblivion after the publication of the third volume of its Essays, in 1756. Professor Robison became a member of it soon after his return from Russia, and was chosen secretary of the new society upon its formation by royal charter in 1783, when it incorporated with itself the whole of the surviving members of the former society. In 1798 he received the compliment of a degree of Doctor of Laws from the university of New Jersey; and a similar honour was paid him at Glasgow the year after. In 1800 he was elected, as successor to Dr Black, on the list of the foreign members of the Royal Academy of Sciences of St Petersburg.

In 1785 he was attacked by a severe disorder, from which he was never afterwards wholly free, though it produced little inconvenience besides pain, with some depression of spirits, which was, however, attributed rather to the closeness of his application than to the immediate effect of the disease, which was a glandular induration. For many years he was obliged to obtain the assistance of substitutes in the delivery of his lectures; but towards the end of his life he was able again to perform the duties of the professorship in person. He continued his literary labours with little intermission, and was most happy in the care and attention of his wife and children, whose virtues he found the best alleviation of his sufferings. He took a slight cold, after giving a lecture, on the 28th of January 1805, and died on the 30th.

1. It was comparatively late in life that Professor Robison assumed the character of an author, having communicated to the Royal Society of Edinburgh, in 1786, a paper on the Determination of the Orbit and Motion of the Georgium Sidus, which was published in the *Edinburgh Transactions*, vol. i. He had observed the opposition of the planet with an equatorial telescope only, and he had computed the elements of its orbit with greater accuracy than any other astronomer had then done; although his suspicion of the effect of such a planet on the motions of Jupiter and Saturn has not been confirmed by later investigations, the irregularities of these planets, on the contrary, having been otherwise explained.

2. A second paper, published in the same collection, vol. ii., p. 82, relates to the Motion of Light, as affected by refracting or reflecting substances which are themselves in motion. The author corrects some errors of Boscovich, who had miscalculated the effect of a water-telescope: but he seems to agree with Dr Wilson in the suggestion of another experiment of a similar nature, which, to say the least, is wholly superfluous.

3. The most important, beyond all comparison, of Professor Robison's scientific publications, are the articles which he communicated from time to time to the third edition of the *Encyclopædia Britannica*, and to its Supplement. It was under the care of Mr

Colin Macfarquhar that the first twelve volumes of the third edition of this work were published; and upon his death, in 1793, the task of continuing it was committed to Dr Gleig, to whom Professor Robison became a most essential co-operator, and from that time "the work ceased to be a mere compilation." The first of his contributions, according to Professor Playfair, was the article OPTICS, but it is probable he only revised and enlarged that article: it was followed by PHILOSOPHY,¹ which he wrote jointly with Dr Gleig; by PHYSICS, PNEUMATICS, PRECESSION, PROJECTILES, PUMPS, RESISTANCE, RIVERS, ROOF, ROPE-MAKING, ROTATION, SEAMANSHIP, SIGNAL, SOUND, SPECIFIC GRAVITY, STATICS, STEAM, STEAM-ENGINE, STEELYARD, STRENGTH, TELESCOPE, TIDE, TRUMPET, VARIATION, and WATER-WORKS; and in the Supplement, by ARCH, ASTRONOMY, BOSCOVICH, CARPENTRY, CENTRE, DYNAMICS, ELECTRICITY, IMPULSION, INVOLUTION, MACHINERY, MAGNETISM, MECHANICS, PERCUSSION, PIANO-FORTE, POSITION, TEMPERAMENT, THUNDER, TRUMPET, TSCHIRNHAUS, and WATCH-WORK. Notwithstanding some degree of prolixity and want of arrangement, which could scarcely be avoided, in the preparation of original articles for such a mode of publication, the whole of them, taken together, undeniably exhibit a more complete view of the modern improvements of physical science than had ever before been in the possession of the British public; and display such a combination of acquired knowledge with original power of reasoning as has fallen to the lot of a few only of the most favoured of mankind.

4. It is not altogether with so high approbation that his friends and his biographers have mentioned a work, of a nature rather political than philosophical, entitled *Proofs of a Conspiracy against all the Religions and Governments of Europe* (Edin. 1797, 8vo), though it went through several editions. The principal part of the book consists of the history of the *Illuminati* and the German Union, whom he considers as having become the chief agents in a plot first formed by the freemasons, at the suggestion of some ex-Jesuit, who proposed for their model the internal economy of the order which he had quitted; and whatever foundation this outline may have had in truth, there is no doubt that the manner in which Professor Robison has filled it up betrays a degree of credulity extremely remarkable in a person used to calm reasoning and philosophical demonstration: for example, in the admission of a story told by an anonymous German author, that the minister Turgot was the protector of a society that met at Baron d'Holbach's, for the purpose of examining the brains of *living children*, in order to discover the principle of vitality. He does not accuse the English freemasons of having participated in the conspiracy; but he considers the continental lodges as having been universally implicated in it.

5. After the death of Dr Black, in 1799, he undertook to superintend the publication of his *Lectures on Chemistry*, which appeared in 1803, 2 vols. 4to. And this task, which was rather laborious than difficult, he executed with equal zeal and ability. He endeavoured to reduce to their just estimate the comparative pretensions of the French and British chemists, though he is somewhat puritanically severe in criticising the literal meaning of the compliments paid to Black by Lavoisier, on which he founds a charge of insincerity.

6. His last publication was the first volume of a series which was to form a complete system, entitled *Elements of Mechanical Philosophy*, Edin. 1804, 8vo. It comprehended only Dynamics and Astronomy, and it never became very popular: it was too difficult for the many, who wished for general and philosophical notions only, and not sufficiently precise and demonstrative for the few, who wanted practical and numerical results. In attempting to combine the separate merits of the *Exposition du Système du Monde* and of the *Mécanique Céleste*, the author sacrificed both the popular simplicity of the former and the mathematical perfection of the latter. A few inaccuracies, which ought not to escape the attention of the reader of the work, were pointed out in the *Imperial Review* for March 1805, a journal long since discontinued.

7. The contents of the volume last mentioned, together with some manuscripts intended to have formed part of a second, and the greater part of the articles furnished by Professor Robison to the *Encyclopædia*, were collected into a *System of Mechanical Philosophy*, with Notes, by David Brewster, LL.D. (now Sir David Brewster), Edin. 1822, 4 vols. 8vo,—a spirited bookseller in London having undertaken the risk of the publication.

"Although Dr Robison's name," says Dr (now Sir David) Brewster in his preface, "cannot be associated with the great discoveries of the century which he adorned, yet the memory of his talents and his virtues will be long cherished by his country. Im-

¹ It is scarcely necessary to observe that, in the present edition (the eighth), a considerable number of those articles have been rewritten, owing mainly to the advanced state of the several sciences since Professor Robison's day.—Ed.

Robison.

Robson.

bued with the genuine spirit of the philosophy which he taught, he was one of the warmest patrons of genius wherever it was found. His mind was nobly elevated above the mean jealousies of rival ambition, and his love of science and of justice was too ardent to allow him either to depreciate the labours of others, or to transfer them to himself. To these great qualities as a philosopher Dr Robson added all the more estimable endowments of domestic and of social life. His friendship was at all times generous and sincere. His piety was ardent and unostentatious. His patriotism was of the most pure and exalted character; and like the immortal Newton, whose memory he cherished with a peculiar reverence, he was pre-eminently entitled to the high distinction of a Christian, patriot, and philosopher." His person was handsome and his physiognomy prepossessing; and he appears to have been endowed with an extraordinary combination of talents, even exclusively of those which were called into immediate activity in his professional pursuits, for he was a good linguist, an excellent draughtsman, and an accomplished musician. His conversation was always energetic and interesting, and sometimes even poetical; and his liberality of sentiment was only limited by his regard for what he considered as the best interests of mankind.

A short account of his life was published in 1802 by a contributor to the *Philosophical Magazine*, who, among other inaccuracies, asserted that Robson was an admirer of the algebraical form of representation in preference to the geometrical. His friend Dr Gleig soon after stepped forward to correct these mistakes, in the *Anti-Jacobin Review* for 1802, and his letter was copied into the *Philosophical Magazine*. He asserts, from his own knowledge, that even yet Professor Robson "delights much more in geometry than in any of the modes of algebra, assigning as the reason of his preference, that in the longest demonstration the geometrician has always clear and adequate ideas, which the most expert algebraist can very seldom have." It may perhaps be asserted, on the other hand, that the same reasoning would lead us always to employ actual multiplication or division in preference to the use of logarithms or of a sliding rule, and that the whole of the magic of calculation depends on the abstraction of the results from the numerous and separately unimportant steps by which they are obtained; but the having once seen those steps clearly is certainly of great importance to the process of reasoning, even when the memory no longer retains them; and no mathematician of correct taste can study the ancient geometricians without admiring the elegance and precision of their method, even amidst the pedantry which too frequently envelopes their expressions, and without being grateful for their punctuality in collecting their results into the very convenient form of distinct propositions, and in making such references from each proposition to the foundations on which it depends, as to enable him readily to trace back their steps to the most elementary principles; which is scarcely possible in any of the works of the most modern school of analysis. Professor Robson, however, seems rarely to have cultivated the higher mathematics for their own sake only, or any further than as they could be applied to the study of the phenomena of nature, or to the practice of the combinations of art; in fact, without some such limitation, there would be no track to guide us in the pathless regions of quantity and number, and their endless relations and functions. But besides the utility of the pure mathematics as a branch of early education, in exercising and fortifying the powers of the mind, it is impossible to foresee with certainty *how much* of mathematics may be wanted by the natural philosopher in any given investigation; and Professor Robson, as well as many others of his countrymen, would certainly have been the better for the possession of a little more, as the author of the criticisms in the *Imperial Review* has already had occasion to remark.

(*Philosophical Magazine*, xiii.; Dr Gleig, in *Anti-Jacobin Magazine*, xi., 1802; Stark's *Biographia Scotica*; Aikin's *General Biography*, viii., Lond. 1813, 4to; Playfair, in *Edin. Trans.* vii., 1815, p. 495; Chalmers's *Biographical Dictionary*, xxv., Lond. 1816, 8vo.)

(T. Y.)

ROBSON, GEORGE FENNEL, an eminent landscape-painter in water-colours, who was born at Durham in 1790, was a great devotee of his art. From the artists who came to sketch in the neighbourhood of his native town he picked up a knowledge of drawing. With five pounds in his pocket, he then set out to try his fortune in London. There his pencil was plied assiduously, until he had scraped together a sum sufficient to enable him to gratify his long-cherished desire of travelling. Making a tour through the United Kingdom, he explored with enthusiasm the Highlands of Scotland, the mountains in the north of England, and the lakes of Killarney. Every striking piece of

scenery was lingered over; every aspect of nature was copied; and he returned to London with his sketch-book rich in materials for future use. Robson now began to be very successful in his profession. His pictures, though numerous, readily found purchasers. Some of his works, such as "The View of London from the Bridge," "The City of Durham," and "Outlines of the Grampian Mountains," brought his name into note. He died in 1833, much regretted by the public at large. Robson was the artist of the illustrations in Britton's *English Cities*, and of "Landscape Illustrations of the Waverley Novels." (See Bryan's *Painters and Engravers*.)

ROCHDALE, a parliamentary borough and market-town of England, in the county of Lancaster, in a beautiful valley on the Roch, here crossed by five bridges, 10 miles N.N.E. of Manchester, and 200 N.W. by N. of London. It stands on both sides of the river, and has been recently very much improved. Most of the houses are built of brick, and roofed with stone instead of slate; but some are of freestone quarried in the vicinity. In the principal street, which is broad, and, like most of the others, well paved, stand the market-house and town-hall, the latter a neat edifice, serving also as a news-room. On a height, approached by a flight of 126 steps, stands the parish church, an ancient building in the Norman and early English styles. It has a square embattled tower, several richly-carved windows, an ancient font, and some interesting tombs. The plain brick church of St Mary was built in 1740, and that of St James in 1814. Other places of worship there are, belonging to Roman Catholics; Independents; Baptists; Wesleyan, Association, and Primitive Methodists; Quakers; Unitarians, and others. To most of these Sunday schools, largely attended, are attached. The grammar school of Rochdale, founded in 1564, had only nine pupils in 1854. The school-house has recently been rebuilt in the Elizabethan style. A large national school, two endowed schools, and others, are among the educational establishments of the town. A literary institute, an Athenæum, a people's institute, with libraries and reading-rooms, also contribute to the diffusion of knowledge among the inhabitants; and the relief of the poor is provided for by a dispensary, poor-house, and other charitable institutions. It is chiefly, however, for its industrial importance that the town is remarkable. Woollen and cotton goods, especially the former, form the staple of the manufactures. Baize, flannel, friezes, and blankets, are the principal kinds of woollen, and strong calico the most important among the cotton fabrics made here. Hat-making and cotton-yarn spinning furnish employment to a great number of the people. Rochdale has also iron and brass foundries and machine-works. In most of the factories steam-power is employed. Within the bounds of the parish there are coal-pits, iron-mines, and quarries of sandstone, &c. Two markets are held weekly, one for manufactures and other articles, and the other for provisions; and there are fairs three times a year. The trade of the town is facilitated by the Rochdale Canal, which passes at a short distance from it, and unites the Duke of Bridgewater's canal at Manchester with the waters of the Calder and Ribble near Halifax. It is 33 miles long, and was constructed at a great cost, and opened in 1804. The railway between Manchester and Leeds has a station here. The borough was not represented in Parliament before the Reform Act of 1832, but it now returns one member. It is governed by the magistrates of the county, and has a county court and a convenient jail. Rochdale is a place of much antiquity, as even under the Romans there was a station in the neighbourhood; but the history of the town presents few events of importance. In the reign of Edward III. the woollen manufacture was introduced by some Flemish emigrants; and Rochdale acquired a celebrity for such articles,

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which it retained in the time of Elizabeth. As early as 1610 there were five fulling-mills in the parish. The beautiful manor of Rochdale, near the town, was long the property of the Byron family, but was sold by the poet. Pop. of the borough (1851) 29,195.

ROCHEFORT-SUR-MER, a town of France, capital of an arrondissement in the department of Charente-Inférieure, situated partly on a hill and partly on a marshy plain, on the right bank of the Charente, 9 miles above its mouth, and 20 miles S.E. of La Rochelle. In form it is semicircular, inclosed towards the land by ramparts. It is altogether modern. The streets are broad and regular, many of them planted with rows of trees; and the houses, though low, are in general very handsome. The principal streets meet in the Place d'Armes, a regular square, in the centre, adorned with a fountain and with trees. The most conspicuous edifice is the large naval hospital, on a height outside of the town. Rochefort derives its chief importance from its naval arsenal, which is considered the third of its kind in France. Dockyards, sail-shops, rope-works, biscuit manufactories, storehouses, naval schools, and other establishments connected with maritime affairs, are to be seen here. The harbour is capacious, and deep enough for the largest vessels: it is divided into two parts, for merchantmen and men-of-war respectively. The roadstead is large, and well sheltered by the islands of Ré, Oleron, and Aix. Besides the fortifications of the town, there are five forts to guard the mouth of the river. The town contains a college, courts of law, and a large convict prison. Ship-building is the principal branch of industry here; but there are also sugar and vinegar works. An active trade is carried on in the produce of the adjacent country and colonial goods. Rochefort was made a naval station by Louis XIV. in 1666. It was here that Napoleon, in 1815, gave himself up to Captain Maitland of the Bellerophon, after a vain attempt to escape to America. Pop. (1856) 21,372.

ROCHEFOUCAULD, FRANÇOIS, Duc de la, Prince of Marsillac, governor of Poitou, was born in 1613. He was the son of Francis, the first Duke of Rochefoucauld, and was distinguished equally by his courage and his wit. These shining qualities endeared him to all the nobility at court, who were ambitious of decorating themselves at once with the laurels of Mars and of Apollo. He wrote two excellent works: the one a book of *Maxims*, which Voltaire says has contributed more than anything else to form the taste of the French nation; and the other, *Memoires de la Regence d'Anne d'Autriche*. It was partly at the instigation of the beautiful Duchess de Longueville, to whom he had long been attached, that the Duc de Rochefoucauld engaged in the civil war, in which he signalized himself, particularly at the battle of St Antoine. After the civil wars were ended, he thought of nothing but enjoying the calm pleasure of friendship and literature. His house became the rendezvous of every person of genius in Paris and Versailles. Racine, Boileau, Savigné, and Lafayette found in his conversation charms which they sought for in vain elsewhere. He was not, however, with all his elegance and genius, a member of the French Academy. The necessity of making a public speech on the day of his reception was the only cause that he did not claim admittance. This nobleman, with all the courage he had displayed upon various critical occasions, and with his superiority of birth and understanding over the common run of men, did not think himself capable of facing an audience to utter only four lines in public, without being out of countenance. He died at Paris in 1680, aged sixty-eight, leaving behind him a character which has been variously drawn by those who during his life were proud of his friendship.

Rochefoucauld's *Memoirs of the Regency of Queen Anne of Austria* are written with much elegance and spirit, displaying a faithful picture of that stormy time, in which the

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painter was himself one of the leading actors. In his *Reflections and Maxims* he lays it down as an absolute rule, that all the actions of men are under the guidance of self-love or of self-interest. This self-love, vanity, or pride, he maintains to be the poison with which universal humanity is tainted, and which it is impossible for man to remove by all the efforts of his reason. Such being Rochefoucauld's view of human nature, it need not be wondered at that the tone of his book does not rise, in any case, beyond the grovelling speculation with which he sets out. This theory perpetually clings to it; and despite its very great claims upon our attention as a book written with singular elegance, it will be more or less regarded by all thinking men more as a satire upon human nature, than as a book calculated to make men better. A very good and very perfect edition of the *Maxims* is that of Gabriel Brotier, Paris, 1789; there is likewise a more recent one by Aimé Martin, 1822. The *Œuvres* of Rochefoucauld were published in 1818, with a notice of his life and works by Depping; and another edition in 1825, with a biographical and literary notice by his relation the Count Gaetan de la Rochefoucauld. The *Maxims* have been frequently translated into English.

ROCHELLE, LA, a town of France, capital of the department of Charente-Inférieure, on the north shore of an inlet of the sea, 295 miles W. by N. of Paris. It is encircled by fortifications, and entered by seven gates. Its broad, straight streets are lined with buildings, which, though not lofty, are generally good. The most of the town is built round the harbour, which is bordered with an elegant quay shaded by rows of trees. The town-hall is a fine building in the *renaissance* style of the time of Francis I.; the cathedral, exchange, court-house, and public library are among the ornaments of the town. Many of the squares and public walks are exceedingly beautiful. La Rochelle contains several schools, hospitals, a botanic garden, mint, arsenals, &c. The manufactories of the place include potteries, glass-works, ship-building yards, sugar refineries, and cotton factories. The harbour is very safe, and admits vessels of 400 or 500 tons. An extensive trade is carried on in wine, brandy, oil, salt, timber, iron, colonial produce, &c. The town of Rochelle is ancient; but no remarkable event is connected with its history till the time of the Reformation. Before 1372, it had been alternately possessed by the French and English; but was finally secured for the former in that year by Du Guesclin. In 1557 the Huguenots obtained possession of La Rochelle, and retained it for seventy-two years, defending themselves against a siege in 1572, and only surrendering on honourable terms in 1629, after a blockade of fourteen months. The mole constructed by Richelieu to close up the harbour on that occasion may still be seen at low water. Pop. (1856) 14,157.

ROCHESTER, a market-town and municipal and parliamentary borough of England, in the county of Kent, on the right bank of the Medway, 8 miles N. of Maidstone, and 29 E.S.E. of London. It forms almost a continuous town with Chatham and Brompton on the E., and Stroud, across the river, on the W. The streets are generally irregular; the principal one, forming part of the London and Dover road, extends from Chatham to the bridge over the Medway, at the W. end of the town, a length of more than 2 miles. The most of the houses are ancient in appearance; many of them are built of wood, with the gables turned to the street. In the outskirts, however, and along the banks of the river, stand many fine new houses and neat villas. The principal building is the cathedral, built by Bishop Gundulph in the eleventh century, on the site of a more ancient edifice, said to have been founded in 604. It has a nave and aisles; a choir, raised above the level of the nave; two transepts, the larger at the junction of the nave and choir, and the smaller at the east end of the latter. Its dimensions are as follows:—Length of the nave, 150 feet; breadth, with

Rochester. aisles, 66 feet; length of the choir, 156 feet; total length of the church, 306 feet; of the larger transept, 122 feet; of the smaller, 90 feet. A tower, built in 1825, rises from the centre; one, now in ruins, called Gundulph's Tower, from the north side of the choir, near the principal transept; and two others dissimilar in appearance, flank the doorway at the west end. This front was formerly adorned with other two towers at its extremities. The style of the building is partly Norman and partly early English; on the exterior it does not present a very imposing aspect, but the interior has been recently repaired with great taste. The monuments that it contains are more distinguished for singularity than for beauty. Underneath, in a large crypt, the ruined chapter-house has been replaced by a mean building serving the purpose of the former, and also containing a library. Rochester has two parish churches, one in the perpendicular, and another in a mixed style. There are also places of worship for Wesleyans, Independents, Quakers, and Jews. At the south-east of the town the ancient castle towers above the waters of the Medway. It has long been in a state of decay; the outer walls, which inclosed a large area, are in ruins, but the strong massive keep still rises in the centre to the height of 104 feet, with turrets 12 feet higher at each corner. This is considered one of the best extant specimens of Norman military architecture. Another fine building in Rochester is the brick town-hall, with its Doric portico in front. There is also a jail, theatre, assembly-rooms, &c. The cathedral grammar school, founded in 1542, has four exhibitions at Oxford and Cambridge, and contained 62 scholars in 1854. A free mathematical school, with 47 scholars in the same year; national and British schools, also provide for the education of the people. The charitable institutions include a dispensary, alms-houses, and a charity for poor travellers. Rochester has no manufactures, if we except a small amount of ship-building; but many of the inhabitants are employed in the dockyards and other establishments at Chatham. Oyster fishing is carried on; and there is some trade, chiefly in coal, by means of coasting vessels. The number of sailing-vessels registered at the port, December 31, 1857, was 415, tonnage 19,086; of steamers, number 5, tonnage 228. The number of sailing-vessels that entered in that year was 213, tonnage 27,748; of steamers, number 117, tonnage, 18,544; of those that cleared 70 sailing-vessels, tonnage 6411, and 29 steamers, tonnage 3650. The stone bridge of eleven arches over the Medway was built in the reign of Richard II. Farther down, the river is crossed by a new iron bridge of three lofty arches, the central one opening in the middle to allow the passage of large vessels. Two weekly markets, a monthly cattle market, and two yearly fairs are held at Rochester. Quarter-sessions and a county court meet here. The borough is governed by a mayor, 5 other aldermen, and 18 councillors; and represented in Parliament by 2 members. The existence of Rochester can be traced back with probability to the period before the invasion of the Romans, by whom it was called *Durobriva*. Under the Saxon kingdom of Kent it was important as a stronghold, and the seat of a bishop. In 676 it was destroyed by the Saxons of Merica; again in 839 by the Danes, into whose hands it had almost fallen a second time in 885, had it not been rescued by Alfred. The town and castle were strengthened by William the Conqueror; and afterwards sustained several attacks, one of which was from the rebels under Wat Tyler. In 1667 the Dutch made a descent on Rochester; and in 1688 James II. took ship to France from this port. Pop. (1851) 14,938.

ROCHESTER, a town of the United States of North America, in the state of New York, on both sides of the Genesee, 7 miles above its mouth, in Lake Ontario, and 230 W. by N. of Albany. It is built on level ground, with broad, straight, well-paved streets, the principal of which

run from E. to W. through the middle of the town. The houses are for the most part built of limestone or brick; many of them are surrounded with gardens; and the streets are generally lined with rows of trees. The court-house and city-hall, a large and handsome edifice, with a granite front; the arcade, a fine building partly occupied by the post-office; the western house of refuge for juvenile delinquents, a large brick structure; the university buildings, as well as many handsome churches of different sects, form the most conspicuous ornaments of the town. The university of Rochester, founded in 1850, is under the direction of the Baptists, and had in 1857, 8 professors, 165 students, and a library of 5200 volumes. There is also a Baptist theological seminary, containing in 1856-7, 3 professors and 36 students. The town has numerous schools, an athenæum, two orphan hospitals, and other benevolent institutions. Several newspapers and other periodicals are published. The prosperity of the place must chiefly be ascribed to the great amount of water-power within reach; for the Genesee descends within a short distance by three cataracts and two rapids, in all 373 feet; and the inhabitants have not been slow to make use of these advantages. The chief establishments are flour-mills, which are perhaps the most extensive in the United States, and produced in 1852, 538,680 barrels of flour. Machinery, cutlery, iron, leather, cloth, paper, and other articles are also made here. The town is remarkable for the extent of its fruit nurseries. The Erie Canal, which traverses the centre of the town, and crosses the river on an aqueduct of stone, extends westward to the lake of the same name; and the Genesee Valley Canal opens up communication with the south. The steam-boat navigation, which extends on the river to within 2 miles of the town, and the several railways which diverge from it, increase the facilities for commerce that Rochester possesses. The shipping of the district, June 30, 1852, had an aggregate tonnage of 686 enrolled and licensed, of which 429 tons belonged to steamers. During the year ending on that day there entered (exclusive of canal navigation) 264 vessels, with a tonnage of 38,903; and there cleared 200, tonnage 33,027. Rochester was first settled in 1812, and received its charter in 1834. Pop. (1850) 36,403; (1853) about 42,000.

ROCKET. See PYROTECHNY.

ROCKY MOUNTAINS, called also, but not so generally, *Chippewyan Mountains*, the principal range in North America, extending from the shore of the Arctic Ocean, near Mackenzie Bay, about 70. N. Lat., in a S.S.E. direction, through the continent. The name is sometimes applied to the whole range of mountains so far S. as 19. N. Lat., where they are interrupted by the low lands in Nicaragua and the isthmus of Panama; but, properly speaking, the Cordilleras of Mexico do not form part of the Rocky Mountains, nor are they indeed immediately connected with that chain. In its stricter application, the term designates only the mountains which traverse the British possessions and the United States, and terminate a few miles S.E. of Santa Fe in the territory of New Mexico. They form a part of the great mountain chain, which, with a few interruptions and under various names, traverses the whole of the Western Continent from very nearly its extreme northern to its extreme southern point, forming the watershed between the Atlantic and Pacific oceans, though much nearer the latter than the former. The northern range, however, does not approach so near to the sea as the southern range does at almost all parts of its course. Near the southern extremity of the Rocky Mountains, and not far from the source of the Arkansas River, is a knot of mountains from which various chains diverge in different directions,—the Sierra de San Juan, stretching S.W. towards the Sierra Madre; the Rocky Mountains, on the one hand N.W., and on the other S.E.; and the

Rocket
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Rocky
Mountains

Medicine Bow Hills towards the N.E. The main ridge continues in a single almost unbroken line as far northwards as Mount Brown, about 53. N. Lat., where a lower ridge diverges and runs nearly parallel to the principal chain, a short distance to the W. This second chain is known by the name of the Peak Mountains, and sends off another range, also parallel to the two former, and still nearer the coast. The loftiest summits of the Rocky Mountains throughout the greater part of their length rise from 10,000 to 14,000 feet; but N. of Mount Brown, where the divergence takes place, they begin to diminish in altitude, and towards the extremity their average height is not more than 2000 feet. The highest elevation in the southern part of the range is Fremont's Peak, 13,570 feet above the sea. Farther N., between Lat. 46. and 48., there is a considerable depression; but beyond this there is another elevated portion, where Mount Hooper (15,690 feet) and Mount Brown (about 16,000 feet) rise. Some peaks are said to attain the height of 18,000 feet above the sea. The mountains are traversed by several passes. Among these are South Pass, immediately south of Fremont's Peak, forming the principal route to the Mormonite settlements in the W.; Lewis and Clarke's Pass, near the head waters of the Missouri, 6323 feet high; and Athabasca Portage, between Mounts Hooper and Brown, about 7300 feet. The two former of these have been proposed as railway routes across the North American continent. Very recently several additional passes have been discovered by Captain Palliser, some account of which will be found in the *Proceedings of the Royal Geographical Society* for Feb. 1859.

As the range has been but imperfectly explored, little is known of its geological character. There seems, however, no reason to doubt that its structure is primitive. The upper portions consist of granite and gneiss, rising up in bare, rugged, and precipitous peaks. This formation is overlaid in the higher slopes with limestone, and in the lower with sandstone. Volcanic rocks exist in some places; and there is said to be a volcanic region, 100 miles in length, near Fremont's Peak, containing several burning mountains now in activity. Hot springs are found not only here, but in several other places on both slopes of the range; one of the most remarkable being that called the Steamboat Spring, sending up the water to the height of 3 feet. The eastern declivity of the mountains is in general much more precipitous than the western, which in some places rises to a series of terraces and inferior ridges. Many of the summits are covered with perpetual snow. They are seen like a vast rampart rising from the grassy plains, stretching from north to south. Sometimes their aspect is that of continued ranges of a grayish colour, rising into the blue of the atmosphere above the region of the clouds. A great number are black, ragged, and precipitous; and their bases are strewn with immense boulders and fragments of rock, detached by earthquakes and the elements. From this iron-bound and precipitous character they probably received the appellation of Rocky Mountains. They are for the most part but thinly covered with vegetation, a few scrub pines and other trees being all that clothes the lower slopes; but in some places there are magnificent forests. The rivers that take their rise in the Rocky Mountains fall into three great divisions: those which flow into the Arctic Ocean or Hudson's Bay, of which the Athabasca and the Saskatchewan are the chief; those which flow into the Gulf of Mexico, of which the Missouri is the largest; and those which join the Pacific or the Gulf of California, especially the Columbia and Colorado.

ROCROY, a frontier town of France, capital of an arrondissement in the department of Ardennes, in a beautiful plain in the midst of the forest of Ardennes, 15 miles N.N.W. of Mézières. It is strongly fortified; and contains a foundry for cannon-balls and other projectiles. In the

neighbourhood of the town Condé gained a great victory over the Spaniards in 1643. Pop. (1856) 2686.

RODEZ, a town of France, capital of the department of Aveyron, on a hill washed on three sides by a curve of the Aveyron, which flows 150 feet below, 312 miles S. of Paris. Owing to the nature of the site, most of the streets in the town are steep, and their narrowness is increased by the projecting fronts of the houses, which are for the most part meanly built of wood. The fortifications that once inclosed the place are now turned into public walks, commanding a wide prospect over a somewhat bleak country. The most conspicuous building is the cathedral, whose erection was spread over two centuries, from the end of the thirteenth. Its richly-carved belfry rises to the height of 265 feet; and many of its internal ornaments are very fine. Rodez has also an episcopal palace, town-hall, prefect's office, Jesuits' college, public library, Cordeliers' monastery, and an hospital; manufactures of leather, serge, candles, hats, and playing-cards are carried on; and there are also dye-works and worsted-mills in the town. The trade is considerable in manufactured articles, wool from the neighbouring country, and cheese. Rodez contains a court of law, chamber of manufactures, schools, scientific societies, museum, &c. Pop. (1856) 8479.

RODNEY, GEORGE BRYDGES, *Baron* of Stoke, was born on the 19th of February 1718. He was the descendant of an ancient family, and was related to the Duke of Chandos. He bore the name of his Majesty, who stood sponsor for him at his baptism. At a very early age he was sent to Harrow school; and having quitted it at the age of twelve, he received from the king a letter of service, the last ever granted, and went to sea. On the Newfoundland station he served for six years with Admiral Medley. On the 15th of February 1739 he was made lieutenant in the *Dolphin*, by Admiral Haddock, in the Mediterranean, and served successively in the *Essex*, *Royal Sovereign*, and *Namur*. Admiral Mathews having in 1742 appointed him to the *Plymouth*, of sixty-four guns, he convoyed 300 sail of the Lisbon trade through the midst of the French fleet, then cruising in the channel; and for his conduct on this occasion he received the warmest thanks of the merchants. In the rank of captain he was confirmed by the Admiralty, and was appointed to the command of the *Sheerness*, in which he continued for eighteen months. He was then removed to the *Ludlow Castle*, of forty guns. In this ship he fought and took the great *St Maloes* privateer, of forty guns, and one hundred men above his own complement. From this period till December 1745 he was employed in various pieces of service, which afforded him no particular opportunities of obtaining distinction. Having been appointed to the *Centurion*, he for two years cruised in the North Sea. He was now promoted to the command of the *Eagle*, of sixty-four guns; and in 1747 he was despatched in a small squadron for the purpose of intercepting the French fleet, homeward-bound from *St Domingo*. On the 20th of June they fell in with this fleet off Cape Ortegal. The French men-of-war deserted their convoy during the night, and no fewer than forty-eight merchantmen were captured. Rodney afterwards joined the squadron of Admiral Hawke, and bore a distinguished part in the action off *Finisterre* on the 14th of October in the same year. Near the close of this war a small squadron, of which the *Eagle* was one, fell in with a Spanish fleet from the West Indies, consisting of twelve sail of the line, with a rich convoy, and notwithstanding their own inferiority, they took from them six sail of merchantmen.

Captain Rodney was appointed to the *Rainbow* in March 1748, and was soon afterwards sent as governor and commander-in-chief to the Newfoundland station. This was his first appearance with the rank of commodore. He had received particular instructions to discover, if possible, an

Rodney.

island in the Western Ocean, said to be in Lat. 49. N., about 300 leagues from Britain. After cruising fourteen days to no purpose, he sailed for St John's, the seat of his government. In this station he continued till the month of October 1752, when he returned home to take his seat in Parliament, having been elected for the borough of Sal-tash. In May 1577 he sailed in the Dublin, of seventy-four guns, with Hawke's expedition for the bombardment of Rochefort; and in February 1758, with Boscawen in the expedition against Louisbourg. On the 19th of May 1759 he was promoted to the rank of rear-admiral, and was immediately appointed to the command of a small squadron destined to bombard Havre de Grace. This service he performed in a very effectual manner; and having continued to keep the sea till the close of the ensuing year, he returned to Britain. In 1761 he was elected member of Parliament for Penryn. On the 6th of October he hoisted his flag on board the Marlborough, having been appointed commander-in-chief at Barbadoes and the Leeward Islands, and to conduct the naval operations of the armament destined for the attack of Martinique. This island, together with St Lucia, was speedily reduced.

The admiral returned home on the 12th of August 1763, On the 21st of the preceding October he had been made vice-admiral of the blue. In 1764 he was created a baronet, and during the following year was appointed governor of Greenwich Hospital. In 1768 he was returned to Parliament for Northampton. On the 18th of October 1770 he became vice-admiral of the white, and on the 24th of October 1771 vice-admiral of the red. During the latter year, on the 23d of January, he had been appointed commander-in-chief at Jamaica, and with this command was not permitted to retain the office of governor. Having returned to Britain, he struck his flag at Portsmouth on the 4th of September 1774. Being inattentive, as many seamen are, to the rules of economy, his circumstances became so embarrassed that he was obliged to fly from his country, with very slight hopes of ever being able to return. He was in France when the ill-advised policy of that court prompted them to take a decided part with America against Great Britain; and it is said that some men in power, no strangers to the desperate state of Sir George's affairs, offered him a high command in the French navy if he would carry arms against his own country. This offer he rejected with becoming indignation. Soon after this gallant behaviour the Duc de Chartres, afterwards Duke of Orleans, told Sir George that he was himself to have a command in the fleet to be opposed to that under the command of his countryman Keppel; and with an insulting air asked him what he thought would be the consequence of their meeting. "That my countryman will carry your highness with him to learn English," was the high-spirited reply. These statements do not perhaps rest on sufficient authority; but we learn from his own correspondence that Maréchal Biron expressed his willingness to advance whatever sum he might require, even to the amount of L.2000. Having accepted a loan of a thousand louis, he was in 1778 enabled to pay his bills in Paris, and to revisit his own country. He was speedily enabled to discharge this debt, and to make a satisfactory arrangement with his creditors.

On the 1st of October 1779 Rodney was appointed commander-in-chief of Barbadoes and the Leeward Islands. His first exploit after this appointment was on the 8th of January ensuing, when he took sixteen Spanish transports, together with seven ships and vessels of war, which had left St Sebastian's a week before. On the 16th of the same month he fell in with the Spanish fleet, consisting of eleven sail of the line, under the command of Don Juan de Langara, of which one was blown up during the engagement, five were taken, and carried into Gibraltar, among which was the admiral's ship, and the rest were

much shattered. In April the same year he fell in with the French fleet, under the command of Admiral Guichan, at Martinique, which he fought, and beat; though, from the shattered state of his own fleet, and the unwillingness of the enemy to risk another action, he took none of their ships. The successful efforts of the gallant admiral during the year 1780 were generally applauded throughout the nation. He received the thanks of both houses of Parliament, and addresses of thanks from various parts of Great Britain, and the islands to which his victories were more particularly serviceable. In December the same year he made an unsuccessful attempt, together with General Vaughan, on St Vincent's. In 1781 he continued his exertions, with much success, in defending the West Indian Islands; and, along with the above-named general, he conquered St Eustatius, on which occasion his conduct to the inhabitants has been much, though perhaps unjustly, censured. The island was certainly a nest of contraband traders. On the 12th of April 1782, he came to a close action with the French fleet under Count de Grasse; during which he sunk one ship and took five, of which the admiral's ship, the Ville de Paris, was one. On the 22d of May the thanks of both houses of Parliament were voted to the admiral, his officers, and seamen, for this brilliant and decisive victory. He was appointed vice-admiral of Great Britain, and was raised to the peerage by the title of Baron Rodney of Stoke in Somersetshire. The House of Commons voted him an annual pension of L.2000. In the year 1793 this pension was permanently settled on the title; and in 1806 a pension of L.1000 Irish was granted to his grandson for life. Having been superseded very ungraciously in his command, Lord Rodney once more steered a homeward course. He landed at Bristol on the 15th of September 1782, and next day proceeded to join his family at Purbrook near Portsmouth. He survived for ten years, having died on the 24th of May 1792, after he had completed the seventy-fourth year of his age.

Lord Rodney was twice married; first to the sister of the Earl of Northampton, and next to the daughter of John Clies, Esq., with whom he did not reside for several years before his death. (See *The Life and Correspondence of the late Admiral Rodney*, by Major-General Mundy, his lordship's son-in-law, London, 1830, 2 vols. 8vo.)

RODOSTO, or RODOSJIG (anc. *Rhædestus*, or *Bisanthe*), a town of European Turkey, Roumelia, on a picturesque bay on the Sea of Marmora, 77 miles W. of Constantinople. It is defended by walls and towers, and contains many good streets, several mosques, and a large covered bazaar. There is here a harbour, by means of which an active trade in corn, wine, &c., is carried on. In the surrounding country there are many extensive gardens, from which large quantities of fruits and vegetables are sent to the town. Fishing is also carried on to some extent. Pop. 26,000.

RODRIGUES. See MAURITIUS.

ROE, the seed or spawn of fish. (See ICHTHYOLOGY.)

ROEBUCK, JOHN, the son of a Sheffield manufacturer, was born in 1718. After an elementary training, he was placed under the tuition of Dr Doddridge. Passing from this academy, he entered the university of Edinburgh, where he distinguished himself by his logical and metaphysical acuteness, and by great ingenuity in his arguments. Here he formed an acquaintance with Dr Robertson, Mr Hume, and other literary characters. Having completed his medical course at Edinburgh, he afterwards spent some time at the university of Leyden, where in 1743 he took the degree of M.D. Returning to England he commenced practice as a physician at Birmingham. Having substituted leaden vessels in the room of glass ones in the manufacture of sulphuric acid, he was enabled to sell it at a much cheaper rate than had been

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Roebuck.

Roemer. lone hitherto. He accordingly established a manufactory of this material at Prestonpans in the year 1749, which was opposed by Dr Ward, but without success, as Roebuck's discovery did not come within Ward's patent. Dr Roebuck and his partner retained the advantages of their industry and ingenuity for a number of years, supplying the public with sulphuric acid at a much cheaper rate than had been formerly done. He found it expedient to relinquish his medical profession, and he resided in Scotland during the greater part of the year. He made some discoveries in the smelting of ironstone, greatly facilitating that process by using pit-coal instead of charcoal. He and his partner therefore projected a very extensive manufactory of iron, for which they soon procured a sufficient capital, as their friends had much confidence in their integrity and abilities. Dr Roebuck at length made choice of a spot on the banks of the River Carron as the most advantageous situation for the establishment of their manufactory, abundance of ironstone, limestone, and coal being found in its immediate vicinity. The preparations for this establishment were finished in the end of the year 1759; the first furnace was blown on the 1st of January 1760; and a second was soon afterwards erected. These works turned the attention of Dr Roebuck to the state of coal in the neighbourhood, and to the means of procuring the extraordinary supplies which the iron-works might require. He therefore became lessee of the extensive coal and salt works at Borrowstounness, the property of the Duke of Hamilton, in which he sunk, in the course of a few years, not only his own and a considerable part of his wife's fortune, but the regular profits of his more successful works; and, what distressed him above everything else, the great sums of money which he borrowed from his relations and friends, without the prospect of ever being able to repay them. This ruinous adventure cut off for ever the flattering prospects of an independent fortune which his family had once cherished; and he drew from his colliery only a moderate annual support, for which he was indebted to the indulgence of his creditors. It was while engaged in this speculation that he became acquainted with James Watt, the inventor of the modern steam-engine. Some years before his death, he was seized with a disorder that required a dangerous operation, which he bore, however, with his usual spirit and resolution. He visited his works till within a few weeks of his decease, which took place on the 17th July 1794. A pretty copious memoir of Roebuck appeared in the fourth volume of the *Transactions of the Royal Society of Edinburgh*, of which he was a fellow, in which it is stated that, besides contributing a few papers to that society, as well as to the Royal Society of London, he was likewise the author of two political pamphlets.

The present John Arthur Roebuck, M.P., is the grandson of Dr Roebuck.

ROEMER, OLAVUS, a celebrated Danish mathematician and astronomer, was born at Arhusen in Jutland in the year 1644, and was sent to the university of Copenhagen at the age of eighteen. By assiduous application to the study of astronomy and mathematics, he became so eminent in those sciences that Picard was astonished and delighted with him, when making observations in the north, by the order of Louis XIV. He was prevailed on to accompany Picard to France, and being presented to the king, he was chosen the Dauphin's tutor in the study of mathematics. He was afterwards united with Picard and J. D. Cassini in making astronomical observations, and became a member of the Academy of Sciences in 1672. His discoveries acquired for him great reputation during his ten years' residence at Paris; and he did not scruple to assert that Picard and Cassini took the merit of many things which belonged exclusively to himself. Roemer was the first person who discovered the velocity with which

light moves, by means of the eclipses of Jupiter's satellites, determining it to be about seven or eight minutes in coming from the sun to the earth. (See DISSERTATION FOURTH.) This opinion was opposed by many, but it was afterwards demonstrated in a most ingenious manner by Dr Bradley.

Christian V., King of Denmark, recalled Roemer to his native country in the year 1681, when he was appointed professor of astronomy at Copenhagen. He was likewise employed in the reformation of the coin and architecture of the country, in regulating the weights and measures, and in laying out the high roads throughout the kingdom. The consequence was, that the king bestowed many dignities upon him, and among others appointed him chancellor of the exchequer. In fine, he was made councillor of state and burgomaster of Copenhagen under Frederic IV., who succeeded Christian. While Roemer was engaged in preparing to publish the result of his observations, he was cut off on the 19th of September 1710, when about sixty-six years of age. Horrebow, his disciple and successor in the chair of astronomy, made up this loss by publishing, in 4to, in 1753, various observations of Roemer, with his method of observing, under the title of *Basis Astronomiæ*. He had printed various astronomical observations and pieces in several volumes of the *Memoirs of the Royal Academy of Sciences* at Paris. (See ASTRONOMY, *History of*; and MICROMETER.)

ROERMONDE (Fr. *Ruremonde*), a strongly-fortified town in the Dutch province of Limburg, at the confluence of the Roer with the Maas or Meuse, 28 miles N. by E. of Maestricht. It has broad, regular streets, and a fine bridge across the Roer, leading to the suburb of St Jacob. The chief buildings are the cathedral in the Byzantine style, episcopal palace, spacious town-hall, convent, and hospital. There are here a college and several schools. Woollen cloth, silk, paper, leather, and beer are manufactured, and there are also bleach-fields, dye-works, flour-mills, &c. Pop. (1850) 7172.

ROGATION-WEEK, the week immediately succeeding Whitsunday; so called from the three feasts therein, viz., on Monday, Tuesday, and Wednesday.

ROGER DE HOVEDEN. See HOVEDEN.

ROGER DE WENDOVER, who was a monk in the abbey of St Albans, and who died prior of Belvoir in 1237, left behind him a Latin chronicle entitled *Flores Historiarum* ("The Flowers of History"). It is a history of the world from the creation to 1235, and is usually considered by critics as divided into three parts. The first part, which treats of all events before A.D. 447, is taken bodily from the Greek and Roman historians, and from Geoffrey of Monmouth, and is of little or no value. The second part, bringing the narrative down to about 1200, is copied from many of the best of preceding chronicles, and is worthy of being preserved on account of its extracts from numerous works which are now lost. The last part, recording the events which happened within the author's own sight or hearing, is precious as an original history of that age. The Chronicle of Roger de Wendover, with the exception of the first part, has been edited by the Rev. H. C. Coxe, in 4 vols. 8vo, London, 1841-42. An English translation, published in 1849 by Dr J. A. Giles, forms two volumes of Bohn's "Antiquarian Library." Matthew of Paris incorporated, with few alterations, the *Flowers of History* into his own Chronicle.

ROGERS, SAMUEL, an English poet of refined taste and feeling, and for more than half a century greatly distinguished in London society, was born at Newington Green on the 30th of July 1763. He was descended from a Worcestershire family, his grandfather being Thomas Rogers, of the Hill, near Stourbridge. His father settled in London as a banker, and was head of the firm long carried on under the name of Rogers, Olding, & Co., Clement's

Roermonde
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Rogers.

Rogers. Lane. By the maternal side the poet was connected with the English Nonconformists. His mother, Mary Radford, was the grand-daughter of Eleanor, daughter of Philip Henry, and sister of Matthew Henry—both eminent Nonconformist divines. The poet's mother, "a very handsome and very amiable woman," persuaded his father to withdraw from the Church of England, and become a member of the Presbyterian church at Newington, of which Dr Price was the pastor. Price, though described by his adversary Burke, as "a man much connected with literary caballers and intriguing philosophers, with political theologians and theological politicians," was eloquent, courteous, and polished in his manners; and to this dissenting connection the poet was indebted for his introduction to many of the eminent Whig politicians and men of rank whom he was afterwards proud to number among his friends. In mature life he did not care to rank with the dissenters; but he never abjured the association, and the last note in his poem of *Italy* tells us that his original MS. of the poem contained these lines:—

"What though his ancestors, early or late,
Were not ennobled by the breath of kings;
Yet in his veins was running at his birth
The blood of those most eminent of old
For wisdom, virtue—those who could renounce
The things of this world for their conscience sake,
And die like blessed martyrs."¹

Mr Rogers was educated at the Newington Green academy, then taught by a Dr Burgh, author of a treatise on the *Dignity of Human Nature*. One of his school-fellows was Mr William Maltby, a modest and retired scholar, who succeeded Porson as librarian to the London Institution, and lived to the age of ninety, enjoying the friendship of the poet. The latter was fond of relating that one day he and Maltby, while walking up Fleet Street, resolved on visiting Johnson in Bolt Court, and introducing themselves to the great literary dictator; but when Rogers' hand was on the knocker of the door his heart failed him, and the young aspirants withdrew. Boswell, to whom many years afterwards Mr Rogers related the circumstance, said truly "Why did you not go boldly in? He would have received you with all kindness." And such, no doubt, would have been the result. Johnson never appeared to greater advantage than when giving advice and counselling his young and diffident admirers. The first ambition of Rogers was to be a preacher—a second Dr Price; but his father placed him in his own banking-house, preparatory to his being admitted as a partner. He read Gray and Goldsmith as he walked to and from the bank in Cornhill; yet when he ventured on authorship his first appearance was in prose. He contributed a series of essays, entitled the *Scribbler*, to that venerable repository of fugitive literature, the *Gentleman's Magazine*. This was in 1781, when Rogers was in his eighteenth year. The essays are in the usual formal didactic style of that period, and are neatly written. In 1786 he published his *Ode to Superstition, with some other Poems*, paying down a sum of L.30 to the publisher to secure him from loss; and the precaution was not unneeded, as at the end of four years only about twenty copies of the

work (1s. 6d. each) were sold. The *Monthly Review*, however, recognised in the crude imitations of Gray and Dryden, "the hand of an able master," and Rogers confessed that this praise was the first stimulant to his ambition. In 1789 he visited Edinburgh (travelling on horseback), and was introduced to Adam Smith, Blair, Robertson, and Henry Mackenzie. He afterwards regretted that he had not rode on to Ellisland to visit Burns, but some of his Edinburgh friends, he said, dissuaded him from the journey. Part of 1790–91 he spent in Paris, and the year following his return witnessed his advent as a successful poet. His *Pleasures of Memory* appeared in 1792, at first anonymously, but the author becoming known, he was fêted and applauded. "What pleasure I felt," he said, "on being told that Este (Parson Este) had said of me, 'A child of Goldsmith, Sir.'" Este was one of the royal chaplains, an author, and a proprietor of the *Morning Post* and *World* newspapers. He was an authority in fashionable circles, and his favourable award must have appeared fame. In this instance Mr Este was right. The *Pleasures of Memory* belong to the school of Goldsmith. The versification, the pensive vein of reflection, the concise, select imagery and description, show that the poet had carefully studied the *Traveller* and *Deserted Village*—superadding, however, a strain of subtle and refined thought, with historic and classic allusions which peculiarly mark the poetry of Rogers. "His elegance is really wonderful," said Byron; "there is no such thing as a vulgar line in his book." It must be admitted, however, that there are several feeble lines in the poem, with a few half-formed pictures, and passages which recall the more vigorous and fervent inspiration of older masters. In 1793 the poet's father died—his mother he had early lost; and he withdrew in great measure from the banking-house, leaving the management to a younger brother. About the same time he removed from Newington Green to apartments in the Temple, which he furnished with great elegance. His taste in all matters relating to social life may be seen from his *Epistle to a Friend*, printed with a few other poems in 1798. In his rooms in the Temple the poet lived till about the year 1803, when he removed to a house in St James's Place, looking into the Green Park. This house—the celebrated No. 22 St James's Place—he had altered and nearly rebuilt according to his own taste, and there he entertained his friends of every class and country (Charles James Fox was his first dinner guest), and accumulated those treasures of art,—pictures, books, autographs, gems, vases, and antiques of all descriptions, rich and rare, which, on his death, were dispersed after a sale of twenty-two days, producing upwards of L.50,000. Mere wealth could not have amassed such a collection. It was the result of taste and knowledge, combined with the judicious expenditure of money at the right time, and constant vigilance in watching the proper opportunity. Some of those treasures, we are happy to add, have, by the liberality of their owner, found their way into the National Gallery and British Museum. The poet was never married. In 1812 Rogers published a collection of his poems, including in the volume a new piece, *The Voyage of Columbus*, professing to be translated from the original in the

¹ The poet's nephew, Mr Samuel Sharpe (author of the *History of Egypt, &c.*), has illustrated this part of the poet's history with some characteristic anecdotes. When walking one day through Hanover Square with Mr Luttrell, the witty conversationist, and author of *Letters to Julia*, and coming down upon St George's Church, Rogers remarked on the inconvenience of being thrust off the pavement and made to cross the street by the projecting portico. "Ah," exclaimed Luttrell, "that comes of your dissenting principles." On another occasion, when Wordsworth and Rogers were walking through York Minster, the latter descanted on the fitness of the great pile to awaken religious feelings in the mind, when Wordsworth stoutly and rather rudely denied that his companion could admire it equally with himself, because of his Presbyterian education! When the Dissenters' Chapel Bill was before the House of Commons, Mr Sharpe called upon Mr (now Lord) Macaulay to ask him to present a petition signed by the descendants of Philip Henry. "Has my friend Rogers signed it?" asked Macaulay, thus marking his knowledge of family history, and of the fact of Mr Rogers being a descendant of the ejected Nonconformist divine. Rogers' connection with the Presbyterians was something like that of Pope with the Roman Catholics. But he never forgot his early minister, Dr Price; and until within a fortnight of his death it always afforded him pleasure to hear his favourite servant or librarian, Edmund Payne, read one of Price's sermons.

Rogers. Castilian language. This poem is a series of fragmentary sketches, with supernatural machinery, neither very appropriate nor well executed, but containing some imagery and couplets of great picturesqueness and beauty. Mr Ward (afterwards Lord Dudley) reviewed the volume in the *Quarterly Review*, March 1813, in a style of studied yet veiled depreciation, which provoked the poet to retaliate in that inimitable epigram—

“Ward has no heart they say, but I deny it;
He has a heart, and gets his speeches by it.”

The little tale of *Jacqueline*, published in conjunction with Byron's *Lara*, in 1814, was Rogers's next work; and he made no other public appearance until 1819, when his poem of *Human Life* was published. This is the most truly poetical of all his works—as highly finished as the *Pleasures of Memory*, but with deeper feeling and profounder philosophy. His pictures of the different epochs or phases of life,—the noble aspirations of youth—the struggles of patriotism—the various passions, hopes and fears, joys and sorrows, that chequer existence, until the last scene, when “earth recedes and heaven itself appears,”—are touched with a moral beauty, pathos, and refinement of sentiment and expression, that none of his contemporaries have equalled. That the poem is not more popular arises from its delicacy and excessive refinement. It wants the energy of strong passion and the interest of a narrative or consecutive series of incidents; but, as has been said of the kindred poetry of Gray, “when we give its beauties re-perusal and attention, they kindle and multiply to the view.” There is greater variety in his next work *Italy*, but less genuine poetry. The first part of *Italy* was published anonymously in 1822, and other parts followed at intervals; the whole work, he said, not being completed in less than sixteen years. The *Pleasures of Memory* occupied him for nine years, and *Human Life* nearly the same space of time. He used to say, “The time when I consider that I wrote with the least difficulty was about the period of the death of Fox. Then I felt myself equal to anything, and it was then I wrote such lines as these:—

The clouds that rise to quench the orb of day
Reflect its splendour, and dissolve away.

I never wrote better.” Yet this image is directly borrowed from Pope (*Essay on Criticism*, v. 466-473), and much finer lines, original and drawn from nature, will be found both in *Memory* and in *Human Life*. The blank verse of *Italy* is easy and unconstrained, at times sliding into the ordinary language of good conversation, and some charming episodes and anecdotes are introduced along with those descriptions that specially interest the classic student and virtuoso. The poem might appropriately be bound up with Forsyth's *Remarks on the Arts and Antiquities of Italy*, the two works forming a storehouse of fine thoughts and observations and well-digested knowledge, symmetrized and adjusted by consummate taste. The prose of Rogers' notes is as exquisite as his verse, and was written with equal care and fastidiousness. He wrote slowly and corrected elaborately, from a desire, he said, to make his compositions so simple that a child might understand them. There are instances in which he wrote his lines over thirty and even forty different ways in order to get rid of all big words.

“My best lines,” he would remark, “are monosyllabic: small bricks make the stoutest walls.” In quoting from other authors, in notes to his poems, he took the same liberty of rejection and condensation; passages from Mrs Inchbald, and even from Burke, having been subjected to this process, and not always to their advantage. An author of greater power and more robust intellect, animated by the fire of genius, would of course have discarded such rules and restraints, and flung himself boldly into his subject, but with Rogers, as with Akenside, taste was the predominating faculty, and in both it was united to the perception and enjoyment, though without enthusiasm, of the good and the beautiful in art and nature. “True taste,” he says, “is an excellent economist. She confines her choice to few objects, and delights in producing great effects by small means; whilst false taste is for ever sighing after the new and the rare; and reminds us, in her works, of the scholar of Apelles, who, not being able to paint his Helen beautiful, determined to make her fine.” Byron considered that Rogers' highly-cultivated taste and his sensibility must have often rendered him discontented and miserable. He notices, in his diary, his friend's silence, his severity, the perfect arrangements of his house; not a gem, a coin, a book thrown aside on his chimney-piece, his sofa, or table, that did not bespeak an almost fastidious elegance in the possessor. “But this very delicacy,” adds the noble poet, “must be the misery of his existence. Oh, the jarrings his disposition must have encountered through life!” Now Rogers spent much of his time in reading and composition, in the society of the witty, the beautiful, the accomplished, and the learned; he was rich and benevolent, and surrounded by all the luxuries and attractions he most prized. Such a man so occupied and in such “blessed conditions” of fortune and fame, joined to a philosophical and somewhat epicurean frame of mind, could not be long or frequently unhappy. We would rather say that he enjoyed as many hours and days of solid happiness and comfort as are allotted to mankind, and infinitely more than most of his gifted contemporaries (Wordsworth excepted) could ever realize. His sources of enjoyment were more various, and his capacity to appreciate them higher than those of most men; and from some of the worst ills of life—its sordid cares and anxieties—he was wholly exempt. Late in his prosperous career a cloud seemed to come over his fortunes. His banking-house was robbed of a large sum, and the loss was likely to be disastrous. The greater part of the stolen money was, however, recovered; and the generosity with which his friends came forward with offers of assistance—“one nobleman placing L.10,000, a second L.30,000, and a third (a merchant prince) L.100,000 at his disposal”—must have afforded him the most exquisite gratification. The severity which Byron charges against his old friend was not imaginary. He did not, indeed, like Byron himself, “libel his friends all round,” but he often gave them cause for uneasiness and alarm by his habit of fault-finding and saying bitter things couched in calm and measured language. His caustic observations and quiet, stinging sarcasm were feared—his pointed sayings were repeated—and he was thus formidable as well as popular in society.² Such personal sallies

Rogers.

¹ *Edinburgh Review*, July 1856. The essay on Rogers in the *Review* is by Mr Hayward, Q.C., and has since been included in two volumes of Essays published by its accomplished author.

² In Stafford House is a large painting by Murillo of “Abraham entertaining the Angels.” The angelic personages of the great artist have nothing very heavenly in their aspect or appearance; and Rogers, on looking at the picture, said, “I do not wonder at Abraham entertaining the angels *unawares*.” This may give some idea of his studied sarcastic brevity of criticism; but in such things the *manner* of the saying is nearly as important as the *matter*. Some of Rogers' *mots* will be found in Moore's Journals. The following, still better, are from Mr Hayward's essay:—When he was speaking of some one's marriage in his usual tone, he was reminded that the friends of the bridegroom were very much pleased at it; Rogers replied, “He is a fortunate man, then, for his friends are pleased and his enemies delighted.” When a late member for a western county and his wife were stopped by banditti in Italy, Rogers used to say, “The banditti wanted to carry off P—— into the mountains; but she flung her arms round his neck, and rather than take her with them, they let him go.” Rogers was unceasingly at war with the late Lady D. One day at dinner she called across the table, “Now, Mr Rogers, I am sure you are talking about me.” “Lady D.” was the retort, “I pass my life in defending you.”

Rogers.

were common among the wits of his youth, or had descended from the days of Chesterfield and Selwyn; and though in Rogers' case there were undoubtedly flaws of temper as well as the desire to shine and win his way by severity, his habitual politeness and active benevolence operated as powerful checks on the unamiable propensity. Of his income of L.4000 or L.5000 a year, at least L.1500 (according to Thomas Campbell), were spent in relieving distress, or helping onwards modest merit and struggling talent. He cheered the death-bed of Sheridan by his generosity; and in all emergencies his literary friends, including Moore and Campbell, found him a frank and liberal assistant. Instances of this kind are recorded in various memoirs and diaries, but as the poet's friend Mr Dyce has said, "Of his many acts of kindness and charity to the wholly obscure there is no memorial—at least on earth." We may therefore set the life-long kind actions against the occasional bitter words, and in *their* light and warmth the temporary blot will soon vanish. Whatever were Rogers' defects or infirmities, he made no effort to conceal them. No man ever lived more in society or was more communicative in conversation. His breakfast and dinner parties were famous; he held literary levees almost daily; and his classic mansion was thrown open not only to friends, but to strangers, who eagerly sought introduction to the patriarch poet and patron of literature and art. Anecdote and criticism were the favourite topics of the host. He loved to read and expatiate on choice passages in old authors, or characteristic features in the productions of great artists; and though latterly he expected the deference of being allowed to dictate or introduce the topic of conversation, all were invited to mingle in it. Mr Hayward has felicitously sketched the interior of this Tusculum of St James's Place:—

"There, surrounded by the choicest treasures of art, and in a light reflected from Guidos and Titians, have sat and mingled in familiar converse the most eminent poets, actors, artists, critics, travellers, historians, warriors, orators, and statesmen of two generations. Under that roof celebrities of all sorts, matured or budding, and however contrasted in genius or pursuits, met as on the table-land where (according to D'Alembert) Archimedes and Homer may stand on a perfect footing of equality. The man of mind was introduced to the man of action, and modest merit, which had yet its laurels to win, was first brought acquainted with the patron who was to push its fortunes, or with the hero whose name sounded like a trumpet-note. It was in that dining-room that Erskine told the story of his first brief, and Grattan that of his last duel; that the 'Iron Duke' described Waterloo as a 'battle of giants'; that Chantrey, placing his hand on a mahogany pedestal, said, 'Mr Rogers, do you recollect a workman at five shillings a day who came in at that door to receive your orders for this work? I was that workman.' It was there, too, that Byron's intimacy with Moore commenced over the famous mess of potatoes and vinegar; that Madame de Staël, after a triumphant argument with Mackintosh, was (as recorded by Byron) 'well ironed by Sheridan'; that Sydney Smith, at dinner with Walter Scott, Campbell, Moore, Wordsworth, and Washington Irving, declared that he and Irving, if the only prose writers, were not the only prosers in the company. It was through that window, opening to the floor, and leading through the garden to the park, that the host started with Sheridan's gifted grand-daughter (Mrs Norton) on 'The Winter's Walk,' which she has so gracefully and feelingly commemorated. It was in the library above that Wordsworth, holding up the original contract for the copyright of *Paradise Lost* (1300 copies for L.5), proved to his own entire satisfaction that solid fame was in an inverse ratio to popularity; whilst Coleridge, with his finger upon the parchment deed by which Dryden

Rohan.

agreed for the translation of the *Æneid*, expatiated on the advantages which would have accrued to literature if 'glorious John' had selected the *Iliad* and left Virgil to Pope."

These ever-shifting and brilliant scenes have now "gone glittering through the dream of things that were:" and of all the actors, one only, the fair poetess, remains. But in thus dispensing his refined and lettered hospitality, in assembling parties who might otherwise have never met, in healing differences, and bringing forward talent struggling into notice, Mr Rogers performed one of the noblest duties of a citizen, worthy, for the sake of example, of imperishable record. It is to be regretted that no Boswell was present at these gatherings. The host himself took occasional notes of the opinions and remarks of some of the more illustrious of his friends; and his recollections of Fox, Grattan, Porson, Horne Tooke, Erskine, and the Duke of Wellington, have been published by his nephew, Mr William Sharpe; but the collection is small, desultory, and imperfect,—a not unpleasant table-book, but a feeble illustration of the intellectual powers or moral qualities of the great men commemorated.

The illustrated editions of his *Italy* and *Poems* formed Mr Rogers' last public work. He called in the genius of Turner and Stothard, and the talent of the best engravers, expending on the two volumes, besides his own ceaseless care and taste, a sum of about L.15,000; but the undertaking proved remunerative, and the books are still unsurpassed among our illustrated publications. In 1850, on the death of Wordsworth, the post of laureate was offered to Rogers, and pressed on his acceptance by Prince Albert; but he was then eighty-seven, fit only for the Court of Death, though happily not surrounded by any of "the gloomy attendants of his reign." He declined the appointment, and it was worthily bestowed on Mr Tennyson. A few weeks afterwards, in June 1850, the aged poet met with an accident, a fall in the street, which ever afterwards confined him to his chair. As he had all his life been a great walker, and was remarkable for the amount of exercise he could accomplish in one day,—visiting distant friends, dining out, or receiving company, attending the opera, and finishing off at a ball,—the want of locomotion was a sad privation. But books, friends, and pictures were still left: he could take his daily drive, or he could be wheeled out to the garden or park to witness the sunsets which he so much admired; and the orb of day never declined more gently, or shaded more imperceptibly into final obscurity, than this Nestor of poets journeyed downwards to the grave. He died on the 18th of December 1855, being then in his ninety-third year, and was buried at Hornsey. (R.C.—S.)

ROHAN, HENRI, *Duc de*, peer of France, and prince of Leon, was born at the Chateau de Blein, in Brittany, in 1579. Henri IV., under whose eye he gave distinguished proofs of his bravery at the siege of Amiens, when only sixteen years of age, loved him with as much affection as if he had been his own son. After the death of Henry, he became chief of the Calvinists in France; and was equally formidable for his genius as for his sword. In defence of the civil and religious rights of his party, he maintained three wars against Louis XIII. The first, which terminated to the advantage of the Protestants, broke out when that prince wished to establish the Romish religion in Bearn; the second, because of the siege which Cardinal de Richelieu ordered to be laid to Rochelle; and the third, when that place was besieged a second time. The consequences of this war are sufficiently known: Rochelle surrendered, and the Duc de Rohan, perceiving that, after the taking of this place, the majority of his party were endeavouring to make up matters with the court, succeeded in procuring for them a general peace in 1629, upon very honourable and advantageous terms. There is an anecdote told of him, in the *Memoirs of the Duchess of Rohan*, Mar-

Rohault. garet of Bethune, daughter of the famous Sully. While the Duc de Rohan was at Venice, a proposal was made to him from the Porte, that for 200,000 crowns, and an annual tribute of 60,000 livres, the grand seignior would give him the island of Cyprus, and fully invest him with the dignity and prerogative of king. The duke was warmly inclined to comply with this proposal, and to settle in the island the Protestant families of France and Germany. He negotiated this business at the Porte by means of the intervention of the patriarch Cyril, with whom he had much correspondence; but different circumstances, and in particular the death of the patriarch, contributed to break off the treaty. The republic of Venice chose Rohan for their commander-in-chief against the imperialists; but Louis XIII. took him from the Venetians, and sent him ambassador into Switzerland and into the Grisons. He wished to assist these people in reducing La Valteline to obedience, the revolt of which the Spaniards and imperialists encouraged. Rohan being declared general of the Grisons, after many victories, drove the German and Spanish troops entirely from La Valteline in 1633. He again defeated the Spaniards in 1636, at the banks of the Lake of Como. France, not thinking it proper to withdraw her troops, the Grisons rose up in arms; and the Duc de Rohan, not satisfied with the conduct of the court, entered into a special treaty with them on the 28th of March 1637. This hero, fearing the resentment of Cardinal de Richelieu, retired to Geneva, with a view of joining his friend the Duke of Saxe-Weimar, who wished him to undertake the command of his army, then ready to engage the imperialists near Rhinfeldt. Although he declined this honour, yet he took the command of the regiment of Nassau, with which he threw the enemy into confusion; but was himself wounded, 28th February 1638, and died the 13th of April following, at the age of fifty-nine. He wrote several interesting performances:—*Les Intérêts des Princes*, printed at Cologne in 1666, in 12mo. *Le parfait Capitaine*, or an abridgment of the wars from Cæsar's *Commentaries*, in 12mo. *Traité de la Corruption de la Milice Ancienne*; *Traité de Gouvernement des 13 Cantons*; also *Mémoires*. They contain the history of France from 1610 to 1629. *Recueil de quelques Discours Politiques sur les Affaires d'Etat*, from 1612 to 1629, 8vo, Paris, 1644, 1693, 1755; with *Mémoires et Lettres de Henri, Duc de Rohan, sur la Guerre de la Valteline*, 3 vols. 12mo, Geneva, 1757. This was the first edition which appeared of these curious memoirs: we owe it to the great attention and diligence of Baron de Zurlauben, who published them from different authentic manuscripts, with a highly interesting Life of the noble author.

ROHAULT, JACQUES, one of the first and most zealous propagators of the Cartesian philosophy in France, was born at Amiens in 1620. He was early conveyed to Paris, where he showed a decided predilection for philosophical pursuits. So high did he rank in the esteem of his masters that Clerselier gave him his daughter in marriage. He continued to teach in Paris with great reputation for ten or twelve years. In 1771 he published a *Traité du Physique*, which enjoyed an immense reputation both in and out of France. It was translated into Latin by Dr Samuel Clarke, who corrected the Cartesian predilections of the author by the more sound investigations of Newton. Rohault was likewise the author of a small book, *Entretiens de Philosophie*, in which he endeavoured to meet the objections of all parties to the writings of his master Descartes. He died in 1672, and was buried at Sainte-Geneviève, beside him in whose interest he had spent his life. (See Clerselier's preface to the second volume of his *Lettres de Descartes*; and the *Œuvres Posthumes* of Rohault, 4to, Paris, 1682. The reader may likewise consult Damiron's *Histoire de la Philosophie du 17 Siècle*; and the *Dictionnaire des Sciences Philosophiques*.)

VOL. XIX.

ROHILCUND, a name given to a tract of country in Rohilcund British India, presidency of Bengal, lying between N. Lat. 27. 15. and 29. 51., E. Long. 73. 3. and 80. 30.; bounded on the N. by British Gurwhal and Kumaon, E. by Oude, S. and W. by the Ganges, which separates it from the Doab. It comprises the British districts of Bijnour, Moradabad, Pilleebheet, Bareilly, Budaoon, and Shajehanpore, with the native jaghire of Rampore. Area 12,428; pop. 5,217,507, of whom 4,036,166 are Hindus. The country is fertile, traversed by numerous rivers, and has a very good climate. The soil is watered with much care by artificial means, and produces large quantities of corn, sugar, and tobacco. There are also extensive saul forests, and this timber forms one of the principal articles of exportation. The country derives its name from its former rulers, the Rohillas, an Afghan people who invaded India, and established themselves in the N.W. of Oude about 1747. Vain efforts were made by several nabobs of Oude to subdue this military colony, which, though disunited except for defence, could bring 80,000 men into the field. But their most formidable enemies were the Mahrattas; and, as these were equally hostile to Oude, an alliance was made in 1773 between the Rohillas, the nabob of Oude, and the British, by means of which the Mahratta forces were repulsed. Thereupon the nabob, by his exorbitant demands, made a pretext for subduing Rohilcund; an enterprise which, to the disgrace of the British name, was made successful by a body of troops lent by Warren Hastings. The country was ravaged and plundered by the cruel and cowardly followers of the nabob, and the Rohillas were, with few exceptions, exterminated or expelled. Rohilcund was afterwards ceded to the British in 1801.

ROLAND, MANON JEANNE PHILIPON, the great heroine of the French Revolution, was the only surviving child of Philipon, an engraver, and was born at Paris in 1754. In her quiet home on the Quai des Orfèvres, and amid the routine of humble household duties, the young girl began to develop her earnest nature. The budding beauty of her person was but a faint shadow of the serene and noble spirit that was moving within. She sought after truth with all the devoted affection of a lover. Through history, theology, philosophy, and the sciences her vigorous mind wandered, fixing upon whatever gratified her pure and elevated tastes. Especially did her attention love to rest upon the ancient ages as portrayed in Plutarch's *Lives*. Dwelling in spirit in those great times, her conduct became imbued with the severe magnanimity of an old Greek or Roman. She abjured everything but what was true and uprightly noble. The rites of the priests seemed hollow mockeries, and she abandoned the Christian religion. The gilded vices of the aristocracy roused her indignation; and she turned a confirmed republican. Nor did she act less consistently when, about the age of twenty, she began to be assailed by offers of marriage. The crowd of volatile suitors who were attracted by her charms did not excite her vanity. She rejected the whole tribe, one after another, with unhesitating candour. In vain did her father remonstrate with her. "It is not a position," she said, "but a mind that I want." The only person that was able to affect her well-disciplined heart was Jean Marie Roland de la Platière, inspector of manufactures at Amiens, a grave, middle-aged philosopher, weather-beaten and thought-worn, coldly virtuous as a Spartan, and sternly patriotic as a Cato. She therefore gave him her hand about her twenty-fifth year, and thenceforth devoted herself entirely to his stern will.

Madame Roland was in Paris in the early part of 1792, occupying a prominent place among the revolutionists. Her husband had been deputed to the Constituent Assembly by the city of Lyons. His honest patriotism had raised him to a high place among the reformers; and when

Rolle.

a Girondist cabinet had been forced upon the royal choice, he had been appointed minister of the Interior. Accordingly she was now living in the official saloon, and giving ministerial dinners twice a week. On these occasions she was wont to exercise all the spontaneous power of a queen. No sooner had her guests entered than they felt the captivating effect of her mature beauty and flashing genius. As they sat at table they could not help being inspired with her noble enthusiasm and wise political views. When the cloth had been removed they were still sensible of her influence, although she sat silently apart at her work-table; and they were ready to moderate their hot discussions whenever she prudently interposed. In fact, she was the very soul of the Girondist party.

The spirit of Madame Roland appeared in all its serene greatness when, on the fall of her faction, she was cast into prison by the triumphant Jacobins. The remorseless gripe of her enemies, the axe ready at any moment to fall upon her head, and the unknown gulf on the other side of death, did not daunt her soul. Her mind, like that of a brave pagan, dwelt upon the grand vision of human magnanimity. She lived over again, and recorded, in a series of *Mémoires*, her previous life of self-sacrifice and patriotism. She also summoned up from the pages of her favourite Plutarch the great deeds and death-scenes of the past. It is true that the thought of her little girl, left so early without a mother's care, of her infirm husband fleeing before his blood-thirsty enemies, and of herself doomed to a premature and unjust end, sometimes proved too strong for her womanly heart, and made her burst into tears. Yet at other times, looking through the grating of her window, she addressed the prisoners in the court-yard of the Conciergerie, and, like a very angel of liberty, spoke with an eloquence so refined and musical that the poor doomed victims of the Revolution stood charmed on the spot for hours together, and then went away to their cells shouting "*Vive la République*."

On the 8th November 1793, the last day of her life, the demeanour of the brave Roland was more heroically subdued than ever. After hearing herself sentenced to be guillotined, she thanked her judges that they had sent her to share the same fate as those brave men whom they had recently murdered. She then ran down stairs from the judgment-hall to her cell as if making haste to be gone. The preparation was soon over; and she appeared in the condemned cart calm and beautiful, a perfect statue of innocence, clad in white, and with her raven hair flowing down in thick ringlets to her girdle. As the vehicle rumbled onwards to the Place de la Concorde, she stooped down amid the insults of the mob to cheer her fellow-victim, an old man, who was crying like a child. Nor did her self-possession fail when she arrived in front of the guillotine. She asked for a pen to write down "the strange thoughts that were arising within her." Then mounting the scaffold, she turned to the statue of Liberty which stood close by, and exclaimed, "O Liberty, what crimes are committed in thy name." These were her last words, and in a few moments afterwards her head fell into the basket.

Several days after the death of Madame Roland, the dead body of her husband was found in an avenue near Rouen, pierced through the heart with a long stiletto. On a scrap of paper beside it were these words:—"After my wife's murder, I would not remain any longer in a world so stained with crimes." (See *Mémoires de Madame Roland*, 2 vols., Paris, 1821; Lamartine's *Girondists*; and Carlyle's *French Revolution*.)

ROLLE, MICHEL, a French mathematician, was born at Ambert in Auvergne in 1652. Although obliged at an early age to become an attorney's clerk, all the young man's tastes were soon concentrated upon mathematics. His work, in course of time, grew intolerable to him. He

gave it up in 1675, and went to Paris to seek for a better opportunity of gratifying his master-passion. Supporting himself by teaching writing, he devoted all his spare moments to algebra. So ardently, in fact, did he labour, that his dexterity soon attracted the notice of the minister Colbert, and gained for him a pension. Rolle now entered upon a career of distinction. The recently-instituted Academy of Sciences elected him into their number in 1685. Fresh reputation was gained by his *Treatise on Algebra* in 1690, and by his *Method of resolving Indeterminate Questions in Algebra* in 1699. At length, in 1701, he came very prominently before the learned public as a pertinacious objector to the newly-discovered Differential Calculus. Boldly asserting the fallacy of that process, he attempted to show that it could not be applied to certain cases. In vain did Varignon and others prove to him that the error lay in his misapplication of the principles in question. For several years he persisted in his opposition; and it was only shortly before his death in 1719 that he confessed his mistake.

ROLLI, PAOLO ANTONIO, an Italian poet, was born at Rome in 1687. He was the son of an architect, and a pupil of the celebrated Gravina, who inspired him with a taste for learning and poetry. An intelligent and learned English peer having brought him to London, introduced him to the royal family as a master of the Tuscan language. Rolli remained in England till the death of Queen Caroline, his protectress, and the patroness of literature in general. He returned to Italy in 1747, where he died in 1767, in the eightieth year of his age, leaving behind him a very curious collection in natural history, with a valuable and well-chosen library. His principal works first appeared in London in 1735 in 8vo. They consist of odes in blank verse, elegies, songs, and other poems after the manner of Catullus. A collection of his epigrams was printed at Florence in 1776, in 8vo, to which is prefixed an account of his life by Fondini. What Martial said of his own collection may be said of this, "that there are few good, but many indifferent or bad pieces in it." He likewise translated into Italian verse the *Paradise Lost* of Milton, printed at London in folio in 1735; and the *Odes* of Anacreon, London, 1739, in 8vo.

ROLLIN, CHARLES, a celebrated French writer, was the son of a cutler at Paris, and was born there on the 30th of January 1661. He studied at the college of Plessis, in which he obtained an exhibition through the interest of a Benedictine monk whom he had served at table, and who discovered in him some marks of genius. Here he acquired the regard of M. Gobinet, principal of the college, who had a particular esteem for him. After having studied humanity and philosophy, he applied himself to divinity three years at the Sorbonne: but he did not prosecute this study, and was satisfied with obtaining the tonsure. He afterwards became professor of rhetoric in his own college, and in 1688 succeeded his master as professor of eloquence in the Royal College. In 1694 he was chosen rector of the university, which was then a mark of distinction, and he continued in that office two years. He spoke the annual panegyric upon Louis XIV., and made many very useful regulations in the university; he revived the study of the Greek language, which was then much neglected; he substituted academical exercises in the place of tragedies; and introduced the practice, which had been formerly observed, of causing the students to get by heart passages of Scripture. He was a man of indefatigable application, and trained innumerable persons, who did honour to the church, the state, and the army. Upon the expiration of the rectorship, Cardinal Noailles engaged him to superintend the studies of his nephews, who were in the college of Laon; and in this office he was agreeably employed when, in 1699, he was, with great reluctance,

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made coadjutor to the principal of the college of Beauvais. This college was then a kind of desert, inhabited by very few students, and without any regular discipline; but Rollin's great industry soon raised it to that credit which it long retained. In this situation he continued till 1712, when the war between the Jesuits and the Jansenists drawing towards a crisis, he fell a sacrifice to the prevalence of the former. Father le Tellier, the king's confessor, a furious agent of the Jesuits, infused into his master prejudices against Rollin, whose connection with Cardinal de Noailles would alone have sufficed to make him a Jansenist; and on this account he lost his share in the principality of Beauvais. He now employed his leisure upon Quintilian, an author whom he justly valued, and could not without uneasiness see neglected. He retrenched in him whatever he thought curious rather than useful: placed summaries or contents at the head of each chapter, and accompanied the text with short and select notes. His edition appeared in 1715, in 2 vols. 12mo, with an elegant preface explaining his method and views.

In 1710 Rollin was chosen rector of the university of Paris; but he was displaced in about two months by a *lettre de cachet*. He now applied himself to the composition of his *Treatise on the Manner of Studying and Teaching the Belles Lettres*, two volumes of which were published, in 8vo, in 1726, and two more in 1728. This work, though greatly deficient in order, and displaying neither depth nor philosophy, has been exceedingly successful; and its success encouraged the author to undertake another work of equal use and entertainment, his *Ancient History of the Egyptians, Carthaginians, Assyrians, Babylonians, Medes and Persians, Macedonians and Greeks*, which he finished in 13 vols. 8vo, and published between 1730 and 1738. Voltaire, after having observed that Rollin was "the first member of the university of Paris who wrote French with dignity and correctness," says of this work, that "though the last volumes, which were written in too great a hurry, are not equal to the first, it is nevertheless the best compilation that had yet appeared in any language; because it is seldom that compilers are eloquent, and Rollin was remarkably so." This is perhaps saying too much. His chronology is neither exact nor consistent; he states facts inaccurately; he has not sufficiently examined the exaggerations of ancient historians; he often interrupts the most solemn narrations with mere trifles; and his style is not uniform. Nothing can be more noble and more refined than his reflections; but they are strewn with too sparing a hand, and want that lively and laconic turn on account of which the historians of antiquity are read with so much pleasure. There is a visible negligence in his diction with regard to grammatical usage, and the choice of his expressions, which he does not at all times select with sufficient taste, although, on the whole, he writes well, and has preserved himself free from many of the faults of modern authors. While the last volumes of his *Ancient History* were printing, he published the first of his *Roman History*, which he lived to carry on, through the eighth volume and into part of the ninth, to the war against the Cimbri, about seventy years before the battle of Actium. Crevier, the worthy disciple of Rollin, continued the history to the battle of Actium, which closes the tenth volume; and afterwards completed the original plan of Rollin in sixteen volumes 12mo, which was, to bring it down from the foundation of the city to the reign of Constantine the Great. This work is alternately diffuse and barren; and the greatest advantage of the work is, that there are several passages from Livy translated with great elegance into French. He also published a Latin translation of some of the theological writings relative to the disputes of the times in which he lived. He also published *Opuscules*, containing different letters, Latin harangues, discourses, complimentary addresses, &c.,

Paris, 1771, 2 vols. 12mo. He died in 1741. The *Œuvres de Rollin* have frequently been printed both in French and English. One of the best of the French editions is that annotated by M. Guizot, 30 vols. 8vo, 1821-27. (See the *Eloges* on Rollin by Berville, Maillet-Lacoste, and Trognon; also his Life by Rivarolle-Etienne and Bousson de Mairat.)

ROLLO, ROLF, or RAOUL, the conqueror of Normandy, was a Norwegian duke, banished from his country by Harold Harfagr (who conquered Norway in A.D. 870) on account of the piracies he committed. He first retired with his fleet among the islands of the Hebrides, to the north-west of Scotland, whither the flower of the Norwegian nobility had fled for refuge ever since Harold had become master of the whole kingdom. He was there received with open arms by those warriors, who, eager for conquest and revenge, waited only for a chief to undertake some glorious enterprise. Rollo, placing himself at their head, and seeing his power formidable, sailed towards England, which had long been a field open on all sides to the violence of the northern nations. But the great Alfred had some years before established such order in his part of the island that Rollo, after several fruitless attempts, despaired of forming there such a settlement as should make him amends for the loss of his own country. He pretended, therefore, to have had a supernatural dream, which promised him a glorious fortune in France, and which served at least to support the ardour of his followers. The weakness of the government in that kingdom, and the confusion in which it was involved, were still more persuasive reasons to insure them of success. Having therefore sailed up the Seine to Rouen, he immediately took the capital of the province then called Neustria (subsequently *Normandy*), and making it his magazine of arms, he advanced and laid siege to Paris. The entire cession of Neustria was the result, which Charles the Simple was obliged to give up to Rollo and his Normans in order to purchase a peace. Rollo received it in perpetuity to himself and his posterity as a feudal duchy dependent on the crown of France. A description of the interview between Charles and this new duke gives us a curious picture of the manners of these Normans; for the latter would not take the oath of fealty to his sovereign lord any other way than by placing his hands within those of the king; and absolutely refused to kiss his feet, as custom then required. It was with great difficulty that he prevailed on to let one of his warriors perform this ceremony in his stead; but the officer to whom Rollo deputed this service suddenly raised the king's foot so high, that he overturned him on his back, a piece of rudeness which was only laughed at; to such a degree were the Normans feared and Charles despised. Rollo was soon afterwards persuaded to embrace Christianity, and he was baptized with much ceremony, under the name of Robert, by the Archbishop of Rouen, in the cathedral of that city, in the year 912. As soon as he saw himself in full possession of Normandy, he exhibited such virtues as rendered the province happy, and deserved to make his former outrages forgotten. Religious, wise, and liberal, this captain of pirates became, after Alfred, the greatest and most humane prince of his time. He seems to have died about 927. Ordericus Vitalis assigns his death to 917. There is published by Duchesne, in his *Historia Normanorum Scriptores Antiqui* the panegyric of Dean Dudo of St Quentin upon the first three dukes of Normandy, viz., Rollo, William I., surnamed Longue-Épée, and Richard, surnamed Sans-Peur.

ROLLOCK, ROBERT, the first principal of the university of Edinburgh, was the son of David Rollock of Powis, in the neighbourhood of Stirling, and was born in the year 1555. He enjoyed the instructions of Thomas Buchanan, a man distinguished for worth and learning, and a nephew of the great George Buchanan. From school he was sent to the university of St Andrews, where his progress was

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so rapid that he was made professor of philosophy soon after he took his master's degree. The magistrates of Edinburgh having petitioned the king to found a university in that city, they obtained a charter, by which they were allowed all the privileges of a university, which was built in 1582, and Rollock was chosen principal and professor of divinity. In the year 1593 Rollock and others were appointed by Parliament to confer with the Popish lords; and in 1595 he was empowered, along with others, to visit the different universities in Scotland, with a view to inquire into the doctrine and practice of the different masters, the discipline adopted by them, the state of their rents and living, which they were ordered to report to the next General Assembly. He was chosen moderator of the General Assembly in the year 1597. The greater part of his life was spent in conducting the affairs of the church; yet Spottiswood assures us that he would rather have preferred retirement and study. Indeed the feebleness of his constitution was not equal to the bustle of public life. He died at Edinburgh on the last day of February 1598, in the forty-third year of his age. Short as his life was, he published many works, chiefly in Latin. A particular account of the author will be found in a volume printed under the following title:—*De Vita et Morte Roberti Rollok, Academiae Edinburgensæ Primarii, Narrationes, auctoribus Georgio Robertson et Henrico Charteris*, Edinb. 1826, 4to. Robertson's biographical tract was originally published in 1599; that of Charteris was printed from a manuscript in the public library of the university for the use of the Bannatyne Club. An edition of the *Select Works* of Robert Rollock was published in Edinburgh under the auspices of the Wodrow Society, and under the editorship of William M. Gunn, 2 vols., 1849. The editor has translated the biography by Charteris, with elucidatory notes. He has likewise given at the end of the biography a list of the author's writings.

ROMA, COMARCA DI, a province of the Papal States, bounded on the E. by the kingdom of Naples, S. by the delegation of Frosinone and legation of Velletri, E. by the Mediterranean and the delegation of Civita Vecchia, and N. by those of Viterbo and Rieti; area, 1715 square miles. The north-eastern part of the country is occupied by the branches of the Sabine and Tuscan Apennines, among which there are many tracts of great picturesqueness and beauty. The principal summits are Monte Guadagnolo; Monte Genaro, the ancient *Lucretilis*, 4185 feet high; and Monte San Oreste, the ancient *Soracte*, about 2000 feet. The principal river in the province is the Tiber, which flows from N.E. to S.W. into the Mediterranean, and it receives from the left the Teverone, anciently called the *Anio*. Some smaller streams flow into the sea; and there are several lakes, such as those of Albano, Bracciano, and Neri, which occupy ancient volcanic craters. The most of the country belongs to the gently-undulating tract called the Campagna di Roma, many parts of which are liable to malaria. Pop. (1856) exclusive of the city, 150,507.

ROMAGNOSI, GIAN DOMENICO, an eminent publicist, was born in 1761, near Piacenza, and studied jurisprudence at Parma. His treatise on the *Origin of Penal Law*, published in 1791, was the beginning of his success. It is true that at first his own countrymen did not recognise the merits of his work. But the French, who gained a footing in Italy by the victory of Marengo, had become acquainted with his talents, and a series of important appointments was the consequence. He was made professor of jurisprudence in 1802 at the university of Parma. He was appointed one of the commission in 1806 for compiling a code of criminal procedure. He was translated in 1807 to the chair of civil law at Pisa. At length he was called to Milan in 1809 to lecture on legislative science. The latter part of Romagnosi's life, however, was attended by

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embarrassing circumstances. The general suppression of special chairs of law in 1817 deprived him of his situation. The scantiness of his savings obliged him to have recourse to private teaching. In the midst of his work a shock of paralysis impaired his strength. The Austrian government also kept a suspicious eye upon all his movements. He was thus forced to live in poverty and cautious obscurity till his death in 1835. Besides the work already mentioned, another important production of Romagnosi's is an *Introduction to the History of Universal Public Law*, in 2 vols. 8vo, Parma, 1806. His complete works were published in 5 vols. 8vo, Florence, 1834.

ROMAINE, WILLIAM, a pious English divine, was born at Hartlepool in Durham in 1714, and was educated for the church at Oxford. No sooner had the young man received orders than he appeared in the character of a Calvinist. The long time which he was compelled to drag out as a country curate did not make him adapt his creed to the principles of the dispensers of ecclesiastical promotion. After he had settled in London in 1748 his consistency came out more prominently than ever. So emphatically did he preach the doctrine of justification by faith alone, that on several occasions he found himself opposed in an outrageous manner by his superiors. During his career as lecturer at St Dunstan's-in-the-West, he was frequently denied the use of lights, and was obliged to hold a candle in one hand while he gave effect to his sermon with the other. In 1755 he was deprived of his office of morning preacher at St George's, Hanover Square, after he had officiated for four years with great success. In 1757 he was refused admission to the university pulpit at Oxford on account of a discourse which he had formerly delivered there on the text, "The Lord our righteousness." It was not until he had been appointed, in 1764, to the rectory of St Ann's, Blackfriars, that he was allowed to discharge his ministerial functions without any violent opposition. Romaine died in 1795. His works, consisting of sermons, letters, and religious pamphlets, accompanied with a memoir, were published by the Rev. W. B. Cadogan, in 8 vols. 8vo, London, 1796.

ROMAN CATHOLICISM, the name applied by Protestants to that large section of Christians which regard the Bishop or Pope of Rome as its infallible spiritual head, and which assumes to itself the title of Catholic or Universal. Its principal doctrines have already been given under the heads MASS, POPE, POKERY, PURGATORY, &c. Under the article REFORMATION is given a rapid sketch of the successful struggles made by various of the European states to deliver themselves from the domination of the Pope.

ROMANA, DON PEDRO CARO Y SUREDA, a Spanish general, was born at Majorca in 1761, and was trained to the profession of arms. In 1808 he was advancing the French interests in Funen at the head of a Spanish force, when the intelligence reached him that the crown of his native kingdom had been given to Joseph Bonaparte. He immediately began to take measures for saving his country. With the utmost secrecy his troops were collected and embarked. Placing them under the command of Count San Roman, he sent them off to vindicate the rights of their lawful sovereign. He himself then repaired to London, to solicit the aid of England against the French. Nor was his task of patriotism finished when he had gained the object of his mission, and had returned to Spain. As commander-in-chief of the provinces of Biscay, Galicia, and Asturias, he assisted the British both by his counsels and by his operations. So notable, indeed, were his services, that on his death in 1811, the Duke of Wellington said that "in him the Spanish army had lost its finest ornament, Spain its purest patriotism, and the world the bravest and the most zealous defender of the cause for which we combat."

ROMANCE.

Romance.
Definition
and origin
of the word
romance.

DR. JOHNSON has defined Romance, in its primary sense, to be "a military fable of the middle ages; a tale of wild adventures in love and chivalry." But although this definition expresses correctly the ordinary idea of the word, it is not sufficiently comprehensive to answer our present purpose. A composition may be a legitimate romance, yet neither refer to love nor chivalry—to war nor to the middle ages. The "wild adventures" are almost the only absolutely essential ingredient in Johnson's definition. We would be rather inclined to describe a *Romance* as "a fictitious narrative in prose or verse; the interest of which turns upon marvellous and uncommon incidents;" being thus opposed to the kindred term *Novel*, which Johnson has described as "a smooth tale, generally of love;" but which we would rather define as "a fictitious narrative, differing from the romance, because the events are accommodated to the ordinary train of human events, and the modern state of society." Assuming these definitions, it is evident, from the nature of the distinction adopted, that there may exist compositions which it is difficult to assign precisely or exclusively to the one class or other; and which, in fact, partake of the nature of both. But the distinction will be found broad enough to answer all general and useful purposes.

The word Romance, in its original meaning, was far from corresponding with the definition now assigned. On the contrary, it signified merely one or other of the popular dialects of Europe, founded, as almost all these dialects were, upon the Roman tongue, that is, upon the Latin. The name of romance was indiscriminately given to the Italian, to the Spanish, even, in one remarkable instance at least,¹ to the English language. But it was especially applied to the compound language of France; in which the Gothic dialect of the Franks, the Celtic of the ancient Gauls, and the classical Latin, formed the ingredients. Thus Robert De Brunne:

"All is calde geste Inglis,
That en this language spoken is—
Frankis speech is cald Romance.
So sayis clerkis and men of France."

At a period so early as 1150, it plainly appears that the Romance language was distinguished from the Latin, and that translations were made from the one into the other; for an ancient romance on the subject of Alexander, quoted by Fauchet, says it was written by a learned clerk,

"Qui de Latin la trest, et en Roman la mit."

The most noted romances of the middle ages were usually composed in the romance or French language, which was, in a peculiar degree, the speech of love and chivalry; and those which are written in English always affect to refer to some French original, which usually, at least, if not in all instances, must be supposed to have a real existence. Hence, the frequent recurrence of the phrase,

"As in romance we read;"

Or,

"Right as the romaunt us tells;"

and equivalent phrases, well known to all who have at any time perused such compositions. Thus, very naturally,

though, undoubtedly by slow degrees, the very name of romance, or romance, came to be transferred from the language itself to that peculiar style of composition in which it was so much employed, and which so commonly referred to it. How early a transference so natural took place, we have no exact means of knowing; but the best authority assures us, that the word was used in its modern sense so early as the reign of Edward III. Chaucer, unable to sleep during the night, informs us, that, in order to pass the time,

"Upon my bed I sate upright;
And bade one rechin me a boke,
A ROMAUNCE, and it me took
To read and drive the night away."

The book described as a romance contained, as we are informed,

"——— Fables
That clerkis had, in old time,
And other poets, put in rhyme."

And the author tells us a little lower,

"This book ne spake but of such things,
Of Queens' lives and of Kings."

The volume proves to be no other than Ovid's *Metamorphoses*; and Chaucer, by applying to it the name of romance, sufficiently establishes that the word was, in his time, correctly employed under the modern acceptation.

Having thus accounted for the derivation of the word, our investigation divides itself into three principal branches, though of unequal extent. In the first of these we propose to inquire into the general history and origin of this peculiar species of composition, and particularly of romances relating to European chivalry, which necessarily form the most interesting object of our inquiry. In the second, we shall give some brief account of the history of the romance of chivalry in the different states of Europe. Thirdly, we propose to notice cursorily the various kinds of romantic composition by which the ancient romances of chivalry were followed and superseded, and with these notices to conclude the article.

I. In the views taken by Hurd, Percy, and other older General authorities, of the origin and history of romantic fiction, their history of attentions were so exclusively fixed upon the romance of romance. chivalry alone, that they appear to have forgotten that, however interesting and peculiar, it formed only one species of a very numerous and extensive genus. The progress of romance, in fact, keeps pace with that of society, which cannot long exist, even in the simplest state, without exhibiting some specimens of this attractive style of composition. It is not meant by this assertion, that in early ages such narratives were invented, in the character of mere fictions, devised to beguile the leisure of those who had time enough to read and attend to them. On the contrary, romance and real history have the same common origin. It is the aim of the former to maintain as long as possible the mask of veracity; and indeed the traditional memorials of all earlier ages partake in such a varied and doubtful degree of the qualities essential to those opposite lines of composition, that they form a mixed class between them; and may be termed either romantic histories, or historical romances,

¹ This curious passage was detected by the industry of Ritson in *Giraldus Cambrensis*, "*Ab aqua illa optima, quæ Scottice vocata est FROTH; Brittanice, WEIRAD; Romane vero Scottie-Watire.*" Here the various names assigned to the Frith of Forth are given in the Gaelic or Earse, the British or Welsh; and the phrase *Roman* is applied to the ordinary language of England. But it would be difficult to shew another instance of the English language being termed Roman or Romance.

Romance. according to the proportion in which their truth is debased by fiction, or their fiction mingled with truth.

A moment's glance at the origin of society will satisfy the reader why this can hardly be otherwise. The father of an isolated family, destined one day to rise into a tribe, and in further progress of time to expand into a nation, may, indeed, narrate to his descendants the circumstances which detached him from the society of his brethren, and drove him to form a solitary settlement in the wilderness, with no other deviation from truth, on the part of the narrator, than arises from the infidelity of memory, or the exaggerations of vanity. But when the tale of the patriarch is related by his children, and again by his descendants of the third and fourth generation, the facts it contains are apt to assume a very different aspect. The vanity of the tribe augments the simple annals from one cause; the love of the marvellous, so natural to the human mind, contributes its means of sophistication from another; while, sometimes, the king and the priest find their interest in casting a holy and sacred gloom and mystery over the early period in which their power arose. And thus altered and sophisticated from so many different motives, the real adventures of the founder of the tribe bear as little proportion to the legend recited among his children, as the famous hut of Loretto bears to the highly ornamented church with which superstition has surrounded and enchased it. Thus the definition which we have given of Romance as a fictitious narrative turning upon the marvellous or the supernatural, might, in a large sense, be said to embrace

quicquid Græcia mendax
Audet in historia,

or, in fine, the mythological and fabulous history of all early nations.

It is also important to remark, that poetry, or rather verse, rhythm at least of some sort or other, is originally selected as the best vehicle for these traditional histories. Its principal recommendation is probably the greater facility with which metrical narratives are retained in the memory, a point of the last consequence, until the art of writing is generally introduced; since the construction of the verse itself forms an artificial association with the sense, the one of which seldom fails to recall the other to recollection. But the medium of verse, at first adopted merely to aid the memory, becomes soon valuable on account of its other qualities. The march or measure of the stanza is gratifying to the ear, and, like a natural strain of melody, can be restrained or accelerated, so as to correspond with the tone of feeling which the words convey; while the recurrence of the necessary measure, rhythm or rhyme, is perpetually gratifying the hearer by a sense of difficulty overcome. Verse being thus adopted as the vehicle of traditional history, there needs but the existence of a single man of genius, in order to carry the composition a step higher in the scale of literature than that of which we are treating. In proportion to the skill which he attains in his art, the fancy and ingenuity of the artist himself are excited; the simple narrative transmitted to him by ruder rhymers is increased in length; is decorated with the graces of language, amplified in detail, and rendered interesting by description; until the brief and barren original bears as little resemblance to the finished piece, as the *Iliad* of Homer to the evanescent traditions, out of which the blind bard wove his tale of Troy Divine. Hence, the opinion expressed by the ingenious Percy, and assented to by Ritson himself. When about to present to his readers an excellent analysis of the old romance of *Lybius Disconius*, and making several remarks on the artificial management of the story, the Bishop observes, that "if an epic poem may be defined a fable related by a poet to

excite admiration and inspire virtue, by representing the action of some one hero favoured by Heaven, who executes a great design in spite of all the obstacles that oppose him, I know not why we should withhold the name of *epic poem* from the piece which I am about to analyse."¹

Yet although this levelling proposition has been laid down by Percy, and assented to by Ritson (writers who have few opinions in common,) and although, upon so general a view of the subject, the *Iliad*, or even the *Odyssey* of Homer, might be degraded into the class of romances, as *Le Beau Deconnu* is elevated into that of epic poems, there lies in ordinary speech, and in common sense, as wide a distinction between these two classes of composition, as there is betwixt the rude mystery or morality of the middle ages, and the regular drama by which these were succeeded. Where the art and the ornaments of the poet chiefly attract our attention; where each part of the narrative bears a due proportion to the others, and the whole draws gradually towards a final and satisfactory conclusion; where the characters are sketched with force, and sustained with precision; where the narrative is enlivened and adorned with so much, and no more, of poetical ornament and description, as may adorn, without impeding its progress; where this art and taste are displayed, supported, at the same time, by a sufficient tone of genius, and art of composition, the work produced must be termed an epic poem, and the author may claim his seat upon the high and honoured throne occupied by Homer, Virgil, and Milton. On the other hand, when a story languishes in tedious and minute details, and relies for the interest which it proposes to excite, rather upon the wild excursions of an unbridled fancy, than upon the skill of the poet; when the supernatural and the extraordinary are relied upon exclusively as the supports of the interest, the author, though his production may be distinguished by occasional flashes of genius, and though it may be interesting to the historian, as containing some minute fragments of real events, and still more so to the antiquary, from the light which it throws upon ancient manners, is still no more than a humble romancer, and his work must rank amongst those rude ornaments of a dark age, which are at present the subject of our consideration. Betwixt the extremes of the two classes of composition, there must, no doubt, exist many works, which partake in some degree of the character of both; and after having assigned most of them, each to their proper class, according as they are distinguished by regularity of composition and poetical talent, or, on the contrary, by extravagance of imagination, and irregularity of detail, there may still remain some, in which these properties are so equally balanced, that it may be difficult to say to which class they belong. But although this may be the case in a very few instances, our taste and habits readily acknowledge as complete and absolute a difference betwixt the epopeia and romance, as can exist betwixt two distinct species of the same generic class.

We have said of romance, that it first appears in the form of metrical history, professes to be a narrative of real facts, and is, indeed, nearly allied to such history as an early state of society affords; which is always exaggerated by the prejudices and partialities of the tribe to which it belongs, as well as deeply marked by their idolatry and superstition. These it becomes the trade of the romancers still more to exaggerate, until the thread of truth can scarce be discerned in the web of fable which involves it; and we are compelled to renounce all hope of deriving serious or authentic information from the materials upon which the compounders of fiction have been so long at work, from one generation to another, that they have at length obliterated the very shadow of reality or even probability.

The view we have given of the origin of romance will be

¹ *Reliques of Ancient English Poetry*, III. xxvii. The Prelate is citing a discourse on epic poetry, prefixed to *Telemachus*.

Romance. found to agree with the facts which the researches of so many active investigators of this curious subject have been able to ascertain. It is found, for example, and we will produce instances in viewing the progress of romance in particular countries, that the earliest productions of this sort, known to exist, are short narrations or ballads, which were probably sung on solemn or festive occasions, recording the deeds and praises of some famed champion of the tribe and country, or perhaps the history of some remarkable victory or signal defeat, calculated to interest the audience by the associations which the song awakens. These poems, of which very few can now be supposed to exist, are not without flashes of genius, but brief, rude, and often obscure, from real antiquity or affected sublimity of diction. The song on the battle of Brunanburgh, preserved in the *Saxon Chronicle*, is a genuine and curious example of this aboriginal style of poetry.

Temporal and spiritual romances.

Even at this early period,¹ there may be observed a distinction betwixt what may be called the *Temporal* and *Spiritual* romances; the first destined to the celebration of worldly glory; the second to recording the deaths of martyrs and the miracles of saints; both which themes unquestionably met with an almost equally favourable reception from their hearers. But although most nations possess, in their early species of literature, specimens of both kinds of romance, the proportion of each, as was naturally to have been expected, differs according as the genius of the people amongst whom they occur leaned towards devotion or military enterprise. Thus, of the Saxon specimens of poetry, which manuscripts still afford us, a very large proportion is devotional, amongst which are several examples of the spiritual romance, but very few, indeed, of those respecting warfare or chivalry. On the other hand, the Norman language, though rich in examples of both kinds of romances, is particularly abundant in that which relates to battle and warlike adventure. The Christian Saxons had become comparatively pacific, while the Normans were certainly accounted the most martial people in Europe.

However different the spiritual romance may be from the temporal in scope and tendency, the nature of the two compositions did not otherwise greatly differ. The structure of verse and style of composition was the same; and the induction, even when the most serious subject was undertaken, exactly resembled that with which minstrels introduced their idle tales, and often contained allusions to them. Warton quotes a poem on the Passions, which begins,

I hereth one lutele tale, that Ich eu wille telle,
As wi vyndeth hit invrite in the godspelle,
Nuz hit nouht of Carlemeyne ne of the Duzpere,
Ac of Criste's thruurynge, &c.

The temporal romances, on the other hand, often commenced by such invocations of the Deity, as would only have been in place when a much more solemn subject was to be agitated. The exordium of the Romance of *Perumbras* may serve as an example of a custom almost universal;

God in glorie of mightis moost
That all things made in sapience,
By virtue of Word and Holy Gooste,
Giving to men great excellence, &c.

The distresses and dangers which the knight endured for the sake of obtaining earthly fame and his mistress's favour, the saint or martyr was exposed to for the purpose of securing his rank in heaven, and the favour of some beloved and peculiar patron saint. If the earthly champion is in peril from monsters, dragons, and enchantments, the spiritual hero is represented as liable to the constant assaults of the whole invisible world, headed by the ancient dragon himself. If the knight is succoured at need by some favouring fairy or

protecting genius, the saint is under the protection not only of the whole heavenly host, but of some one divine patron or patroness who is his especial auxiliary. Lastly, the conclusion of the romance, which usually assigns to the champion a fair realm, an abundant succession, and a train of happy years, consigns to the martyr his fane and altar upon earth, and in heaven his seat among saints and angels, and his share in a blessed eternity. It remains but to say, that the style and language of these two classes do not greatly differ, and that the composers of both employ the same structure of rhythm and of language, and draw their ideas and their incidents from similar sources; so that, having noticed the existence of the spiritual romance, it is unnecessary for the present to prosecute this subject farther.

Another early and natural division of these works of fiction seems to have arranged them into *Serious* and *Comical*. The former were by far the most numerous, and examples of the latter are in most countries comparatively rare. Such a class, however, existed, as proper romances, even if we hold the comic romance distinct from the *Contes* and *Fabliaux* of the French, and from such jocular English narratives as the *Wife Lapt in Moral's Skin*, *The Friar and the Boy*, and similar humorous tales; of which the reader will find many examples in Ritson's *Ancient English Poetry*, and in other collections. The scene of these *gestes* being laid in low, or at least in ordinary life, they approach in their nature more nearly to the class of novels, and may perhaps be considered as the earliest specimens of that kind of composition. But the proper comic romance was that in which the high terms and knightly adventures of chivalry were burlesqued, by ascribing them to clowns or others of a low and mean degree. Such compositions formed, as it were, a parody on the serious romance, to which they bore the same proportion as the antimasque, studiously filled with grotesque, absurd, and extravagant characters, "entering," as the stage direction usually informs us, "to a confused music," bore to the masque itself, where all was dignified, noble, stately, and harmonious.

An excellent example of the comic romance is the *Tournament of Tottenham*, printed in Piercy's *Reliques*, in which a number of clowns are introduced practising one of these warlike games, which were the exclusive prerogative of the warlike and noble. They are represented making vows to the swan, the peacock, and the ladies; riding a tilt on their clumsy cart horses, and encountering each other with ploughshares and flails; whilst their defensive armour consisted of great wooden bowls and troughs, by way of helmets and cuirasses. The learned editor seems to have thought this singular composition was like Don Quixote, with which he compares it, a premeditated effort of satire, written to expose the grave and fantastic manners of the serious romance. This is considering the matter too deeply, and ascribing to the author a more critical purpose than he was probably capable of conceiving. It is more natural to suppose that his only ambition was to raise a laugh, by ascribing to the vulgar the manners and exercises of the noble and valiant; as in the well-known farce of *High Life Below Stairs*, the ridicule is not directed against the manners described, but against the menials who affect those that are only befitting their superiors. The *Hunting of the Hare*, published in the collection formed by the late industrious and accurate Mr. Weber, is a comic romance of the same order. A yeoman informs the inhabitants of a country hamlet that he has found a hare sitting, and invites them to come to course her. They attend, accordingly, with all the curs and mastiffs of their village, and the unsportsman-like manner in which the inexperienced huntsmen and their irregular pack conduct themselves, forms the interest of the piece. It can hardly be supposed the satire is directed against the sport of hunt-

¹ The religious romances of *Barlaam* and *Jehosephat* were composed by John of Damascus in the eighth century.

Romance. ing itself; since the whole ridicule arises out of the want of the necessary knowledge of its rules, incident to the ignorance and inexperience of the clowns who undertook to practise an art peculiar to gentlemen. The ancient poetry of Scotland furnishes several examples of this ludicrous style of romantic composition; as the *Tournament at the Drum*, and the *Justing of Watson and Barbour*, by Sir David Lindsay. It is probable that these mock encounters were sometimes acted in earnest; at least King James I. is accused of witnessing such practical jests; "sometimes presenting David Droman and Archie Armstrong, the king's fool, on the back of other fools, to tilt at one another till they fell together by the ears."—(Sir Anthony Weldon's *Court of King James*.)

Classical
romances.

In hastily noticing the various divisions of the romance, we have in some degree delayed our promised account of its rise and progress; an inquiry which we mean chiefly to confine to the romance of the middle ages. It is indeed true that this species of composition is common to almost all nations, and that even if we deem the *Iliad* and *Odyssey* compositions too dignified by the strain of poetry in which they are composed to bear the name of metrical romances; yet we have the pastoral romance of *Daphnis and Chloe*, and the historical romance of *Theagenes and Chariclea*, which are sufficiently accurate specimens of that style of composition. The *Milesian fables* and the romances of Antonius Diogenes, described by Photius, could they be recovered, would also be found to belong to the same class. It is impossible to avoid noticing that the Sybarites, whose luxurious habits seem to have been intellectual, as well as sensual, were peculiarly addicted to the perusal of the Milesian fables; from which we may conclude that they were not of that severe kind which inspired high thoughts and martial virtues. But there would be little advantage derived from extending our researches into the ages of classical antiquity respecting a class of compositions which, though they existed then, as in almost every stage of society, were neither so numerous nor of such high repute as to constitute any considerable portion of that literature.

Eastern
romances.

Want of space also may entitle us to dismiss the consideration of the Oriental romances, unless in so far as in the course of the middle ages they came to furnish materials for enlarging and varying the character of the romances of knight-errantry. That they existed early, and were highly esteemed both among the Persians and Arabians, has never been disputed; and the most interesting light has been lately thrown on the subject by the publication of *Antar*, one of the most ancient, as well as most rational, if we may use the phrase, of the Oriental fictions. The Persian romance of the *Shah-Nameh* is well known to Europeans by name, and by copious extracts; and the love-tale of *Mejnoun and Leilah* is also familiar to our ears, if not to our recollections. Many of the fictions in the extraordinary collection of the *Arabian Tales* approach strictly to the character of romances of chivalry; although in general they must be allowed to exceed the more tame northern fictions in dauntless vivacity of invention, and in their more strong tendency to the marvellous. Several specimens of the comic romance are also to be found mingled with those which are serious; and we have the best and most positive authority that the recital of these seductive fictions is at this moment an amusement as fascinating and general among the people of the East, as the perusal of printed romances and novels among the European public. But a minute investigation into this particular species of romance would lead us from our present field, already sufficiently extensive for the limits to which our plan confines it.

The European Romance, wherever it arises, and in whatsoever country it begins to be cultivated, had its origin in some part of the real or fabulous history of that country; and of this we will produce, in the sequel, abundant proofs.

But the simple tale of tradition has not passed through many mouths, ere some one, to indulge his own propensity for the wonderful, or to secure by novelty the attention of his audience, augments the meagre chronicle with his own apocryphal inventions. Skirmishes are magnified into great battles; the champion of a remote age is exaggerated into a sort of demi-god; and the enemies whom he encountered and subdued are multiplied in number, and magnified in strength, in order to add dignity to his successes against them. Chaunted to rhythmical numbers, the songs which celebrate the early valour of the fathers of the tribe become its war-cry in battle, and men march to conflict hymning the praises and the deeds of some real or supposed precursor who had marshalled their fathers in the path of victory. No reader can have forgotten that when the decisive battle of Hastings commenced, a Norman minstrel, Taillefer, advanced on horseback before the invading host, and gave the signal for onset, by singing the *Song of Roland*, that renowned nephew of Charlemagne, of whom romance speaks so much, and history so little; and whose fall, with the chivalry of Charles the great in the pass of Roncesvalles, has given rise to such clouds of romantic fiction, that its very name has been for ever associated with it. The remarkable passage has been often quoted from the *Brut of Wace*, an Anglo-Norman metrical chronicle.

Taillefer, qui moult bien chantout
Sur un cheval qui tost alout,
Devant le Duc alout chantant
De Karlemaigne et de Rollant,
Et d'Oliver et des vassals,
Qui morurent en Roncevaux.

Which may be thus rendered :

Taillefer, who sung both well and loud,
Came mounted on a courser proud;
Before the Duke the minstrel sprung,
And loud of Charles and Roland sung,
Of Oliver and champions mo,
Who died at fatal Roncevaux.

This champion possessed the sleight-of-hand of the juggler, as well as the art of the minstrel. He tossed up his sword in the air, and caught it again as he galloped to the charge, and showed other feats of dexterity. Taillefer slew two Saxon warriors of distinction, and was himself killed by a third. Ritson, with less than his usual severe accuracy, supposed that Taillefer sung some part of a long metrical romance upon Roland and his history; but the words *chanson*, *cantilena*, and *song*, by which the composition is usually described, seems rather to apply to a brief ballad or national song; which is also more consonant with our ideas of the time and place where it was chaunted.

But neither with these romantic and metrical chronicles did the mind long remain satisfied; more details were demanded, and were liberally added by the invention of those who undertook to cater for the public taste in such matters. The same names of kings and champions, which had first caught the national ear, were still retained, in order to secure attention, and the same assertions of authenticity, and of reference to real history, were stoutly made both in the commencement and in the course of the narrative. Each nation, as will presently be seen, came at length to adopt to itself a cycle of heroes like those of the *Iliad*; a sort of common property to all minstrels who chose to make use of them, under the condition always, that the general character ascribed to each individual hero was preserved with some degree of consistency. Thus, in the romances of *The Round Table*, Gawain is usually represented as courteous; Kay as rude and boastful; Mordred as treacherous; and Sir Launcelot as a true though a sinful lover, and in all other respects a model of chivalry. Amid the Paladins of Charlemagne, whose cycle may be considered as peculiarly the property of French in opposition to Anglo-Norman ro-

Romance. mance, Gan, or Ganelon of Mayence, is always represented as a faithless traitor engaged in intrigues for the destruction of Christianity; Roland as brave, unsuspecting, devotedly loyal, and somewhat simple in his disposition; Renaud, or Rinaldo, is painted with all the properties of a borderer, valiant, alert, ingenious, rapacious and unscrupulous. The same conventional distinctions may be traced in the history of the Nibelung, a composition of Scandinavian origin, which has supplied matter for so many Teutonic adventurers. Meister Hildebrand, Etzel, Theodorick, and the champion Hogan, as well as Chrimhelda and the females introduced, have the same individuality of character, which is ascribed, in Homer's immortal writings, to the wise Ulysses, the brave but relentless Achilles, his more gentle friend Patroclus, Sarpedon, the favourite of the gods, and Hector, the protector of mankind. It was not permitted to the invention of a Greek poet to make Ajax a dwarf, or Teucer a giant, Thersites a hero, or Diomedes a coward; and it seems to have been under similar restrictions respecting consistency that the ancient romancers exercised their ingenuity upon the materials supplied them by their predecessors. But, in other respects, the whole store of romantic history and tradition was free to all as a joint stock in trade, on which each had a right to draw as suited his particular purposes. He was at liberty not only to select a hero out of known and established names which had been the theme of others, but to imagine a new personage of his own pure fancy, and combine him with the heroes of Arthur's Table or Charlemagne's Court, in the way which best suited his fancy. He was permitted to excite new wars against those bulwarks of Christendom, invade them with fresh and innumerable hosts of Saracens, reduce them to the last extremity, drive them from their thrones, and lead them into captivity, and again to relieve their persons, and restore their sovereignty, by events and agents totally unknown in their former story.

In the characters thus assigned to the individual personages of romantic fiction, it is possible there might be some slight foundation in remote tradition, as there were also probably some real grounds for the existence of such persons, and perhaps for a very few of the leading circumstances attributed to them. But these realities only exist as the few grains of wheat in the bushel of chaff, incapable of being winnowed out, or cleared from the mass of fiction with which each new romancer had in his turn overwhelmed them. So that romance, though certainly deriving its first original from the pure fount of history, is supplied, during the course of a very few generations, with so many tributes from the imagination, that at length the very name comes to be used to distinguish works of pure fiction.

When so popular a department of poetry has attained this decided character, it becomes time to inquire who were the composers of these numerous, lengthened, and once admired narratives which are called metrical romances, and from whence they drew their authority. Both these subjects of discussion have been the source of great controversy among antiquaries; a class of men who, be it said with their forgiveness, are apt to be both positive and polemical upon the very points which are least susceptible of proof, and which are least valuable if the truth could be ascertained; and which, therefore, we would gladly have seen handled with more diffidence, and better temper, in proportion to their uncertainty.

The late venerable Dr. Percy, Bishop of Dromore, led the way unwarily to this dire controversy, by ascribing the composition of our ancient heroic songs and metrical legends, in rather too liberal language, to the minstrels, that class of men by whom they were generally recited. This excellent person, to whose memory the lovers of our ancient lyre must always remain so deeply indebted, did not, on publishing his

work nearly fifty years ago, see the rigid necessity of observing the utmost and most accurate precision either in his transcripts or his definitions. The study which he wished to introduce was a new one; it was his object to place it before the public in an engaging and interesting form; and, in consideration of his having obtained this important point, we ought to make every allowance not only for slight inaccuracies, but for some hasty conclusions, and even exaggerations, with which he was induced to garnish his labour of love. He defined the minstrels, to whose labours he chiefly ascribed the metrical compositions on which he desired to fix the attention of the public, as "an order of men in the middle ages, who subsisted by the arts of poetry and music, and sung to the harp verses composed by themselves or others."¹ In a very learned and elegant essay upon the text thus announced, the reverend Prelate in a great measure supported the definition which he had laid down; although it may be thought that, in the first editions at least, he has been anxious to view the profession of the minstrels on their fairest and most brilliant side; and to assign to them a higher station in society than a general review of all the passages connected with them will permit us to give to a class of persons who either lived a vagrant life, dependent on the precarious taste of the public for a hard-earned maintenance, or, at best, were retained as a part of the menial retinue of some haughty baron, and in a great measure identified with his musical band.

The late acute, industrious, and ingenious Mr. Joseph Ritson, whose severe accuracy was connected with an unhappy eagerness and irritability of temper, took advantage of the exaggerations occasionally to be found in the Bishop's *Account of Ancient Minstrelsy*, and assailed him with terms which may be termed any thing but courteous. Without finding an excuse either in the novelty of the studies in which Percy had led the way, or in the vivacity of imagination which he did not himself share, he proceeded to arraign each trivial inaccuracy as a gross fraud, and every deduction which he considered to be erroneous as a wilful untruth, fit to be stigmatised with the broadest appellation by which falsehood can be distinguished. Yet there is so little room for this extreme loss of temper, that, upon a recent perusal of both these ingenious essays, we were surprised to find that the reverend editor of the *Reliques*, and the accurate antiquary, have differed so very little as, in essential facts, they appear to have done. Quotations are, indeed, made by both with no sparing hand, and hot arguments; and, on one side at least, hard words are unsparingly employed; while, as is said to happen in theological polemics, the contest grows warmer in proportion as the ground concerning which it is carried on is narrower and more insignificant. Their systems, in reality, do not essentially differ.

Ritson is chiefly offended at the sweeping conclusion in which Percy states the minstrels as subsisting by the arts of poetry and music, and reciting to the harp verses composed by themselves and others. He shows very successfully that this definition is considerably too extensive, and that the term minstrel comprehended, of old, not merely those who recited to the harp or other instrument romances and ballads, but others who were distinguished by their skill in instrumental music only; and, moreover, that jugglers, sleight-of-hand performers, dancers, tumblers, and such like subordinate artists, who were introduced to help away the tedious hours in an ancient feudal castle, were also comprehended under the general term of minstrel. But although he distinctly proves that Percy's definition applied only to one class of the persons termed minstrels, those, namely, who sung or recited verses, and in many cases of their own composition; the bishop's position remains unassailable, in so far as relates to one general class, and these the most dis-

¹ *Essay on Ancient Minstrels in England* prefixed to the first volume of Bishop Percy's *Reliques*.

Romance. tingished during the middle ages. All minstrels did not use the harp, and recite or compose romantic poetry; but it cannot be denied that such was the occupation of the most eminent of the order. This Ritson has rather admitted than denied; and the number of quotations which his industry has brought together, rendered such an admission inevitable.

Indeed, the slightest acquaintance with ancient romances of the metrical class, shows us that they were composed for the express purpose of being recited, or, more properly, chanted to some simple tune or cadence for the amusement of a large audience. Our ancestors, as they were circumscribed in knowledge, were also more limited in conversational powers than their enlightened descendants; and it seems probable, that in their public festivals, there was great advantage found in the presence of a minstrel who should recite some popular composition on their favourite subjects of love and war, to prevent those pauses of discourse which sometimes fall heavily on a company, even of the present accomplished age, and to supply an agreeable train of ideas to those guests who had few of their own. It is, therefore, almost constantly insinuated, that the romance was to be chaunted or recited to a large and festive society; and in some part or other of the piece, generally at the opening, there is a request of attention on the part of the performer; and hence, the perpetual "Lythe and listen lordings free," which in those, or equivalent words, forms the introduction to so many romances. As, for example, in the old poem of *Guy and Colbrand*, the minstrel speaks of his own occupation:

When meat and drink is great plentye,
Then lords and ladyes still will be,
And sit and solace lythe;
Then it is time for mee to speake,
Of kern knights and kempes greate,
Such carping for to kythe.

Chaucer, also, in his rhyme of *Sir Thopas*, assigns to the minstrels of his hero's household the same duty of reciting romances of spiritual or secular heroes. for the good knight's pastime while arming himself for battle:

"Do cum," he sayd, "my minestrales,
And jestours for to tellen tales
Anon in min arming,
Of romaunces that ben reales,
Of popes and of cardinales,
And eke of love-longing."

Not to multiply quotations, we will only add one of some importance, which must have escaped Ritson's researches; for his editorial integrity was such, as rendered him incapable of suppressing evidence on either side of the question. In the old romance or legend of *True Thomas and the Queen of Elfland*, Thomas the Rhymer, himself a minstrel, is gifted by the Queen of the Faery with the faculties of music and song. The answer of Thomas is not only conclusive as to the minstrel's custom of recitation, but shows that it was esteemed the highest branch of his profession, and superior as such to mere instrumental music:

"To harp and carp Thomas wheresoever ye gon,
Thomas take the these with the" —
"Harping," he said, "ken I non,
For tong is chefe of Mynstralse."¹

We, therefore, arrive at the legitimate conclusion, that although, under the general term minstrels, were compre-

Romance. hended many who probably entertained the public only with instrumental performances, with ribald tales, with jugglery, or farcical representations, yet one class amongst them, and that a numerous one, made poetical recitation their chief, if not their exclusive occupation. The memory of these men was, in the general case, the depository of the pieces which they recited; and hence, although a number of their romances still survive, very many more have doubtless fallen into oblivion.

That the minstrels were also the authors of many of these poems, and that they altered and enlarged others, is a matter which can scarcely be doubted, when it is proved that they were the ordinary reciters of them. It was as natural for a minstrel to become a poet or composer of romances, as for a player to be a dramatic author, or a musician a composer of music. Whatever individual among a class, whose trade it was to recite poetry, felt the least degree of poetical enthusiasm in a profession so peculiarly calculated to inspire it, must, from that very impulse, have become an original author, or translator at least; thus giving novelty to his recitations, and acquiring additional profit and fame. Bishop Percy, therefore, states the case fairly in the following passage: "It can hardly be expected that we should be able to produce regular and unbroken annals of the minstrel art and its professors, or have sufficient information, whether every minstrel or bard composed himself, or only repeated, the songs he chaunted. Some probably did the one and some the other; and it would have been wonderful indeed, if men, whose peculiar profession it was, and who devoted their time and talents to entertain their hearers with poetical compositions, were peculiarly deprived of all poetical genius themselves, and had been under a physical incapacity of composing those common popular rhymes, which were the usual subjects of their recitation."² While, however, we acquiesce in the proposition, that the minstrels composed many, perhaps the greater part of the metrical romances which they sung, it is evident they were frequently assisted in the task by others who, though not belonging to this profession, were prompted by leisure and inclination to enter upon the literary or poetical department as amateurs. These very often belonged to the clerical profession, amongst whom relaxation of discipline, abundance of spare time, and impatience of the routine of ceremonious duties, often led individuals into worse occupations than the listening to or composing metrical romances. It was in vain that both the poems and the minstrels who recited them were, by statute, debarred from entering the more rigid monasteries. Both found their way frequently to the refectory, and were made more welcome than brethren of their own profession; as we may learn from a memorable *Gest*, in which two poor travelling priests, who had been received into a monastery with acclamation, under the mistaken idea of their being minstrels, are turned out in disgrace, when it is discovered that they were indeed capable of furnishing spiritual instruction, but understood none of the entertaining arts with which the hospitality of their convent might have been repaid by itinerant bards.

Nay, besides a truant disposition to a forbidden task, many of the grave authors may have alleged, in their own defence, that the connexion between history and romance was not in their day entirely dissolved. Some eminent men exercised themselves in both kinds of composition; as, for example, Maitre Wace, canon of Caen, in Normandy, who, besides the metrical chronicle of *Le Brut*, containing

¹ Jamieson's *Popular Ballads*, vol. ii. p. 27.

² *Essay on the Ancient Minstrels*, p. 30.

Another authority of ancient date, the *Chronicle* of Bertrand Guesclin, distinctly attributes the most renowned romances to the composition of the minstrels by whom they were sung. As the passage will be afterwards more fully quoted, we must here only say, that after enumerating Arthur, Launcelot, Godfrey, Roland, and other champions, he sums up his account of them as being the heroes

De quoi cilz minstriers font les nobles romans.

Romance. the earliest history of England, and other historical legends, wrote, in 1155, the *Roman de Chevalier de Lyon*, probably the same translated under the title of *Yvain and Gawain*. Lambert li Cors, and Benoit de Saint-Maur, seem both to have been of the clerical order; and, perhaps, Chretien de Troyes, a most voluminous author of romance, was of the same profession. Indeed, the extreme length of many romances being much greater than any minstrel could undertake to sing at one or even many sittings, may induce us to refer them to men of a more sedentary occupation than those wandering poets. The religious romances were, in all probability, the works of such churchmen as might wish to reconcile an agreeable occupation with their religious profession. All which circumstances must be received as exceptions from the general proposition, that the romances in metre were the composition of the minstrels by whom they were recited or sung, though they must still leave Percy's proposition to a certain extent unimpeached.

To explain the history of Romance, it is necessary to digress a little further concerning the condition of the minstrels by whom these compositions were often made, and, generally speaking, preserved and recited. And here, it must be confessed, that the venerable Prelate has, perhaps, suffered his love of antiquity, and his desire to ennoble the productions of the middle ages, a little to overcolour the importance and respectability of the minstrel tribe; although his opponent Ritson has, on the other hand, seized on all circumstances and inferences which could be adduced to prove the degradation of the minstrel character, without attending to the particulars by which these depreciating circumstances were qualified. In fact, neither of these excellent antiquaries has cast a general or philosophical glance on the necessary condition of a set of men who were by profession the instruments of the pleasure of others during a period of society such as was presented in the middle ages.

In a very early period of civilisation, ere the division of tribes had been generally adopted, and while each tribe may be yet considered as one great family, and the nation as an union of such independent tribes, the poetical art, so nearly allied to that of oratory or persuasion, is found to ascertain to its professors a very high rank. Poets are then the historians and often the priests of the tribe. Their command of language, then in its infancy, excites not merely pleasure, but enthusiasm and admiration. When separated into a distinct class, as was the case with the Celtic bards, and, perhaps, with the skalds of Scandinavia, they rank high in the scale of society, and we not only find kings and nobles listening to them with admiration, but emulous of their art, and desirous to be enrolled among their numbers. Several of the most renowned northern kings and champions valued themselves as much upon their powers of poetry as on their martial exploits; and of the Welsh princes, the Irish kings, and the Highland chiefs of Scotland, very many practised the arts of poetry and music. Llŵarch Hen was a prince of the Cymraig, Brian Boromhe, a harper and a musician, and without resorting to the questionable authenticity of Ossian, several instances of the same kind might be produced in the Highlands.

But, in process of time, when the classes of society come to assume their usual gradation with respect to each other, the rank of professional poets is uniformly found to sink gradually in the scale, along with that of all others whose trade it is to contribute mere amusement. The professional poet, like the player or the musician, becomes the companion and soother only of idle and convivial hours; his presence would be unbecoming on occasions of gravity and importance; and his art is accounted at best an amusing but useless luxury. Although the intellectual pleasure derived from poetry or from the exhibition of the drama be of a different and much higher class than that

Romance. derived from the accordance of sounds, or from the exhibition of feats of dexterity, still it will be found that the opinions and often the laws of society, while individuals of these classes are cherished and held in the highest estimation, have degraded the professions themselves among its idle, dissolute, and useless appendages. Although it may be accounted ungrateful in mankind thus to reward the instruments of their highest enjoyments, yet some justification is usually to be drawn from the manners of the classes who were thus lowered in public opinion. It must be remembered, that, as professors of this joyous science, as it was called, the minstrels stood in direct opposition to the more severe part of the Catholics, and to the monks in particular, whose vows bound them to practise virtues of the ascetic order, and to look upon every thing as profane which was connected with mere worldly pleasure. The manners of the minstrels themselves gave but too much room for clerical censure. They were the usual assistants at scenes, not merely of conviviality, but of license; and as the companions and encouragers of revelling and excess, they became contemptible in the eyes, not only of the aged and the serious, but of the libertine himself, when his debauch palled on his recollection. The minstrels, no doubt, like their brethren of the stage, sought an apology in the corrupted taste and manners of their audience, with which they were obliged to comply, under the true but melancholy condition that

—they who live to please must please to live.

But this very necessity, rendered more degrading by their increasing numbers and decreasing reputation, only accelerated the total downfall of their order, and the general discredit and neglect into which they had fallen. The statute of the 39th of Queen Elizabeth, passed at the close of the sixteenth century, ranks those dishonoured sons of song among rogues and vagabonds, and appoints them to be punished as such; and the occupation, though a vestige of it was long retained in the habits of travelling ballad-singers and musicians, sunk into total neglect and contempt. Of this we shall have to speak hereafter; our business being at present with those romances, which, while still in the zenith of their reputation, were the means by which the minstrels, at least the better and higher class amongst them, recommended themselves to the favour of their noble patrons, and of the audiences whom they addressed.

It may be presumed, that, although the class of minstrels, like all who merely depend upon gratifying the public, carried in their very occupation the evils which first infected, and finally altogether depraved their reputation; yet, in the earlier ages, their duties were more honourably estimated, and some attempts were made to introduce into their motley body the character of a regular establishment, subjected to discipline and subordination. Several individuals, both of France and England, bore the title of king of minstrels, and were invested probably with some authority over the others. The serjeant of minstrels is also mentioned; and Edward IV. seems to have attempted to form a guild or exclusive corporation of minstrels. John of Gaunt, at an earlier period, established (between jest and earnest, perhaps) a court baron of minstrels, to be held at Tilbury. There is no reason, however, to suppose that the influence of their establishments went far in restraining the licence of a body of artists so unruly as well as numerous.

It is not, indeed, surprising that individuals, whose talents in the arts of music or of the stage rise to the highest order, should, in a special degree, attain the regard and affection of the powerful, acquire wealth, and rise to consideration; for, in such professions, very high prizes are assigned only to pre-eminent excellence; while ordinary or inferior practisers of the same art may be said to draw in the lottery something worse than a mere blank. Garrick, in

Romance. nis chariot, and whose company was courted for his wit and talent, was, after all, by profession, the same with the unfortunate stroller, whom the British laws condemn as a vagabond, and to whose dead body other countries refuse even the last rites of Christianity. In the same manner it is easy to suppose that, when in compliance with the taste of their age, monarchs entertained their domestic minstrels,¹ those persons might be admitted to the most flattering intimacy with their royal masters; sleep within the royal chamber,² amass considerable fortunes, found hospitals,³ and receive rewards singularly over-proportioned to the perquisites of the graver professions;⁴ and even practise in company with their royal masters the pleasing arts of poetry and music, which all are so desirous of attaining;⁵ whilst, at the same time, those who ranked lower in the same profession were struggling with difficulty to gain a precarious subsistence, and incurring all the disgrace usually attached to a vagabond life and a dubious character. In the fine arts, particularly, excellence is demanded, and mere mediocrity is held contemptible; and, while the favour with which the former is loaded, sometimes seems disproportioned to the utility of the art itself, nothing can exceed the scorn poured out on those who expose themselves by undertaking arts which they are unable to practise with success. Self-conceit, however, love of an idle life, and a variety of combined motives, never fail to recruit the lower orders of such idle professions with individuals by whose performances, and often by their private characters, the art which they have rashly adopted can only be discredited without any corresponding advantage to themselves. It is not, therefore, surprising that, while such distinguished examples of the contrary appeared amongst individuals, the whole body of minstrels, with the romances which they composed and sung, should be reprobated by graver historians in such severe terms as often occur in the monkish chronicles of the day.

Character and style of the romances of chivalry.

Respecting the style of their composition, Du Cange informs us, that the minstrels sometimes devoted their strains to flatter the great, and sing the praises of those princes by whom they were protected; while he owns, at the same time, that they often recommended to their hearers the path of virtue and nobleness, and pointed out the pursuits by which the heroes of romance had rendered themselves renowned in song.⁶ He quotes from the romance of *Bertrand Guesclin*, the injunction on those who would rise to

fame in arms to copy the valiant acts of the Paladins of Romance. Charles, and the Knights of the Round Table, narrated in romances; and it cannot be denied, that those high tales, in which the virtues of generosity, bravery, devotion to his mistress, and zeal for the Catholic religion, were carried to the greatest height of romantic perfection in the character of the hero, united with the scenes passing around them, were of the highest importance in affecting the character of the age. The fabulous knights of romance were so completely identified with those of real history, that graver historians quote the actions of the former in illustration of, and as a corollary to the real events which they narrate.⁷ The virtues recommended in romance were, however, only of that overstrained and extravagant cast which consisted with the spirit of chivalry. Great bodily strength, and perfection in all martial exercises, was the universal accomplishment inalienable from the character of the hero, and which each romancer had it in his power to confer. It was also easily in the composer's power to devise dangers, and to free his hero from them by the exertion of valour equally extravagant. But it was more difficult to frame a story which should illustrate the manners as well as the feats of chivalry; or to devise the means of evincing that devotion to duty, and that disinterested desire to sacrifice all to faith and honour;—that noble spirit of achievement which laboured for others more than itself—which form, perhaps, the fairest side of the system under which the noble youths of the middle ages were trained up. The sentiments of chivalry, as we have explained in our article on that subject, were founded on the most pure and honourable principles, but unfortunately carried into hyperbole and extravagance; until the religion of its professors approached to fanaticism, their valour to frenzy, their ideas of honour to absurdity, their spirit of enterprise to extravagance, and their respect for the female sex to a sort of idolatry. All those extravagant feelings, which really existed in the society of the middle ages, were magnified and exaggerated by the writers and reciters of romance; and these given as resemblances of actual manners, became, in their turn, the glass by which the youth of the age dressed themselves; while the spirit of chivalry and of romance thus gradually threw light upon and enhanced each other.

The romances, therefore, exhibited the same system of manners which existed in the nobles of the age. The character of a true son of chivalry was raised to such a pitch

¹ Berdic (*Regis Joculator*), the jongleur or minstrel of William the Conqueror, had, as appears from the Domesday record, three villas and five carucates of land in Gloucestershire without rent. Henry I. had a minstrel called Galfrid, who received an annuity from the abbey of Hyde.

² A minstrel of Edward I., during that prince's expedition to the Holy Land, slept within his tent, and came to his assistance when an attempt was made to assassinate him.

³ The Priory and Hospital of Saint Bartholomew, in London, was founded in the reign of Henry I. by Royer or Raher, a minstrel of that prince.

⁴ In 1441, the monks of Maxlock, near Coventry, paid a donation of four shillings to the minstrels of Lord Clinton for songs, harping, and other exhibitions, while, to a doctor who preached before the community in the same year, they assigned only sixpence.

⁵ The noted anecdote of Blondel and his royal master, Richard Cœur de Lion, will occur to every reader.

⁶ MINISTELLI dicti præsertim scurræ, mimi, joculatores, quos etiamnum vulgo *Menestreux* vel *Menestriers*, appellamus. Porro ejusmodi scurrarum erat Principes, non suis duntaxat ludicris oblectare, sed et eorum aures variis avorum, adeoque ipsorum Principum laudibus, non sine assentatione, cum cantilenis et musicis instrumentis, demulcere. Interdum etiam virorum insignium et heroum gesta, aut explicata et jucunda narratione commemorabant, aut suavi vocis inflectione, fidibusque decantabant, quo sic dominorum, cæterorumque qui his intererant ludicris, nobilium animos ad virtutem capessendam et summorum virorum imitationem accenderent: quod fuit olim apud Gallos Bardorum ministerium, ut auctor est Tacitus. Neque enim alios à *Ministellis*, veterum Gallorum *Bardos* fuisse pluribus probat Henricus Valesius ad 15. Ammiani.—*Chronicon Bertrandi Guesclini*:

Qui veut avoir renom des bons et des vaillans,
Il doit aler souvent à la pluie et au champ,
Et estre en la bataille, ainsy que fu Rollans,
Les quatre fils Haimon et Charlon li plus grans,
Li Dus Lions de Bourges, et Guion de Comans,
Perceval li Galois, Lancelot et Tristans,
Alexandres, Artus, Godefroy li sachans,
De quoy eils menestriers font les nobles Romans.

⁷ Barbour, the Scottish historian, censures a Highland chief, when, in commending the prowess of Bruce in battle, he likened him to the Celtic hero, Fin Mac Coul, and says, he might in more mannerly fashion have compared him to Gaudifer, a champion celebrated in the romance of Alexander.

Romance. of ideal and impossible perfection, that those who emulated such renown were usually contented to stop far short of the mark. The most adventurous and unshaken valour, a mind capable of the highest flights of romantic generosity, a heart which was devoted to the will of some fair idol, on whom his deeds were to reflect glory, and whose love was to reward all his toils; these were attributes which all aspired to exhibit who sought to rank high in the annals of chivalry; and such were the virtues which the minstrels celebrated. But, like the temper of a tamed lion, the fierce and dissolute spirit of the age often shewed itself through the fair varnish of this artificial system of manners. The valour of the hero was often stained by acts of cruelty, or freaks of rash desperation; his courtesy and munificence became solemn foppery and wild profusion; his love to his lady often demanded and received a requital inconsistent with the honour of the object; and those who affected to found their attachment on the purest and most delicate metaphysical principles, carried on their actual intercourse with a license altogether inconsistent with their sublime pretensions. Such were the real manners of the middle ages, and we find them so depicted in these ancient legends.

So high was the national excitation in consequence of the romantic atmosphere in which they seemed to breathe, that the knights and squires of the fourteenth and fifteenth centuries imitated the wildest and most extravagant emprises of the heroes of romance; and, like them, took on themselves the most extraordinary adventures to shew their own gallantry, and do most honour to the ladies of their hearts. The females of rank, erected into a species of goddesses in public, and often degraded as much below their proper dignity in more private intercourse, equalled in their extravagances the youth of the other sex. A singular picture is given by Knyghton of the damsels-errant who attended upon the solemn festivals of chivalry, in quest, it may reasonably be supposed, of such adventures as are very likely to be met with by such females as think proper to seek them. "These tournaments are attended by many ladies of the first rank and greatest beauty, but not always of the most untainted reputation. These ladies are dressed in party-coloured tunics, one-half of one colour and the other half of another; their lirripipes, or tippets, are very short; their caps remarkably little, and wrapt about their heads with cords; their girdles and pouches are ornamented with gold and silver; and they wear short swords, called *daggers*, before them, a little below their navels; they are mounted on the finest horses, with the richest furniture. Thus equipped, they ride from place to place in quest of tournaments, by which they dissipate their fortunes, and sometimes ruin their reputation."—(Knyghton, quoted in Henry's *History*, vol. viii. p. 402.)

The minstrels, or those who aided them in the composition of the romances, which it was their profession to recite, roused to rivalry by the unceasing demand for their compositions, endeavoured emulously to render them more attractive by subjects of new and varied interest, or by marvellous incidents which their predecessors were strangers to. Much labour has been bestowed, somewhat unprofitably, in endeavouring to ascertain the sources from which they drew the embellishments of their tales, when the hearers began to be tired of the unvaried recital of battle and tournament which had satisfied the simplicity of a former age. Percy has contended for the northern *Sagas* as the unquestionable origin of the romance of the middle ages. Warton conceived that the *Oriental fables*, borrowed by those minstrels who visited Spain, or who in great numbers attended the crusades, gave the principal distinctive colouring to those remarkable compositions; and a later system, patronised by later authors, has derived them, in a great measure, from

Romance. the fragments of classical superstition, which continued to be preserved after the fall of the Roman empire. All those systems seem to be inaccurate, in so far as they have been adopted, exclusively of each other, and of the general proposition, that fables of a nature similar to the romances of chivalry, modified according to manners and state of society, must necessarily be invented in every part of the world, for the same reason that grass grows upon the surface of the soil in every climate and in every country. "In reality," says Mr. Southey, who has treated this subject with his usual ability, "mythological and romantic tales are current among all savages of whom we have any full account; for man has his intellectual as well as his bodily appetites, and these things are the food of his imagination and faith. They are found wherever there is language and discourse of reason; in other words, wherever there is man. And in similar stages of civilization, or states of society, the fictions of different people will bear a corresponding resemblance, notwithstanding the difference of time and scene."¹

To this it may be added, that the usual appearances and productions of nature offer to the fancy, in every part of the world, the same means of diversifying fictitious narrative by the introduction of prodigies. If in any romance we encounter the description of an elephant, we may reasonably conclude that a phenomenon, unknown in Europe, must have been borrowed from the east; but whosoever has seen a serpent and a bird, may easily aggravate the terrors of the former by conferring on a fictitious monster the wings of the latter; and whoever has seen or heard of a wolf, or lion, and an eagle, may, by a similar exertion of invention, imagine a griffin or hippogriff. It is imputing great poverty to the human imagination, to suppose that the *speciosa miracula*, which are found to exist in different parts of the world, must necessarily be derived from some common source; and perhaps we should not err more grossly in supposing that the various kinds of boats, skiffs, and rafts, upon which men have dared the ocean on so many various shores, have been all originally derived from the vessel of the Argonauts.

On the other hand, there are various romantic incidents and inventions of a nature so peculiar, that we may boldly, and at once, refer them to some particular and special origin. The tale of *Flora and Blanchefleur*, for example, could only be invented in the east, where the scene is laid, and the manners of which are observed with some accuracy. That of *Orfeo and Heurodis*, on the contrary, is the classical history of Orpheus and Eurydice, with the Gothic machinery of the elves or fairies, substituted for the infernal regions. But notwithstanding these and many other instances in which the subjects or leading incidents of romance can be distinctly traced to British or Armorican traditions, to the tales and history of classic antiquity, to the wild fables and rich imagery of Arabia, or to those darker and sterner themes which were first treated of by the Skalds of the north, it would be assuming greatly too much upon such grounds to ascribe the derivation of romantic fiction, exclusively to any one of these sources. In fact, the foundation of these fables lies deep in human nature, and the superstructures have been imitated from various authorities by those who, living by the pleasure which their lays of chivalry afforded to their audience, were especially anxious to recommend them by novelty of every kind; and were undoubtedly highly gratified when the report of travellers, or pilgrims, or perhaps their own intercourse with minstrels of other nations, enabled them to vary their usual narrations with circumstances yet unheard in bower and hall. Romance, therefore, was like a compound metal, derived from various mines, and in the different specimens of which, one metal or other was alternately predominant; and viewed in this light, the ingenious theories of those learned antiquaries, who have

¹ Preface to Southey's edition of the *Morte D'Arthur*. Lond. 1817, 2 vols. 4to.

Romance. endeavoured to seek the origin of this style of fiction in one of these sources alone, to the exclusion of all others, seem as vain as that of travellers affecting to trace the proper head of the Nile to various different springs, all of which are owned to be necessary to form the full majesty of his current.

Prose romance.

As the fashion of all things passes away, the metrical romances began gradually to decline in public estimation, probably on account of the depreciated character of the minstrels by whom they were recited. Tradition, says Ritson, is an alchemy, which converts gold into lead; and there is little doubt, that, in passing from mouth to mouth, and from age to age, the most approved metrical romances became gradually corrupted by the defect of memory of some reciters and the interpolations of others; since few comparatively can be supposed to have had recourse to the manuscripts in which some have been preserved. Neither were the reciters in the latter, as in the former times, supplied with new productions of interest and merit. The composition of the metrical romance was gradually abandoned to persons of an inferior class. The art of stringing together in loose verse a number of unconnected adventures, was too easy not to be practised by many who only succeeded to such a degree as was discreditable to the art, by shewing that mere mediocrity was sufficient to exercise it. And the licentious character, as well as the great number of those who, under the various names of glee-men, minstrels, and the like, traversed the country, and subsisted by this idle trade, brought themselves and their occupation into still greater contempt and disregard. With them, the long recitations formerly made at the tables of the great, were gradually banished into more vulgar society.

But though the form of those narratives underwent a change of fashion, the appetite for the fictions themselves continued as ardent as ever; and the prose romances which succeeded, and finally superseded those composed in verse, had a large and permanent share of popularity. This was, no doubt, in a great degree owing to the important invention of printing, which has so much contributed to alter the destinies of the world. The metrical romances, though in some instances sent to the press, were not very fit to be published in this form. The dull amplifications which passed well enough in the course of a half-heard recitation, became intolerable when subjected to the eye; and the public taste gradually growing more fastidious as the language became more copious, and the system of manners more complicated, graces of style and variety of sentiment were demanded instead of a naked and unadorned tale of wonders. The authors of the prose romance endeavoured, to the best of their skill, to satisfy this newly awakened and more refined taste. They used, indeed, the same sources of romantic history which had been resorted to by their metrical predecessors; and Arthur, Charlemagne, and all their chivalry, were as much celebrated in prose as ever they had been in poetic narrative. But the new candidates for public favour pretended to have recourse to sources of authentic information, to which their metrical predecessors had no access. They refer almost always to Latin, and sometimes to Greek originals, which certainly had no existence; and there is little doubt that the venerable names of the alleged authors are invented, as well as the supposed originals from which they are said to have translated their narratives. The following account of the discovery of *La tres elegante delieieux melliflue et tres plaisante Hystoire du tres noble Roy Perceforest* (printed at Paris in 1528 by Galliot du Pré,) may serve to show that modern authors were not the first who invented the popular mode of introducing their works to the world as the contents of a newly discovered manuscript. In the abridgment to which we are limited, we can give but a faint picture of the minuteness with which the author announces his pretended discovery, and which forms an admirable example of the lie with a circumstance.

Romance. In the year 1286, Count William of Hainault had, it is averred, crossed the seas in order to be present at the nuptials of Edward, and in the course of a tour through Britain, was hospitably entertained at an abbey situated on the banks of the Humber, and termed, it seems, Burtimer, because founded by a certain Burtimericus, a monarch of whom our annals are silent, but who had gained, in that place, a victory over the heathens of Germany. Here a cabinet, which was inclosed in a private recess, had been lately discovered within the massive walls of an ancient tower, and was found to contain a Grecian manuscript, along with a royal crown. The abbot had sent the latter to king Edward, and the Count of Hainault with difficulty obtained possession of the manuscript. He had it rendered from Greek into Latin by a monk of the abbey of Saint Landelain, and from that language it is said to have been translated into French by the author, who gives it to the world in honour of the blessed Virgin, and for the edification of nobleness and chivalry.

By such details, the authors of the prose romances endeavoured to obtain for their works a credit for authenticity which had been denied to the rhythmical legends. But in this particular they did great injustice to their contempered predecessors, whose reputations they murdered in order to rob them with impunity. Whatever fragments or shadowings of true history may yet remain hidden under the mass of accumulated fable, which had been heaped on them during successive ages, must undoubtedly be sought in the metrical romances; and according to the view of the subject which we have already given, the more the works approach in point of antiquity to the period where the story is laid, the more are we likely to find those historical traditions in something approaching to an authentic state. But those who wrote under the imaginary names of Rusticien de Puisse, Robert de Borron, and the like, usually seized upon the subject of some old minstrel; and, recomposing the whole narrative after their own fashion, with additional characters and adventures, totally obliterated in that operation any shades which remained of the first, and probably authentic tradition, which was the original source of the elaborate fiction. Amplification was especially employed by the prose romancers, who, having once got hold of a subject, seem never to have parted with it until their power of invention was completely exhausted. The metrical romances, in some instances, indeed, ran to great length, but were much exceeded in that particular by the folios which were written on the same or similar topics by their prose successors. Probably the latter judiciously reflected that a book which addresses itself only to the eyes, may be laid aside when it becomes tiresome to the reader; whereas it may not always have been so easy to stop the minstrel in the full career of his metrical declamation.

Who, then, the reader may be disposed to inquire, can have been the real authors of those prolix works, who, shrouding themselves under borrowed names, derived no renown from their labours, if successful, and who, certainly, in the infant state of the press, were not rewarded with any emolument? This question cannot, perhaps, be very satisfactorily answered; but we may reasonably suspect that the long hours of leisure which the cloister permitted to its votaries, were often passed away in this manner; and the conjecture is rendered more probable, when it is observed that matters are introduced into those works which have an especial connection with sacred history, and with the traditions of the Church. Thus, in the curious romance of *Huon de Bourdeaux*, a sort of second part is added to that delightful history, in which the hero visits the terrestrial paradise, encounters the first murderer Cain, in the performance of his penance, with more matter to the same purpose, not likely to occur to the imagination of a layman; besides, that the laity of the period were in general too busy and too igno-

Romance. rant to engage in literary tasks of any kind. The mystical portion of the romance of the *Round Table* seems derived from the same source. It may also be mentioned, that the audacious, and sometimes blasphemous assertions, which claimed for these fictions the credit due even to the inspired writings themselves, were likely to originate amongst Roman Catholic churchmen, who were but too familiar with such forgeries for the purpose of authenticating the legends of their superstition. One almost incredible instance of this impious specious of imposture occurs in the history of the *Saint Graal*, which curious mixture of mysticism and chivalry is ascribed by the unfearing and unblushing writer to the second person of the Trinity.

Churchmen, however, were by no means the only authors of these legends, although the *Sires Clerics*, as they were sometimes termed, who were accounted the chronicles of the times in which they lived, were usually in orders; and although it appears that it was upon them that the commands of the sovereigns whom they served often imposed the task of producing new romances under the usual disguise of ancient chronicles translated from the learned languages, or otherwise collected from the ruins of antiquity. As education became improved, and knowledge began to be more generally diffused, individuals among the laity, and those of no mean rank, began to feel the necessity, as it may be called, of putting into a permanent form the "thick-coming fancies" which gleam along the imagination of men of genius. Sir Thomas Malory, who compiled the *Morte D'Arthur* from French originals, was a person of honour and worship; and Lord Berners, the excellent translator of Froissart, and author of a romance called *The Chevalier de la Cygne*, is an illustrious example that a nobleman of high estimation did not think his time misemployed on this species of composition. Some literary fame must therefore have attended these efforts; and perhaps less eminent authors might, in the latter ages, receive some pecuniary advantages. The translator of *Perceforest*, formerly mentioned, who appears to have been an Englishman or Fleming, in his address to the warlike and invincible nobility of France, holds the language of a professional author, who expected some advantage besides that of pleasing those whom he addressed; and who expresses proportional gratitude for the favourable reception of his former feeble attempts to please them. It is possible, therefore, that the publishers, these lions of literature, had begun already to admit the authors into some share of their earnings. Other printers, like the venerable Caxton, compiled themselves, or translated from other languages, the romances which they sent to the press; thus uniting in their own persons the three separate departments of author, printer, and publisher.

The prose romance did not, in the general conduct of the story, where digressions are heaped on digressions, without the least respect to the principal narrative, greatly differ from that of their metrical predecessors, being to the full as tedious and inartificial; nay, more so, in proportion as the new romances were longer than the old. In the transference from verse to prose, and the amplification which the scenes underwent in the process, many strong, forcible, and energetic touches of their original author have been weakened, or altogether lost; and the reader misses with regret some of the redeeming bursts of rude poetry which, in the metrical romance, make amends for many hundred lines of bald and rude versification. But, on the other hand, the prose romances were written for a more advanced stage of society, and by authors whose language was much more copious, and who certainly belonged to a more educated class than the ancient minstrels. Men were no longer satisfied with hearing of hard battles and direful wounds; they demanded at the hand of those who professed to entertain them,

some insight into nature, or at least into manners; some description of external scenery, and a greater regard to probability both in respect of the characters which are introduced, and the events which are narrated. These new demands the prose romances endeavoured to supply to the best of their power. There was some attention shewn to relieve their story, by the introduction of new characters, and to illustrate these personages by characteristic dialogue. The lovers conversed with each other in the terms of metaphysical gallantry, which were used in real life; and from being a mere rhapsody of warlike feats, the romance began to assume the nobler and more artificial form of a picture of manners. It is in the prose folios of *Lancelot du Lac*, *Perceforest*, and others, that antiquaries find recorded the most exact accounts of fights, tournaments, feasts, and other magnificent displays of chivalric splendour; and as they descend into more minute description than the historians of the time thought worthy of their pains, they are a mine from which the painful student may extract much valuable information. This, however, is not the full extent of their merit. These ancient books, amid many pages of dull repetition and uninteresting dialogue, and notwithstanding the langour of an inartificial, protracted, and confused story, exhibit from time to time passages of deep interest, and situations of much novelty, as well as specimens of spirited and masculine writing. The general reader, who dreads the labour of winnowing out these valuable passages from the sterile chaff through which they are scattered, will receive an excellent idea of the beauties and defects of the romance from Tressan's *Corps d'Extraits de Romans de Chevalerie*, from Mr. Ellis's *Specimens of Early English Romances*, and Mr. Dunlop's *History of Fiction*.

These works continued to furnish the amusement of the most polished courts in Europe, so long as the manners and habits of chivalry continued to animate them. Even the sagacious Catherine of Medicis considered the romance of *Perceforest* as the work best qualified to form the manners and amuse the leisure of a young prince; since she impressed on Charles IX. the necessity of studying it with attention. But by degrees the progress of new opinions in religion, the promulgation of a stricter code of morality, together with the important and animating discussions which began to be carried on by means of the press, diverted the public attention from these antiquated legends. The Protestants of England, and the Huguenots of France, were rigorous in their censure of books of chivalry, in proportion as they had been patronized formerly under the Catholic system; perhaps because they helped to arrest men's thoughts from more serious subjects of occupation. The learned Ascham thus inveighs against the romance of *Morte D'Arthur*, and at the same time acquaints us with its having passed out of fashion: "In our forefathers' tyme, when papestrie, as a standyng poole, covered and overflowed all Englande, fewe booke were read in our tongue, savyng certayne booke of chivalrie, as they said for pastime and pleasure; which, as some say, were made in monasteries by idle monks, or wanton chonons. As, for example, *La Morte D'Arthur*, the whole pleasure of which booke standeth in two speciall poyntes, in open manslaughter, and bold bawdrye: in which booke they are counted the noblest knightes that do kill most men without any quarrell, and commit foulest adulteries by sutleyst shiftes; as Sir Launcelote, with the wife of King Arthur his master; Sir Tristram, with the wife of King Marke his uncle; Sir Lamerocke, with the wife of King Lote, that was his own aunt. This is good stuffe for wise men to laughe at, or honest men to take pleasure at: yet I know, when God's Bible was banished the court, and *La Morte D'Arthur* received into the prince's chamber."¹

The brave and religious La Noue is not more favourable to the perusal of romances than the learned Ascham; at-

¹ Works of Roger Ascham, p. 254. 4to. edition.

Romance. tributing to the public taste for these compositions the decay of morality amongst the French nobility. "The ancient fables whose reliques doe yet remain, namely, *Lancelot of the Lake*, *Pierreforest*, *Tristram*, *Giron the Courteous*, and such others, doe beare witness of this olde vanitie; herewith were men fed for the space of 500 yeeres, untill our language growing more polished, and our mindes more ticklish, they were driven to invent some nouelties wherewith to delight us. Thus came y^e bookes of *Amadis* into light among us in this last age. But to say y^e truth, *Spaine* bred thē, and *France* new clothed thē in gay garments. In y^e daies of *Henrie the Second* did they beare the chiefest sway, and I think if any man would then have reproved thē, he should have been spit at because they were of themselves playfellows and maintainers to a great sort of persons; whereof some, after they had learned to amize in speech, their teeth watered, so desirous were they even to taste of some small morsels of the delicacies therein most livelie and naturally represented."² The gallant Marechal proceeds at considerable length to refute the arguments of those who contended that these books were intended as a spur to the practice of arms and honourable exercises amongst youth, and labours hard to shew that they teach dishonest practices both in love and in arms. It is impossible to suppress a smile when we find such an author as La Noue denouncing the introduction of spells, witchcrafts, and enchantments into these volumes, not because such themes are absurd and nonsensical, but because the representing such beneficent enchanters as Alquife and Urganda is, in fact, a vindication of those who traffic with the powers of darkness; and that those who love to read about sorceries and enchantments become, by degrees, familiarized with those devilish mysteries, and may at length be induced to have recourse to them in good earnest.

The romances of chivalry did not, however, sink into disrepute under the stern rebuke of religious puritans or severe moralists, but became gradually neglected, as the customs of chivalry itself fell into disregard; when, of course, the books which breathed its spirit, and were written under its influence, ceased to produce any impression on the public mind, and, superseded by better models of composition, and overwhelmed with the ridicule of Cervantes, sunk by degrees into utter contempt and oblivion.

Other works of amusement, of the same general class, succeeded the proper romance of chivalry. Of these we shall take some notice hereafter, since we must here close our general view of the history of romance, and proceed briefly to give some account of those peculiar to the various European nations.

Romances of the different countries of Europe.

II. We can here but briefly touch upon a subject of great interest and curiosity, namely, the peculiar character and tone which the romance of chivalry received from the manners and early history of the nations amongst whom it is found to exist; and the corresponding question, in what degree each appears to have borrowed from other countries the themes of their own minstrels, or to have made use of materials common to the whole.

Northern romances.

Scandinavia, as was to be expected, may be safely considered as the richest country in Europe, in ancient tales corresponding with the character of romance; sometimes composed entirely in poetry or rhythm, sometimes in prose, and much more frequently in a mixture of prose, narrative, and lyrical effusions. Their well-known Skalds or bards held a high rank in their courts and councils. The character of a good poet was scarcely second to that of a gallant leader, and many of the most celebrated champions ambitiously endeavoured to unite both in their own persons. Their earlier sagas or tales approach to the credit of real history, and were unquestionably meant as such, though, as

usual at an early period, debased by the intermixture of those *speciosa miracula* which the love of the wonderful early introduces into the annals of an infant country. There are, however, very many of the sagas, indeed by far the greater number of those now known to exist, which must be considered as falling rather under the class of fictitious than of real narratives; and which, therefore, belong to our present subject of inquiry. The *Omeyingen Saga*, the *Heimskringla*, the *Saga* of Olaf Triggvason, the *Eyrbyggja Saga*, and several others, may be considered as historical; whilst the numerous narratives referring to the history of the Nibelungen and Volsungen are as imaginary as the romances which treat of King Arthur and of Charlemagne. These singular compositions, short, abrupt, and concise in expression, full of bold and even extravagant metaphor, exhibiting many passages of forceful and rapid description, hold a character of their own; and whilst they remind us of the indomitable courage and patient endurance of the hardy Scandinavians, at once the honour and the terror of Europe, rise far above the tedious and creeping style which characterised the minstrel efforts of their successors, whether in France or England. In the pine forests also, and the frozen mountains of the north, there were nursed, amid the reliques of expiring paganism, many traditions of a character more wild and terrible than the fables of classical superstition; and these the gloomy imagination of the skalds failed not to transfer to their romantic tales. The late spirit of inquiry which has been so widely spread through Germany, has already begun to throw much light on this neglected storehouse of romantic lore, which is worthy of much more attention than has yet been bestowed upon it in Britain. It must, however, be remarked, that although the north possesses champions and romances of its own, unknown to southern song, yet, in a later age, the inhabitants of these countries borrowed from the French minstrels some of their most popular subjects; and hence we find sagas on the subject of Sir Tristrem, Sir Percival, Sir Ywain, and others, the well-known themes of French and English romance. These, however, must necessarily be considered later in date, as well as far inferior in interest, to the sagas of genuine northern birth. Mr. Ritson has indeed quoted their existence as depreciating the pretensions of the northern nations to the possession of poems of high antiquity of their own native growth. Had he been acquainted with the *Norman-Kiempe-Datur*, a large folio, printed at Stockholm in 1737, he would have been satisfied, that out of the numerous collection of legends respecting the achievements of Gothic champions, far the greater part are of genuine Norse origin; and although having many features in common with the romances of southern chivalry, are, in other marked particulars, distinctly divided from that class of fictitious composition.

The country of Germany, lying contiguous to France, German romance, and constantly engaged in friendly and hostile intercourse with that great seat of romantic fiction, became, of course, an early partaker in the stores which it afforded. The Minnesingers of the Holy Empire were a race no less cherished than the Troubadours of Provence, or the Minstrels of Normandy; and no less active in availing themselves of their indigenous traditions, or importing those of other countries, in order to add to their stock of romantic fiction. Gotfrid of Strasburg composed many thousand lines upon the popular subject of Sir Tristrem; and others have been equally copious, both as translators and as original authors, upon various subjects connected with French romance; but Germany possessed materials, partly borrowed from Scandinavia, partly peculiar to her own traditional history, as well as to that of the Roman empire, which they applied to the construction of a cycle of heroes as famous

² *The Politicke and Militarie Discourses of the Lord De La Noue*, pp. 87, 88. 4to. Lond. 1587.

Romance. in Teutonic song as those of Arthur and of Charlemagne in France and Britain.

As in all other cases of the kind, a real conqueror, the fame of whose exploits survived in tradition, was adopted as the central object, around whom were to be assembled a set of champions, and with whose history was to be interwoven the various feats of courage which they performed, and the adventures which they underwent. Theodorick King of the Goths, called in these romantic legends Diderick of Bern (*i. e.* Verona,) was selected for this purpose by the German Minnesingers. Among the principal personages introduced are Ezzel, King of the Huns, who is no other than the celebrated Attila; and Gunter, King of Burgundy, who is identified with a Guntacher of history who really held that kingdom. The good knight Wolfram von Eschenbach seems to have been the first who assembled the scattered traditions and minstrel tales concerning these sovereigns into one large volume of German verse, entitled *Heldenbuch*, or the Book of Heroes. In this the author has availed himself of the unlimited licence of a romancer; and has connected with the history of Diderick and his chivalry a number of detached legends which had certainly a separate and independent existence. Such is the tale of *Sigurd the Horny*, which has the appearance of having originally been a Norse saga. An analysis of this singular piece was published by Mr. Weber, in a work entitled *Illustrations of Northern Antiquities from the earlier Teutonic and Scandinavian Romances*; and the subject has been fully illustrated by the publications of the learned Von der Hagen in Germany, and those of the Hon. William Herbert.

It is here only necessary to say, that Theodorick, like Charlemagne and Arthur, is considered in the romance as a monarch more celebrated for the valorous achievements of the brotherhood of chivalry whom he has drawn around him, than for his own, though neither deficient in strength nor courage. His principal followers have each their discriminatory and peculiar attributes. Meister Hildebrand, the Nestor of the band, is, like the Maugis of Charlemagne's heroes, a magician as well as a champion. Hogan, or Hagan, begot betwixt a mortal and a sea-goblin, is the fierce Achilles of the confederation. It is the uniform custom of the romancers to conclude by a general and overwhelming catastrophe, which destroys the whole ring of chivalry whose feats they had commemorated. The ruin which Roncesvalles brought to the Paladins of Charlemagne, and the fatal battle of Camlan to the Knights of the Round Table, fell upon the warriors of Diderick through the revengeful treachery of Crimhilda, the wife of Ezzel; who, in revenge for the death of her first husband, and in her inordinate desire to possess the treasures of the Niflunga or Burgundians, brought destruction on all those celebrated champions. Mr. Weber observes that these German fictions differ from the romances of French chivalry, in the greater ferocity and less refinement of sentiment ascribed to the heroes; and also in their employing to a great extent the machinery of the Duergar, or dwarfs, a subterranean people to whom the *Heldenbuch* ascribes much strength and subtilty, as well as profound skill in the magic art, and who seem, to a certain extent, the predecessors of the European fairy.

Italian romance. Italy, so long the seat of classical learning, and where that learning was first revived, seems never to have strongly embraced the taste for the Gothic romance. They received, indeed, the forms and institutions of chivalry, but the Italians seem to have been in a considerable degree strangers to its spirit, and not to have become deeply enamoured of its literature. There is an old romance of chivalry proper to Italy, called *Guerino the Wretched*, but we doubt if even this be of indigenous growth. Indeed, when they did adopt from the French the fashionable tales of Charlemagne and his Paladins, these did not attract the attention

Romance. of the classical Italians, until Boiardo, Berni, Pulci, and, above all, the divine Ariosto, condescended to use them as the basis of their well-known romantic poems; and thus the fictitious narratives originally composed in metre, and afterwards rewritten in prose, were anew decorated with the honours of verse. The romantic poets of Italy did not even disdain to imitate the rambling, diffuse, and episodic style proper to the old romance; and Ariosto, in particular, although he torments the reader's attention, by digressing from one adventure to another, delights us, upon frequent perusals, by the extreme ingenuity with which he gathers up the broken ends of his narrative, and finally weaves them all handsomely together in the same piece. But the merits and faults of romantic poetry form themselves the fruitful subject of a long essay. We here only notice the origin of those celebrated works, as a species of composition arising out of the old romance, though surpassing it in regularity, as well as in all the beauties of style and diction.

With Spain the idea of romance was particularly connected; and the associations which are formed upon perusing the immortal work of Cervantes, induce us for a long time to believe that the country of Don Quixote must be the very cradle of romantic fiction. Yet, if we speak of priority of date, Spain was amongst the last nations in Europe with whom romance became popular. It was not indeed possible that, among a people speaking so noble and poetical a language, engaged in constant wars, which called forth at once their courage and their genius, there should not exist many historical and romantic ballads descriptive of their rencounters with the Moors. But their native poets seem to have been too much engaged with the events of their own age, and of that which had just preceded it, to permit of their seeking subjects in the regions of pure fiction; and we have not heard of a Spanish metrical romance, unless the poems describing the adventures of the Cid should be supposed to have any affinity to that class of composition. The Peninsula, however, though late in adopting the prevailing taste for romantic fiction, gave origin to one particular class, which was at least as popular as any which had preceded it. *Amadis de Gaul*, the production, it would seem, of Vasco de Lobeira, a Portuguese knight, who lived in the fourteenth century, gave a new turn to the tales of chivalry, and threw into the shade the French prose romances, which, until the appearance of this distinguished work, had been the most popular in Europe.

The author of *Amadis*, in order, perhaps, to facilitate the other changes which he introduced, and to avoid rushing against preconceived ideas of events or character, laid aside the worn-out features of Arthur and Charlemagne, and imagined to himself a new dynasty both of sovereigns and of heroes, to whom he ascribed a style of manners much more refined, and sentiments much more artificial, than had occurred to the authors of *Perceval* or *Perceforest*. Lobeira had also taste enough to perceive, that some unity of design would be a great improvement on the old romance, where one adventure is strung to another with little connection from the beginning to the end of the volume; which thus concluded, not because the plot was winded up, but because the author's invention, or the printer's patience, was exhausted. In the work of the Portuguese author, on the contrary, he proposes a certain end, to advance or retard which all the incidents of the work have direct reference. This is the marriage of Amadis with Oriana, against which a thousand difficulties are raised by rivals, giants, sorcerers, and all the race of evil powers unfavourable to chivalry; whilst these obstacles are removed by the valour of the hero, and constancy of the heroine, succoured on their part by those friendly sages, and blameless sorceresses, whose intervention gave so much alarm to the tender-conscienced De la Noue. Lobeira also displayed considerable attention to the pleasure which arises from the contrast of character;

Romance. and to relieve that of Amadis, who is the very essence of chivalrous constancy, he has introduced Don Galaor, his brother, a gay libertine in love, whose adventures form a contrast with those of his more serious relative. Above all, the *Amadis* displays an attention to the style and conversation of the piece, which, although its effects are now exaggerated and ridiculous, was doubtless at the time considered as the pitch of elegance; and here were, for the first time, introduced those hyperbolical compliments, and that inflated and complicated structure of language, the sense of which walks as in a masquerade.

The *Amadis* at first consisted only of four books, and in that limited shape may be considered as a very well conducted story; but additions were speedily made which extended the number to twenty-four; containing the history of Amadis subsequent to his obtaining possession of Oriana, and down to his death, as also of his numerous descendants. The theme was not yet exhausted; for, as the ancient romancers, when they commenced a new work, chose for their hero some newly invented Paladin of Charlemagne, or knight of King Arthur, so did their successors adopt a new descendant of the family of Amadis, whose genealogy was thus multiplied to a prodigious degree. For an account of *Esplandian*, *Florimond of Greece*, *Palmerin of England*, and the other romances of this class, the reader must be referred to the valuable labours of Mr. Southey, who has abridged both *Amadis* and *Palmerin*, with the most accurate attention to the style and manners of the original. The books of *Amadis* became so very popular, as to supersede the elder romances almost entirely, even at the court of France, where, according to La Noue, already quoted, they were introduced about the reign of Henry II. It was against the extravagance of these fictions in character and in style, that the satire of Cervantes was chiefly directed; and almost all the library of Don Quixote belongs to this class of romances, which, no doubt, his adventures contributed much to put out of fashion.

French Romance. In every point of view, France must be considered as the country in which chivalry and romance flourished in the highest perfection; and the originals of almost all the early romances, whether in prose or in verse, whether relating to the history of Arthur or of Charlemagne, are to be found in the French language; and other countries possess only translations from thence. This will not be so surprising when it is recollected, that these earlier romances were written, not only for the use of the French, but of the English themselves, among whom French was the prevailing language during the reigns of the Anglo-Norman monarchs. Indeed, it has been ingeniously supposed, and not without much apparent probability, that the fame of Arthur was taken by the French minstrels for the foundation of their stories in honour of the English kings, who reigned over the supposed dominions of that British hero; while, on the other hand, the minstrels who repaired to the coast of France, celebrated the prowess of Charlemagne and his twelve peers as a subject more gratifying to those who sat upon his throne. It is perhaps, some objection to this ingenious theory, that, as we have already seen, the battle of Hastings was opened by a minstrel, who sung the war-song of Roland, the nephew of Charlemagne; so that the Norman duke brought with him to England the tales that are supposed, at a much later date, to have been revived to soothe the national pride of the French minstrels.

How the French minstrels came originally by the traditional reliques concerning Arthur and Merlin, on which they wrought so long and so largely, must, we fear, always remain uncertain. From the Saxons we may conclude they had them not; for the Saxons were the very enemies against whom Arthur employed his good sword *excalibar*, that is to say, if there was such a man, or such a weapon. We know, indeed, that the British, like all the branches of the Celtic

Romance. race, were much attached to poetry and music, which the numerous relics of ancient poetry in Wales, Ireland, and the Highlands of Scotland, sufficiently evince. Arthur, a name famous amongst them, with some traditions concerning the sage Merlin, may have floated either in Armorica, or among the half-British of the borders of Scotland, and of Cumberland; and thus preserved, may have reached the ear of the Norman minstrels, either in their newly conquered dominions, or through their neighbours of Brittany. A theme of this sort once discovered, and found acceptable to the popular ear, gave rise, of course, to a thousand imitations; and gradually drew around it a cloud of fiction which, embellished by such poetry as the minstrels could produce, arranged itself by degrees into a system of fabulous history, as the congregated vapours touched by the setting sun, assume the form of battlements and towers. We know that the history of Sir Tristrem, first versified by Thomas the Rhymer of Erceldoune, was derived from Welsh traditions, though told by a Saxon poet. In fact, it may be easily supposed, that the romancers of that early period were more eager to acquire popular subjects than delicately scrupulous of borrowing from their neighbours; and when the foundation-stone was once laid, each subsequent minstrel brought his contribution to the building. The idea of an association of knights assembled around one mighty sovereign, was so flattering to all the ruling princes of Europe, that almost all of them endeavoured to put themselves at the head of some similar institution, and the various orders of chivalry are to be traced to this origin. The historical foundation of this huge superstructure is almost imperceptible. Mr. Turner has shewn that the evidence rather inclines to prove the actual existence of King Arthur; and the names of Gawain, his nephew, and of Genuera, his faithful spouse, of Mordred, and Merlin, were preserved by Welsh tradition. To the same source may be referred the loves of Tristrem and Ysolde, which, although a separate story, has become, in the later romances, amalgamated with that of Arthur. But there can be little doubt that all beyond the bare names of the heroes owes its existence to the imagination of the romancers.

It might be thought that the romances referring to the feats of Charlemagne ought to contain more historical truth than those concerning Arthur; since the former relate to a well-known monarch and conqueror, the latter to a personage of a very doubtful and shadowy existence. But the romances concerning both are equally fabulous. Charles had, indeed, an officer named Roland, who was slain with other nobles in the field of Roncesvalles, fighting, not against the Saracens or Spaniards, but against the Gascons. This is the only point upon which the real history of Charlemagne coincides with that invented for him by romancers. Roland was prefect of Bretagne, and his memory was long preserved in the war-song which bore his name. A fabulous chronicler, calling himself Turpin, compiled, in or about the eleventh century, a romantic history of Charlemagne; but it may be doubted whether, in some instances, he has not availed himself of the fictions already devised by the early romancers, while to those who succeeded them his annals afforded matter for new figments. The personal character of Charlemagne has suffered considerably in the hands of the romantic authors, although they exaggerated his power and his victories. He is represented as fond of flattery, irritable in his temper, ungrateful for the services rendered him by his most worthy paladins, and a perpetual dupe to the treacherous artifices of Count Gam, or Ganelon, of Mayence; a renegade, to whom the romancers impute the defeat at Roncesvalles, and all the other misfortunes of the reign of Charles. This unfavourable view of the prince, although it may bear some features of royalty, neither resembles the real character of the conqueror of the Saxons and Lombards, nor can be easily reconciled with the

Romance. idea, that he was introduced to flatter the personal vanity of the princes of the Valois race, by a portrait of their great predecessor.

The circumstance that Roland was a lieutenant of Brittany, and the certainty that Marie borrowed from that country the incidents out of which she composed her lays, seems to fortify the theory, that the French minstrels obtained from that country much of their most valuable materials; and that, after all that has been said and supposed, the history of Arthur probably reached them through the same channel.

The Latin writers of the middle ages afforded the French romancers the themes of those metrical legends which they have composed on subjects of classical fame.

The honour of the prose romances of chivalry, exclusive always of the books of Amadis, belongs entirely to the French, and the curious volumes which are now the object of so much research amongst collectors, are almost universally printed at Paris.

English romance. England, so often conquered, yet fated to receive an accession of strength from each new subjugation, cannot boast much of ancient literature of any kind; and, in the department of which we treat, was totally inferior to France. The Saxons had, no doubt, romances (taking the word in its general acceptation); and Mr. Turner, to whose researches we are so much indebted, has given us the abridgment of one entitled *Cædmon*, in which the hero, whose adventures are told much after the manner of the ancient Norse Sagas, encounters, defeats, and finally slays an evil being called Grendel, who, except in his being subject to death, seems a creature of a supernatural description. But the literature of the Saxons was destroyed by the success of William the Conqueror, and the Norman knights and barons, among whom England was in a great measure divided, sought amusement, not in the lays of the vanquished, but in those composed in their own language. In this point of view, England, as a country, may lay claim to many of the French romances, which were written, indeed, in that language, but for the benefit of the court and nobles of England, by whom French was still spoken. When the two languages began to assimilate together, and to form the mixed dialect termed the Anglo-Norman, we have good authority for saying that it was easily applied to the purpose of romantic fiction, and recited in the presence of the nobility.

Robert de Brunne, who composed his *History of England* about this time, has this remarkable passage, which we give, along with the commentary of the editor of *Sir Tristrem*, as it is peculiarly illustrative of the subject we are inquiring into.

Als thai haf wryten and sayd,
Haf I alle in myn Inglis layd,
In symple speche as I couthe,
That is lightest in manne's mouthe.
I mad nought for no disours,
Ne for no seggours, no harpours,
Bot for the luf of symple men,
That strange Inglis cannot ken;
For many it ere that strange Inglis,
In ryme wate never what it is;
And bot thai wist what it mente,
Ellis methought it were alle schente.
I made it not for to be praysed,
Bot at the lewed men were aysed.
If it were made in ryme couvee,
Or in strangere, or enterlace,
That rede Inglis it ere inowe
That couthe not haf coppled a kowe,
That outhur in cowee or in baston
Sum suld haf ben fordon;
So that fele men that it herde
Suld not witte howe that it ferde
I see in song, in sedgeyng tale,
Of Erceldoun and of Kendale,

Romance. Non tham sayis as thai tham wroght,
And in ther saying it semes nocht.
That may thou here in *Sir Tristrem*,
Over gestes it has the steem,
Over all that is or was,
If men it sayd as made Thomas.
Bot I here it no man so say,
That of some copple som is away.
So thare fayre saying here beforne,
Is thare travayle nere forlorne;
Thai sayd it for pride and nobleye,
That were not suyke as thei,
And alle that thai wild overwhere,
Alle that ilk wille now forfare.
Thai sayd it in so quainte Inglis,
That manyone wate not what it is.
Therefore heuyed wele the more
In strange ryme to travayle sore,
And my wit was oure thyne,
So strange speche to travayle in;
And forsoth I couth nought
So strange Inglis as thai wroght,
And men besoght me many a tyme
To turne it bot in light ryme.
Thai seyde, if I in strange ryme it turn,
To here it manyon suld skorne;
For in it ere names fulle selcouthe,
That ere not used now in mouthe.
And therefore, for the comonalté,
That blythely wild listen to me,
On light lange I it began,
For luf of the lewed man.

"This passage requires some commentary, as the sense has been generally mistaken. Robert de Brunne does not mean, as has been supposed, that the minstrels who repeated Thomas's romance of *Sir Tristrem*, disguised the meaning by putting it into *quainte Inglis*; but, on the contrary, that Kendal and Thomas of Erceldoune did themselves use such *quainte Inglis*, that those who repeated the story were unable to understand it, or to make it intelligible to their hearers. Above all, he complains that, by writing an intricate and complicated stanza, as '*ryme cowee*, *strangere*, or *entrelacé*,' it was difficult for the *diseurs* to recollect the poem; and of *Sir Tristrem*, in particular, he avers, that he never heard a perfect recital, because of some one '*copple*' or stanza, a part was always omitted. Hence he argues at length, that he himself, writing not for the minstrel or harper, nor to acquire personal fame, but solely to instruct the ignorant in the history of their country, does well in chusing a simple structure of verse, which they can retain correctly on their memory, and a style which is popular and easily understood. Besides which, he hints at the ridicule he might draw on his poem, should he introduce the uncouth names of his personages into a courtly or refined strain of verse. They were

Great names, but hard in verse to stand.

While he arrogates praise to himself for his choice, he excuses Thomas of Erceldoune and Kendale for using a more ambitious and ornate kind of poetry. They wrote, he says, for pride (fame) and for nobles, not such as these my ignorant hearers."¹

If the editor of *Sir Tristrem* be correct in his commentary, there existed in the time of Robert de Brunne, minstrels or poets who composed English poetry to be recited in the presence of the great, and who, for that purpose, used a singularly difficult stanza, which was very apt to be mutilated in recitation. *Sir Tristrem*, even as it now exists, shows likewise that considerable art was resorted to in constructing the stanza, and has, from beginning to end, a concise, quaint, abstract turn of expression, more like the Saxon poetry, than the simple, bald, and diffuse details of the French minstrel. Besides *Sir Tristrem*, there remain, we

¹ *Sir Tristrem*, Introduction, pp. 61-65. Edin. 1804.

Romance. conceive, at least two other examples of "gestes written in quaint Inglis" composed, namely, according to fixed and complicated rules of verse, and with much attention to the language, though the effect produced is far from pleasing. They are both of Scottish origin, which may be explained, by recollecting, that in the Saxon provinces of Scotland, as well as at the court, Norman was never generally used; and therefore it is probable that the English language was more cultivated in that country at an early period, than in England itself, where, among the higher orders, it was for a long time superseded by that of the French conquerors. These romances, entitled *Sir Gawain*, and *Sir Gologras*, and *Sir Galeran of Galloway*, have all the appearance of being original compositions, and display considerable poetical effort. But the uncouth use of words dragged in for the sake of alliteration, and used in secondary and oblique meanings, renders them extremely harsh in construction, as well as obscure in meaning.

In England it would seem that the difficulties pointed out by De Brunne, early threw out of fashion this ornate kind of composition; and the English minstrels had no readier resource than translating from the French, who supplied their language at the same time with the phrases of chivalry which did not exist in English. These compositions presented many facilities to the minstrel. He could, if possessed of the slightest invention, add to them at pleasure, and they might as easily be abridged when memory failed, or occasion required. Accordingly, translations from the French fill up the list of English romance. They are generally written in short lines rhyming together; though often, by way of variety, the third and sixth lines are made to rhyme together, and the poem is thus divided into stanzas of three couplets each. In almost all of these legends, reference is made to "the romance," that is, some composition in the French language, as to the original authority. Nay, which is very singular, tales where the subjects appear to be of English growth, seem to have yet existed in French ere they were translated into the language of the country to which the heroes belonged. This seems to have been the case with *Hornchild*, with *Guy of Warwick*, with *Bevis of Hampton*, all of which appear to belong originally to England; yet are their earliest histories found in the French language, or at least the vernacular versions refer to such for their authority. Even the romance of *Richard*, England's own Cœur de Lion, has perpetual references to the French original from which it was translated. It must naturally be supposed that these translations were inferior to the originals; and whether it was owing to this cause, or that the composition of these rhymes was attended with too much facility, and so fell into the hands of very inferior composers, it is certain, and is proved by the highest authority, that of Chaucer himself, that even in his time these rhyming romances had fallen into great contempt. The *Rime of Sir Thopas*, which that poet introduces as a parody, undoubtedly, of the rhythmical romances of the age, is interrupted by mine host Harry Bailly, with the strongest and most energetic expressions of total and absolute contempt. But though the minstrels were censured by De Brunne, for lack of skill and memory, and the poems which they recited were branded as "drafty rhymings," by the far more formidable censure of Chaucer, their acceptance with the public in general must have been favourable, since, besides many unpublished volumes, the two publications of Ritson and Weber bear evidence of their popularity. Some original compositions doubtless occur among so many translations, but they are not numerous, and few have been preserved. The poem of *Sir Eger* and *Sir Greme*, which seems of Scottish origin, has no French original; nor has any been discovered either of the *Squire of Low Degree*, *Sir Eglamour*, *Sir Pleindamour*, or some others. But the French derivation of the two last names renders it probable that such may exist.

The minstrels and their compositions seem to have fallen

Romance. into utter contempt about the time of Henry VIII. There is a piteous picture of their condition in the person of Richard Sheale, which it is impossible to read without compassion, if we consider that he was the preserver at least, if not the author of the celebrated heroic ballad of *Chevy Chase*, at which Sir Philip Sidney's heart was wont to beat as at the sound of a trumpet. This luckless minstrel had been robbed on Dunsmore Heath, and, shame to tell, he was unable to persuade the public that a son of the Muses had ever been possessed of the sixty pounds which he averred he had lost on the occasion. The account he gives of the effect upon his spirits is melancholy, and yet ridiculous enough.

After my robbery my memory was so decayde,
That I colde neather syng, nor talke, my wytt wer so dismayde,
My audacitie was gone, and all my myrry tawke:
Ther ys sum heare have sene me as myrry as a hawke;
But nowe I am so trublyde with phansis in my mynde,
That I cannot play the myrry knave, accordyng to my kynd.
Yet to tak thought, I perseve, ys not the next waye
To bring me out of det, my creditors to paye.
I may well say that I hade but well hape,
For to lose about threscore pounde at a clape.
The losse of my mony did not greve me so sore,
But the talke of the pyple dyde greve me moch mor.
Sum sayde I was not robde, I was but a lyeng knave,
Yt was not possyble for a mynstrell so much mony to have.
In dede, to say the truthe, that ys ryght well knowene,
That I never had so moche mony of myn owene,
But I had frendds in London, whos namys I can declare,
That at all tymes wold lende me cc.lxs. worth of ware,
And sum agayn such frendship I founde,
That thei wold lend me in mony nyn or tene pownde.
The occasion why I cam in dete I shall make relacion,
My wyff in dede ys a sylk woman be her occupacion,
And lynen cloths most cheffy was her greatyste trayd,
And at faris and merkytts she solde sale-ware that she made;
As sheretts, smockys, partlytts, hede clothes, and othar thingys,
As sylk thredd, and eggyns, skirrts, bandds, and strings.

From *The Chant of Richard Sheale*,
British Bibliographer, No. xiii. p. 101.

Elsewhere, Sheale hints that he had trusted to his harp, and to the well known poverty attached to those who used that instrument, to bear him safe through Dunsmore Heath. At length the order of English minstrels was formally put down by the act 39th of Queen Elizabeth, classing them with sturdy beggars and vagabonds; in which disgraceful fellowship they only existed in the capacity of fiddlers, who accompanied their instrument with their voice. Such a character is introduced in the play of *Monsieur Thomas*, as the "poor fiddler who says his songs." The metrical romances which they recited also fell into disrepute, though some of the more popular, sadly abridged and adulterated, continued to be published in *chap. books*, as they are called. About fifty or sixty years since, a person acquired the nickname of *Rosewal and Lilian*, from singing that romance about the streets of Edinburgh, which is probably the very last instance of the proper minstrel craft.

If the metrical romances of England can boast of few original compositions, they can show yet fewer examples of the prose romance. Sir Thomas Malory, indeed, compiled, from various French authorities, his celebrated *Morte d'Arthur*, indisputably the best prose romance the language can boast. There is also *Arthur of Little Britain*; and the Lord Berners compiled the romance of the *Knight of the Swan*. The books of Amadis were likewise translated into English; but it may be doubted whether the country in general ever took that deep interest in the perusal of these records of love and honour with which they were greeted in France. Their number was fewer; and the attention paid to them in a country where great political questions began to be agitated, was much less than when the feudal system still continued in its full vigour.

III. We should now say something on those various kinds

Romance. of romantic fictions which succeeded to the romance of chivalry. But we can only notice briefly works which have long slumbered in oblivion, and which certainly are not worthy to have their slumbers disturbed.

Pastoral romance. Even in the time of Cervantes, the pastoral romance, founded upon the *Diana* of George of Monte Mayor, was prevailing to such an extent as made it worthy of his satire. It was, indeed, a system still more remote from common sense and reality than that of chivalry itself. For the maxims of chivalry, high-strained and absurd as they are, did actually influence living beings, and even the fate of kingdoms. If *Amadis de Gaul* was a fiction, the Chevalier Bayard was a real person. But the existence of an Arcadia, a pastoral region, in which a certain fantastic sort of personages, desperately in love, and thinking of nothing else but their mistresses, played upon pipes, and wrote sonnets from morning to night, yet were supposed all the while to be tending their flocks, was too monstrously absurd to be long credited or tolerated.

Heroic romances. A numerous, and once most popular class of fictions, was that entitled the heroic romance of the seventeenth century.

If the ancient romance of chivalry has a right to be called the parent of those select and beautiful fictions which the genius of the Italian poets has enriched with such peculiar charms, another of its direct descendants, the heroic romance of the seventeenth century, is, with few exceptions, the most dull and tedious species of composition that ever obtained temporary popularity. The old romance of Heliodorus, entitled *Theagenes and Chariclea*, supplied perhaps the earliest model of this style of composition; but it was from the romances of chivalry that it derives its most peculiar characteristics. A man of a fantastic imagination, Honoré d'Urfé, led the way in this style of composition. Being willing to record certain love intrigues of a complicated nature which had taken place in his own family, and among his friends, he imagined to himself a species of Arcadia on the banks of the Lignon, who live for love, and for love alone. There are two principal stories, said to represent the family history of D'Urfé and his bro-

ther, with about thirty episodes, in which the gallantries and intrigues of Henry IV.'s court are presented under borrowed names. Considered by itself, this is but an example of the pastoral romance; but it was so popular that three celebrated French authors, Gomberville, Calprenède, and Madame Scuderi, seized the pen, and composed in emulation many interminable folios of heroic romance. In these insipid performances, a conventional character, and a set of family manners and features, are ascribed to the heroes and heroines, although selected from distant ages, and various quarters of the world. The heroines are, without exception, models of beauty and perfection; and, so well persuaded of it themselves, that to approach them with the most humble declaration of love, was a crime sufficient to deserve the penalty of banishment from their presence; and it is well if the doom were softened to the audacious lover, by permission, or command to live, without which, absence and death were to be accounted synonymous. On the other hand, the heroes, whatever kingdoms they have to govern, or other earthly duties to perform, live through these folios for love alone; and the most extraordinary revolutions which can agitate the world, are ascribed to the charms of a Mandana, or a Statira, acting upon the crazy understanding of their lovers. Nothing can be so uninteresting as the frigid extravagance with which these lovers express their passion; or, in their own phrase, nothing can be more freezing than their flames, more creeping than their flights of love. Yet the line of metaphysical gallantry which they exhibited, had its date, and a long one, both in France and England. In the latter country they continued to be read by our grandmothers during the Augustan age of English; and while Addison was amusing the world with his wit, and Pope by his poetry, the ladies were reading Clelia, Cleopatra, and the Grand Cyrus. The fashion did not decay till about the reign of George I.; and even more lately, Mrs. Lennox, patronized by Dr. Johnson, wrote a very good imitation of Cervantes, entitled *The Female Quixote*, which had those works for its basis. They are now totally forgotten. (W.S.—TT.)

MODERN ROMANCE AND NOVEL.

We alluded in the commencement of this essay, to the division of fictitious narratives in prose, into two classes; the *romance*, in which the interest of the narrative turns chiefly on marvellous and uncommon incidents; and the *novel*, in which the events are accommodated to the ordinary train of human events, and the modern state of society.

Rise of novel writing in England. The rise of this last department of fictitious composition in England, takes place about the commencement of the eighteenth century; and its coincidence with the decline of the drama is remarkable. The novel aspired, in fact, to perform for a reading and refined age, what the drama had done for a ruder and more excitable period; to embody the spirit of the times in pictures at once amusing and accurate, and in the form best calculated to awaken attention and interest in those to whom they are addressed. In the earlier periods of a national literature, while the poetical and imaginative spirit of the time takes the direction of the long prose romance, the task of painting manners, and satirizing follies, and displaying the comic oddities of character, is most efficiently performed by the drama. Its strength, terseness, and brevity, with the aid of action and scenery, present the manners living as they rise, with abundance of force at least, and probably, for a time, with sufficient fidelity. But as society becomes more decorous, and peculiarities of manners less marked, the pictures exhibited by the stage are apt to become less true; for dramatic effect appears to demand something more stimulating than reality affords; and hence the drama, with a pardonable leaning to the principle of stage effect, often continues to reproduce the man-

ners, vices, and humours of a preceding age, long after they have ceased to exist, merely because they are found better adapted to that broad and strongly-coloured delineation in which it chiefly deals. Thus, though the age of Vanburgh, Congreve, and Wycherley, was probably not a very moral age, and the tone even of its polite conversation, would probably appear somewhat questionable to modern ears, there seems to be no reason to believe that the universal profligacy of manners, and boundless licence of conversation which are exhibited in the comedies of these writers, really characterised the period at which they wrote. Their Wildairs, Sir John Brutes, Lady Touchwoods, and Mrs. Frails, are conventional reproductions of those wild gallants and demireps which figure in the licentious dramas of Dryden and Shadwell. They represented the manners and the morals of an age gone by; and the audiences who tolerated these indecencies for the sake of the wit by which they were occasionally redeemed, would have been revolted by their exaggeration and incorrectness, if they had looked upon them as exhibitions of society as it existed. The drama, then, had ceased to be the mirror in which the age could contemplate itself, and exhibited the license of a masque, or the extravagance of a caricature, much more than the sobriety of actual life, or the fidelity of a portrait. Besides, there are many lesser traits of character, many sentiments and feelings, which are not at all dramatic, and which had therefore been overlooked by writers for the stage, yet in themselves highly interesting and curious, and capable, when judiciously employed, of exercising a strong influence on the feelings. These become more prominent, and stand out in brighter relief, as the restraints of civilization gradu-

Romance. ally throw into the background the wilder passions and more stormy impulses of our nature, until they acquire an importance which not only justifies, but renders their introduction into any fictitious narrative which represents the peculiarities of the time, necessary; and for this purpose, the calm and even march of the novel, and the detailed development both of sentiment and incident which it allows, is found to be admirably adapted. It is in the works of our novelists, therefore, rather than our dramatists, and in those passages in our essayists of Queen Anne's time, in which they treat of past fashions, manners, whims, and humours, that we must look for the changes which society has undergone, and from which we must try to realize to ourselves the features which it exhibited at any particular period.

Field of
the novel
wider than
the drama.

The novel, then, affords a wider field for accurate and complete delineation of passions and feelings than the drama, and certainly one more in harmony with the dispositions of a modern public. In powerful effects no doubt it cannot compete with the stage. The whole range of novel or romance contains nothing, for instance, which in its tremendous impression, can be compared with the explosion of passion in the third act of *Othello*; but, on the other hand, it has greatly the advantage in the impression of verisimilitude which it leaves behind, produced by the accumulation of many particulars and minute traits of character; in pleasing interchanges of action and repose; in the delineation of emotions, which the drama, speaking only to the eye and the ear, cannot lay before us; in the descriptions of external scenery, which, in the hand of a writer of genius, are far more effective, when presented in words to the imagination, than when counterfeited to the eye upon the stage, even by all the united resources of the scene-painter and the mechanist; and which, from the strong connection that exists between the state of our feelings and external influences, are found in the hands of a judicious novelist to afford powerful materials for deepening the pervading tone of sentiment which he aims to produce; just as in painting relief and effect are obtained by the tone and character of the background against which the figures are opposed. Another advantage obtained by the substitution of narrative fiction for the drama, was, that a much wider licence was obtained in the conduct of the plot. A good plot is no doubt as essential to the novel as the drama; but the kind of plot which may be used with effect in each, and the manner in which the incidents are to be conducted, differ materially. A play in which every scene does not grow out of the preceding, and lead directly into the next, with a visible progress of plot, is in that respect faulty. On the contrary, in the novel and romance, as in real life, much is admissible which is episodic, which does not directly help forward nor produce the catastrophe, but merely tends to bring out some point of character in the personages represented, or to increase the air of verisimilitude in the main story, by the appearance of minute and literal correctness in the details. In the novel or romance, too, it has been generally remarked that the catastrophe may be made to turn upon accident, but that this is inadmissible in the drama.¹ Thus the catastrophe in the *Bride of Lammermoor*, where Ravenswood is swallowed up by a quicksand, is singularly grand in romance, but would be inadmissible in a drama. And on the same principle, Schiller has, in his *Fiesco*, thought himself compelled to deviate from the actual truth of history, and to ascribe the Count's death, not to an accidental stumble from a plank, but to the hand of the republican Verrina. In a novel, the real catastrophe would have been far more impressive in its moral effect than the imaginary one; but Schiller held, and we think rightly, that in the drama nothing must be *accident*, but every thing *result*.

Although, as compared with the romance, the term novel

may be said to indicate a class of fictions dealing more with calm feelings, and with manners and humours, than with strong passions, and deriving its interest more from the probability than the marvellous nature of its incidents, this definition is not to be taken too literally; for there are many works which we might call novels, in as much as the scene is laid in modern times, and the general course of the incidents is that of every-day life, but in which the even tenor of the story is occasionally broken by scenes of powerful passion, or incidents of a mysterious and terrible character, elevating the composition for the time into the sphere of the romantic; so that perhaps the word tale, as a middle term between the others, would most appropriately describe them. It has been doubted whether, although such a union of the common-place with the extraordinary, be not unfrequently met with in the course of real life, a more cautious separation of these elements would not, on the whole, be most favourable to the effect of a narrative as a work of art; and whether the attempt to blend them, does not produce in fiction, something of that illegitimate effect which is the result of the melo-drama on the stage. It is certain, however, that the tendency for some time past, and particularly since the school of fiction introduced by Sir Walter Scott, has been towards a mixture of the novel and romance in the same composition, so that broad comedy is often found alternating with the pathetic, the gaiety of a ball-room with midnight murders upon lonely heaths, and the disclosure of some piece of fashionable scandal standing side by side with the discovery of some secret and fearful crime. In the hands of our great masters of fiction, we admit the fine effect which these occasionally produce. Judiciously arranged, these opposites are the light and shadow of the composition; but even in our greatest modern novelist, we could point out not a few instances in which this sort of contrast is carried too far; while in many of his imitators, it is so regularly and mechanically introduced, that, as in the case of Mr. Puff's stage arrangements, we can always predict that the discharge of cannon will be followed by soft music.

When the declining popularity of the pastoral and heroic romance of the seventeenth century, suggested the necessity of opening a new vein in fiction, it is probable that the stilted, unnatural, and exaggerated character of those effete compositions led the public taste, by a natural recoil of feeling, into the opposite extreme, viz. the selection of topics and characters from common, and even from vulgar life, and a literal adherence to nature, even at the risk of the sacrifice of art. For we pass over the tiresome and licentious love stories of Mrs. Aphra Behn, with the just remark of Sir Richard Steele, that the lady appears to have "understood the practical part of love better than the speculative," as well as those of her imitator, Mrs. Heywood, in which the struggle between the high sentimental character of the heroic romance, and the growing taste for a style of portraiture more true to the life, is very obvious, and come at once to the writer by whom the inspiration of reality was carried to its greatest perfection.

Defoe, (1661—1731) without high imagination, with no power of raising the passions, with little pathos and no eloquence, had yet that peculiar genius which enabled him to excel within the peculiar department which he chose for himself; that of counterfeiting homely truth by fiction, and forging, as it were, the handwriting of nature herself, with a dexterity which defied detection. Whether Defoe was led to the selection of his peculiar themes, by a real sympathy with roguery, (and his conduct in regard to the well-known imposture of Mrs. Veal's Ghost would justify us in believing him to be like Gil Blas, "tant soi peu fripon;") or by the influence of the Spanish romances of roguery, such as *Lazaro de Tormes*, *Marcos de Obregon*,

Romance.

Blending
of the
novel and
romance.

¹ See some valuable papers on Art in Fiction, ascribed, we believe with justice, to Sir L. Bulwer. *Monthly Chronicle*, Nos. i. and ii.

Romance. and Gusman d'Alfarache, with some of which it is highly probable that he was acquainted through translations; or whether his strong vulgar likenesses of seafaring personages, half privateer, half mariner, and his fondness for the delineation of equivocal characters of all kinds, arose from his familiarity with the one class, through his residence at Limehouse, and his acquaintance with Dampier,—and with the other, from his long and frequent imprisonments;—it is certain that though he had no intention of favouring immorality, he yet enters upon the delineation of personages, and scenes of roguery, low profligacy and vice, with a degree of curiosity and complacency, and dwells upon them with a fondness and minuteness of detail, altogether uncommon, and not a little unaccountable in a person who in his opinions savoured of the puritan. This strange labour of love, and study of the morbid anatomy of society, has resulted in a series of night pieces from the haunts of crime, which, though sombre and gloomy in a high degree, and little suited to a cultivated taste, nay, indeed, frequently producing on the mind the painful effect of a real chapter from the *Newgate Calendar*, yet display the most wonderful invention and keeping in all their parts, and a coherence and dexterity of adaptation to each other, which render the ordinary tests by which we endeavour to discriminate a fictitious from a real narrative, inadequate or altogether inapplicable to these singular compositions of Defoe. Whatever might be the motive of his humility of choice, Defoe, like many of his favourite heroes, was perfectly contented to take up his abode in the back settlements of fiction, and was most at home in that Alsatia of Romance, the purliens of which, by common consent, his more ambitious predecessors had sedulously avoided, as discreditable or dangerous. The transition from their refined Orondates' and Statiras, to the society of the *Captain Jack* and *Moll Flanders* of Defoe, is, to use a phrase of Sterne, like turning from Alexander the Great to Alexander the coppersmith. In his novels, we rarely meet with any thing more exalted or respectable, than masters of trading vessels, dealers in small wares, supercargoes, or, it may be, pickpockets, pirates, candidates for the plantations, or *emeriti* who have already obtained that distinction. In the foreground, we have the cabin, the night cellar, the haunts of fraud, or the round-house; in the distance, Newgate, or Execution Dock. There can be but one opinion, however, as to the wonderful air of veracity, resembling that of a deposition upon oath, which Defoe has imparted to his fictitious creations, and which his genius effects, mainly by accumulation of details, *non vi sed sæpe cadendo*; often even by the introduction of a multitude of irrelevant particulars and repetitions, just as in the conversation of uneducated persons in real life. Accordingly the result, as a simulacrum of reality, is one of magical deception. Lord Chatham, it is well known, took his *Memoirs of a Cavalier* for a real history; Dr. Mead believed his *Journal of the Plague* to be the work of a medical man, and his impudent but most plausible history of the apparition of Mrs. Veal, being received by many sober-minded persons as an actual apocalypse from the spiritual world, was the means, as is well known, of disposing of an unsaleable edition of Drelincourt upon death.

But notwithstanding this peculiar power of stamping the impression of reality upon the coinage of his imagination, which, to say the truth, was seldom of the finest metals, it may be safely affirmed, that but for his *Robinson Crusoe*, Defoe would scarcely now be remembered as a writer of fiction. The charm of that work, the first part of which appeared in 1719, is, that it emancipates us from those low haunts and questionable society with which his other novels make us acquainted. We escape from the fumes of tobacco and strong waters, to breathe a purer air on that lone island placed far amidst the melancholy main, where he has imprisoned his shipwrecked mariner; and while Defoe's unrivalled power of inventing a series of probable minutiae, both

in the way of reflexion and incident, enables him to conduct with consummate skill, what we may call the self-education of Crusoe in his solitude,—the process by which he adapts himself to his situation, and the gradual triumphs which, by his ingenuity and patience, he obtains over the difficulties and privations by which he is surrounded, till he changes desolation into comfort;—the imagination of the writer is visibly raised beyond its usual grovelling level by the romance of the situation which he describes. His genius imbibes the spirit of the place; it imparts to the cave of the sailor, something of the seclusion and purity of a hermitage; till the simple train of reflections which he puts into the mouth of his uneducated mariner, upon the sublimity and awfulness of solitude, impress the mind more than the most eloquent declamation. It is a fine proof how completely Defoe has succeeded in interesting us for the solitary being to whom he has given a poetical life, and attuned the mind of his readers to that sentiment of silence and unbroken repose which is breathed over the scene of his imprisonment,—“where all the air a solemn stillness holds,”—that after a time the least incident which threatens to disturb the security of the cave, or the solitude of the island, assumes importance in our eyes, and the groan of an old goat expiring in a cave, or the print of a man's foot in the sand, awaken a feeling of suspense and anxiety which many a writer has in vain laboured to excite by a prodigal expenditure of the machinery of terror.

That *Robinson Crusoe* may be considered in a great measure as a fortunate accident, and that its main charm arises from the more poetical and refined character which the nature of the story and its locality almost necessarily impressed upon it, is indeed evident from the visible inferiority of the second part, where the seclusion of the scene is broken in upon, and Defoe peoples the island with his usual retinue of planters and ship's captains; a production which scarcely rises above the level of his *Captain Singleton*.

The application of the same principle of producing effect by minuteness of detail rather than by grasp, or the selection of a few marking traits, is visible in our next great novelist, Richardson (1689–1761,) but the principle is applied in a different and higher way. Defoe was satisfied with weaving chains of probable incidents, which might be fitted to any character, or at least any character of a given class, such as a mariner or a merchant, a planter or a pickpocket. He did not care, at all events he did not labour, to individualize character. Crusoe, his most finished portrait, is still only the average representative of all shipwrecked mariners; his reflections and his struggles, embody the hopes, fears, and efforts, of all men left to maintain a solitary warfare with difficulties. So his Captain Jack, born a gentleman and bred a pickpocket, has nothing to separate him from other *enfants perdus* of the same class. But Richardson aspired to the creation rather of probable character than probable incident; and to this he applied the same system of accumulating minute traits of words, thoughts, and actions, and reiterating small touches, and minute lights and shadings, which Defoe had done to the creation of masses of coherent and plausible events. In the latter department, indeed, he is probably neither remarkable for success nor failure. Occasionally, and particularly in his *Sir Charles Grandison*, he outrages both patience and probability in no inconsiderable degree; and so little progress does the narrative make, that as Johnson remarked to Erskine, “Were you to read Richardson for the story, your impatience would be so fretted, you would go hang yourself.” But even in the most successful portion of his plots, there is no chance of our mistaking fiction for fact; the artist does not disappear behind his creations as in the case of Defoe. The very form, too, in which his novels are cast, that of a series of correspondence, however favourable to the display of traits of character, and minute dissection of sentiment, is

Romance.

almost in itself fatal to the vraisemblance of incident. The affairs of private life, we cannot help recollecting, are seldom managed to any great extent through the post-office, while in many cases it remains a mystery how such matters came to be committed to paper at all, and least of all under the circumstances in which they are supposed to be recorded by these persevering, and, in the existing state of the revenue laws, formidable correspondents.

There is in the mind of Richardson a very remarkable union of feminine tastes with masculine vigour. Early accustomed peculiarly to court the society of females; the depositary of their gossip, the confidant of their love secrets, the complete letter-writer of a little knot of young ladies when only thirteen years of age, the deference which he thus acquired for their tastes, and the insight he obtained into their habits of thinking, though probably springing, as Johnson believed, very much from his own vanity and love of praise, appear to have been of the utmost use to him in his novels, in which so much of the interest rests upon the female characters, and in the minute dissection and study of emotions and sentiments in which women are either the chief actors or sufferers. The traces of this influence appear constantly, and sometimes in excess, in the minute accuracy with which he dwells, in description, upon those little particulars of looks, and voice, and gesture, and turns of speech, which men in their correspondence generally overlook, but which women note with such care, and interpret with such sagacity; in the complacency with which he dwells on the details of robes and wedding-dresses, which are conceived in the spirit of a waiting-woman, and executed with the learning of a man-milliner, and which, as in the minute description given by Lovelace of Clarissa's dress at the time of her elopement, are occasionally introduced in the worst place.

The more favourable results of these tastes are exhibited in the wonderful familiarity he evinces with the feelings and sympathies of women; for though in his notions of perfection, either in manners or morals, we of another age often see cause to depart from Richardson's standard, we may trust implicitly to his accuracy when he is delineating the movements of passion in the female breast, the revolutions of feeling, or the struggle between feeling and delicacy. In his female portraits, even more than in his corresponding delineations of male character, we acknowledge the justice of the remark which Sir Walter Scott applies to his portraits generally, that "in his survey of the heart he left neither head, bay, nor inlet behind him, until he had traced its soundings, and laid it down in his chart, with all its minute sinuosities, its depths, and its shallows." This accuracy, indeed, constitutes at once his strength and his weakness; for not content with having surveyed the coast and taken its bearings, he still, from the very pride of discovery, insists on following the windings of the shore, and pointing out its landmarks, when those on board would have gladly seen him make his passage by the shortest course. It was the misfortune of Richardson that, like nervous men in company, or like painters who go on re-touching till the picture becomes loaded, he never knew when to have done, either with a character or a conversation. He was unskilful, as D'Israeli remarks, in the art of writing, and "could never lay his pen down while his inkhorn supplied it." Even as regards the description of sentiment or the creation of characteristic dialogue, the field in which Richardson was most at home, it is certain that he carried his system, probably as much from this inability to leave off as from choice, to extremes, particularly in his last novel, *Sir Charles Grandison*; and unless the reader selects that work on the system of the old lady mentioned by Sir Walter Scott, who chose it because she could sleep for half an hour at any time during its perusal, and still find the personages just where she left them, conversing in the cedar parlour, he will probably

think there is more justice than D'Israeli seems willing to admit in the cold remark of D'Alembert, "*La nature est bonne à imiter, mais non pas jusqu'à l'ennui.*" Romance.

It is not often that with this feminine character of intellect, a masculine vigour in painting scenes of a passionate and terrible cast is found united; and yet Richardson has proved his mastery over the higher passions, not less than his minute study of sentiment and manners, in the conclusion of *Clarissa Harlowe*. To apply to him the epithet of the Shakspeare of prose fiction, which has been done by D'Israeli, is extravagant. A solitary creation of this kind, highly pathetic and morally impressive as it is, is but a narrow basis on which to rest the claims of the novelist to such a title. But the conception of the noble character of Clarissa Harlowe, set off by such a foil as is afforded by that of Lovelace, perhaps the most finished picture of the self-possessed and insinuating libertine ever drawn (and certainly as great an improvement on that of the Lothario from which it was drawn, as Rowe's hero had been on the vulgar rake of Massinger), and the closing scenes of that novel, are at all events sufficient to place Richardson among the great writers of fiction; among the few who have formed a striking and original conception, which they have wrought out with a corresponding felicity and power.

A strong contrast to the subtlety, the fine perception, and the power over the passions evinced by Richardson, is presented by his rival Fielding (1707-1754), who, with no command of the pathetic, and no taste for that minute analysis of sentiment and wire-drawing of description in which our English Marivaux indulges, has yet maintained a more general and permanent popularity, by a combination of qualities well suited for the purpose. His grasp of observation led him to select with unerring sagacity the leading traits of ordinary character, and to epitomize nature with skill, instead of transcribing her at full length. His field of delineation admits of such variety and contrast, that in fact it excludes none but the highest and most poetical elements, in which Fielding had neither power of observation or conception. His flow of animal spirits and healthy vivacity of manner, contrast strangely with the Dutch finishing of Richardson's pencilling, but are as well suited to the active, out-of-door scenes which Fielding loved to draw, in his pictures of inbroglios at ale-houses, and the stirring life of the road, as the painstaking inventories of Richardson were to his still-life interiors, and the drowsy monotony of the occupations of the inhabitants. To these he added, at least in his great work *Tom Jones*, the charm of a plot of unrivalled skill, in which the complex threads of interest are all brought to bear upon the catastrophe in a manner equally unexpected and simple, a grave humour, and power of quiet satire unmixed with caricature, in which he is equally superior to Richardson and Smollett. And with his other requisites he combined a knowledge of English life, both in its better features and its deformities, by which we mean, of the essential qualities of men, as modified at that time by the accidents of situation, education, and pursuits,—the result, perhaps, of a long, and not always reputable experience,—to which Richardson, surrounded by a circle of female gossips, and weaving out his materials in his quiet back-shop, purely from the stores of his imagination, can make but slender pretension.

Amelia, much as it was admired by Johnson, is greatly inferior to *Tom Jones*. If the tone of the latter be far from high, that of *Amelia* is creeping and vulgar in no ordinary degree. Booth has Jones' vices with an additional shade of meanness. Half the plot turns on the embarrassments of debt and contrivances to make both ends meet; and one or other of the characters is generally in a spunging-house. Such, too, is the infirmity of human nature, that we really find it difficult to preserve a sufficiently romantic respect

Romance. for the heroine, pretty and amiable as she is, when the saucepan is seldom out of her hand.

"Nec tantum veneris quantum studiosa culinæ."

The finish is put to the whole by the accident which mars even the personal attractions of the heroine; for though the public were willing to regard Clarissa, after the outrage to her honour, with undiminished sympathy, it is certain they have not been equally indulgent to Amelia, after the misfortune of the broken nose.

We have already, however, in our biographical notice of Fielding, quoted so amply from Sir Walter Scott's critique upon his genius and works, that instead of pursuing an exhausted theme, we refer our readers to that article.

Smollett.

The name of Fielding always suggests that of his rival Smollett (1721-1774), though, as writers of fiction, they rather admit of being contrasted than compared. They have, in fact, very few, if any, points in common; agreeing only perhaps in a preference for the delineation of the comic, or the common, over the impassioned and poetical. They chose different departments in novel-writing, and they cultivated them by different means. As Fielding was the faithful and graphic painter of all the common features of character, so the extraordinary and the eccentric were the peculiar appanage of Smollett. He either did not feel sufficiently the charm of the natural in character, and its power of endless re-combination in the hands of a great artist, or he doubted his own powers, at least in comparison with Fielding, of extracting novelty from such simple materials. But the sphere of humorous exaggeration appeared to be open to him, without the awe of a predecessor or the dread of a rival; on that, therefore, he concentrated his powers of mind, neglecting in a great measure the other requisites of fiction; and undoubtedly with a success which leaves him, within the province which he was the first to occupy, and with the occupation of which he was content, still the undisputed sovereign. No one has ever yet equalled him in the observation, or where that does not serve his purpose, the creation, of oddities and exceptional characters which never did or could exist, but still with just enough of humanity about them to give us an interest in their eccentric movements; or in the invention of combinations of burlesque incidents, not always of the best odour, which his fertile fancy showers forth spontaneously as from a cornucopia; mistakes, rencontres, equivoques, whimsicalities of speech or action, all generally the best calculated to bring in heightened and ludicrous relief the comic aberrations of the character represented, and to develop its latent madness; and never failing, at all events, to produce that result which Smollett seemed far more studious to attain than that of "purging the passions by pity or terror;" namely, the excitement of a broad-grin mirth, and "laughter holding both his sides." That the characters, where they have any decided features at all, are generally caricatures; for instance, that such commodores and lieutenants as Trunnion and Hatchway never floated even under the primitive flag of Benbow; that the absurdities of Pallet are painted an inch thick; that by no human possibility could such an accumulation of comic disasters have befallen the characters of the tale, may, and indeed must be granted, even by Smollett's warmest admirers. But if, following Smollett's own example, we throw nature mainly out of the question, and look to what seems to have been his real aim, the objection of want of verisimilitude, while it may retain its truth, seems to lose half its force, and, we may add, wholly its power of conviction. It is in vain to point out the extravagance of the scene where Jolter, in an agony of terror, on hearing the direction given to put on the dead lights in the storm off Calais, goes through the steps of a mathematical proposition with infinite fervour, instead of a prayer; or to criticise the manœuvres of Trunnion, tacking his way to

church on his wedding-day in consequence of a head wind; when the reader cannot see the force of the objection through tears of laughter. In that consummation which he chiefly aimed at, and in which he rarely fails, Smollett has gained his end;—*solvuntur risu tabulæ*; the sense of the improbability of the conceptions is lost in the irrepressible merriment which they occasion.

Humour, then, was the quality in which Smollett felt himself strongest; character, incident, the excitement of the feelings, were obviously with him minor considerations. There is no difficulty in discriminating his style of humour from that of Fielding. Fielding's is calmer, chaster, perhaps of a higher kind than Smollett's, but it certainly has not its breadth, force, and felicity. Smollett could hardly have created in its main features so gentle a humourist as Parson Adams, so he probably could have scarcely imagined a stroke of humour so delicate and appropriate to the character, as when the Parson offers to walk ten miles to fetch his sermon against Vanity, in order to convince his auditor of his total freedom from that vice. But neither, on the other hand, could Fielding have imagined the inimitable feast after the manner of the ancients, the apparition of Pipes to the Commodore, the terror of Pallet on learning the supposed conditions of his emancipation from the Bastile, or the ludicrous concatenation of mischances which beset the luckless inmates of the inn in Flanders "doing or suffering." Some scenes of this sort, in which Fielding enters into competition with Smollett, such as those at the inn at Upton, are among the least successful in his novels. The effort to raise the waters, the malice prepense in the preparation of the comic machinery, is too obvious; and after all, though he creates abundance of confusion, he raises but few smiles.

In another quality, though he has but rarely availed himself of his powers in this respect, Smollett far surpassed Fielding; we mean in his power of exciting the emotions of terror, or the sublime. From scenes of this kind, Fielding, knowing the prosaic turn of his own mind, and the limits of his invention, kept at a respectful distance; Smollett, who felt within himself the spirit of a poet, has occasionally ventured upon them, and with complete success. The robber scene in the old woman's hut in *Count Fathom*, though often imitated since, still remains one of the most impressive and agitating night-pieces of its kind; and the sublimity of the situation on ship-board, where Random sits chained to the poop during an engagement, covered with the blood and brains of the wounded, and screaming in delirium, has been often pointed out.

The morality of Smollett and Fielding is nearly on a par; with this difference, that the slight dash of generosity which is infused into the blackguardism of Tom Jones, while it renders him more natural, makes him at the same time more dangerous than the selfish and often ruffianly heroes of Smollett, whom we despise or dislike, even while laughing at the cruel frolics in which they indulge. The heroes of the latter are mere animals, good-natured or savage, as the fit strikes them; the heroines, with the exception perhaps of Aurelia Darnel in *Sir Lancelot Greaves*, the weakest of Smollett's works, have been justly described of objects rather of appetite than affection. In regard, indeed, to anything like purity of morals or gentlemanly feeling, the inferiority both of Smollett and Fielding to Richardson is obvious. Richardson sometimes mistook his means, but his aim was certainly always moral. On the contrary, both the theory and the practice of Fielding were latitudinarian; and Smollett, though in real life a man of pure morals, had a boundless toleration in fiction for certain vices; for most, indeed, which did not imply want of spirit, courage, or pecuniary generosity.

In the unity of conception and coherence of incident which the plot of the novel, though more pliable than that

Romance. of the drama demands, Fielding, in his two principal works (for *Joseph Andrews* was merely a parody on Richardson's *Pamela*) has a great advantage over Smollett, whose plots indeed in general scarcely deserve the name, being simply a series of strange accidents, odd rencontres, tricks, and frolics, making little or no progress towards the only catastrophe which Smollett seems to have in view, namely, the marriage of his hero. In his *Roderick Random*, *Peregrine Pickle*, and *Count Fathom*, Smollett adopted the easy in-artificial plan of *Gil Blas*, in which we are carried through a succession of scenes where the personages are constantly changing, and those who take part in the close of the story, are quite different from those by whom we are surrounded at its commencement. Fielding, on the contrary, both in his *Tom Jones* and *Amelia*, is singularly attentive to regularity of plan, and to the dexterous evolution and winding-up of his plot, which he regarded as of vital importance. From the very commencement we perceive that he keeps his conclusion clearly in view, "and sees as from a tower the end of all." From this attention to symmetry, and tendency of all the incidents towards the catastrophe, his best work has been not inaptly termed a prose epic; it is at all events a happy accommodation of the principles of the epic, so far as they could be rendered applicable, to the manner of the novel. One exception ought perhaps to be made from this remark on the imperfection of Smollett's plots, in favour of that of *Humphrey Clinker*, in which the plot, though not of much art, is naturally evolved, and a quiet little family romance is gracefully combined with the usual gallery of oddities which Smollett never fails to lay before us. In all respects, this is the most pleasing of his performances. While Lesmahago may rank with the very best of his extravagances, there is more of character and less of caricature in the testy yet kind-hearted Matthew Bramble, "frosty but kindly," than in any personage he has painted; and though the humour, as usual, is dashed with filth, without a *soupçon*, of which indeed Smollett seems always to have thought it wanted pungency, the tale is entirely free from that indecency which deforms both *Roderick Random* and *Peregrine Pickle*. We rather think, too, that Smollett had the merit of originating in this novel that species of the humorous which arises from bad spelling, and which Sheridan afterwards applied to mistakes of words in his *Mrs Malaprop*; a humble kind of humour no doubt in itself, yet capable, as Smollett has proved, of powerfully aiding the ludicrous effect.

Sterne.

Equal genius, though far more deformed by affectation, is visible in Sterne (1713-1768), the first two volumes of whose *Tristram Shandy* appeared in 1759. If a regular progress of incidents towards a catastrophe were an essential requisite in a novel, it would be difficult to bring the works of Sterne within the protection of that definition. Story he has none to tell; at all events, he tells it not. But, "what is a plot good for," says Bayes, "except to bring in good things," and Sterne adopted the theory of the dramatist in its full license. At the conclusion of the eighth volume *Tristram* is not emancipated from the nursery, and had Sterne lived to fulfil his threat of carrying on his work, by the aid of a vegetable diet, through as many more, the *Tristrapædia*, we fear, would still have made no material progress. Sterne's singular work owes its interest, as every one knows, not to the narrative, which is broken and interrupted by cross currents of the most wayward and whimsical description, far exceeding all the fair license of digression, but to his power of seizing on and bringing forward into distinct consciousness, as Coleridge says, some of those points on which every man is a humourist, and to the masterly manner in which he has brought out the characteristics of two beings of the most opposite natures, the elder Shandy and Toby, and sur-

Romance. rounded them with a group of followers sketched with equal life and individuality: in the Corporal, the obstetric Doctor Slop; Yorick, the lively and careless parson; the widow Wadman and Susannah.

The clue which Sterne chiefly follows through the mazes of character is humour;—humour of a very high and peculiar kind, perfectly original, at least in English. For that species of riotous humour arising from comic peculiarities of person and combinations of ludicrous mischances Sterne has little taste; though the admirably-painted scene, where Obadiah on the cart-horse, careering round the corner like a comet, oversets Dr Slop in a whirlpool of mud;—and the cross bills filed by the Doctor and Susannah against each other in applying the cataplasm, show that if he had considered this the highest walk of humour, he might have revelled in it as easily as Smollett himself. But like Fielding, he preferred the humour which arises from bringing out by light and happy touches, and as if unconsciously, the secrets of character; only with this difference in his favour, that with Sterne the humour is steeped in sensibility. Flowing, as it does, as much from the heart as the head, it speaks also to the affections; calm smiles ripple over the countenance as we read, but tears are in the next degree. Thus, in Sterne, humour and feeling heighten and set off each other; the pathetic rises in gentle relief out of the background of the comic, and sinks gracefully and imperceptibly back into it again. It is this, for instance, which gives so irresistible a charm to the story of *Le Fevre*, and the Corporal's account in the kitchen of the death of *Tristram's* elder brother, enforced by the eloquent stroke of dropping the hat, as if a lump of clay had been kneaded into the crown of it. There is nothing sneering, nothing unkindly, nothing that revolts the better feelings in his playful irony. *Circum præcordia ludit*. That of Swift and Voltaire is blighting like an east wind; the sympathies of the heart close themselves up against it; but beneath the genial and balmy humour of Cervantes and Sterne they relax and blow like flowers expanding beneath the west wind in spring.

The two great defects of Sterne, as noticed by Sir Walter Scott, are his affectation and his indefensible indecency. His affectation is the more to be regretted, because his manner in its happiest moods is the very perfection of a lively, spirited, spoken style—idiomatic, imaginative, pliant, and varied. "Writing, when properly managed," he himself observes, "is but a different name for conversation." Unfortunately he did not always conform his practice to his precept. He is sometimes *fade* in his sentimentality, and aiming after a sort of false sublime in his imagery. Some portions of the story of *Maria* are examples of the first; the well-known personification of the recording angel in the close of *Le Fevre* is an instance of the second. Still more unworthy of Sterne are those quackeries of the black page and the white one, the sudden transitions and affected openings of the chapters, with other harlequinades of authorship, which are carried to excess in *Tristram Shandy*.

The indecency of Sterne is more obtrusive and indefensible than that of either Fielding or Smollett; whose highly-coloured scenes seem to be the result of an unchecked imagination, running on heedless whether its course lie through purity or filth. Sterne, on the other hand, goes coldly and deliberately in search of impurity; seeks for it in books, refines upon it, mixes it up with his reflections, and is continually insinuating some equivocal or *double entendre* into scenes where we can ill bear with such adulteration.

Richardson, Fielding, Smollett, and Sterne are the four Goldsmiths. great novelists of this period (the reign of George II.) which was pre-eminently the age of novel-writing in England. For though we should indeed be sorry to undervalue the merits of Goldsmith, or the charm of his *Vicar of*

Romance. *Wakefield*, we cannot quite rank the powers displayed in that delightful little tale, which appeared in 1763, so highly as the varied invention displayed by the writers we have named, upon the broader canvas which they selected. To use his own words, it has many faults, and a hundred things might plausibly be said to prove them beauties. Fortunately they lie more in the minor parts than in the essentials of the tale. In fact, the improbability of the plot is only equalled by the wonderful truth, nature, and keeping of the principal character, for the "limæ labor" which, in this instance, Goldsmith willingly bestowed upon his style, and on the creation and apposition of traits of character he scrupled to waste upon the selection of his incidents. The real interest lies in the development of the character of the amiable Vicar, so rich in heavenly, so poor in earthly wisdom;—possessing little for himself, yet ready to make that little less, whenever misery appeals to his compassion;—with enough of literary vanity about him to show that he shares the weaknesses of our nature,—ready to be imposed upon by cosmogonies and fictitious bills of exchange, and yet commanding, by the simple and serene dignity of goodness, the respect even of the profligate, and making "those who came to mock remain to pray." Doubtless, the probability and look of life which a character drawn with such quiet strokes of the pencil, and with such sobriety of colouring, possesses, is in some measure owing to the fact, that not a few of the incidents of which Goldsmith has availed himself are drawn from circumstances in his personal history, such as the mistake of setting out to teach the French English, without recollecting that it was a necessary preliminary for the tutor to acquire a little French himself; but the skill which can make such trifles in real life subservient to the purposes of real fiction is scarcely less worthy of praise than would have been their original invention. Perhaps there is no better proof of the broad and general truth of delineation which a novel possesses than our being in the habit of resorting to it in conversation for cases in point and comic illustrations of our opinions. In this respect the *Vicar of Wakefield* forms a storehouse of allusion. How naturally does any ridiculous investment in Mexican mines or Spanish stock recall to our recollection Moses' bargain for the gross of green spectacles? Who is there that has not been reminded of the aristocratic Miss Skeggs turning out to be no better than she should be, notwithstanding her intimacy with the Duchess and her taste for Shakspeare and the musical glasses, by some case of the kind within our own experience where, reversing the denouement of the Double Arrangement, the Knight Templar of the company has sunk into the waiter? And, for our own part, we must admit that we have never been able to treat with due gravity any allusion to the learned speculations of Manetho, Berossus, or Sanchoniathon, from their indissoluble connection in our minds with the more finished cosmogony of Jenkinson.

In one respect Goldsmith rises conspicuously superior to his brethren; he has no passages, which, dying, he need have wished to blot, and his characters and his incidents are all calculated to call forth only the better feelings of our nature. *Virginibus puerisque* might have been his appropriate and uncontested motto.

The great novelists to whom we have alluded, and particularly Fielding, Smollett, and Sterne, had of course many imitators. But the minuteness of Richardson was found to be intolerable in any hands but his own, and his manner, in this country at least, though not in France and Germany, was soon abandoned. Amongst the numerous imitations of Fielding's manner, most of which are now forgotten, the *Henry of Cumberland* (1752–1811), is probably the most respectable. Cumberland possessed that degree of talent which enabled him, both in dramatic com-

position, and in the novel, to produce performances which are read with pleasure, though they seldom rouse our interest, and never impress us with the idea of a creative genius.

The imitations of Smollett's manner were not numerous, and, with one exception, totally without merit. We allude to *The Adventures of a Guinea*, by Charles Johnstone, which appeared in 1761, in which a series of scenes and personages in different walks of life are brought before us through the somewhat inartificial mode of making a coin, which shifts through the hands of successive proprietors, the historian of their follies and their vices; a contrivance very inferior indeed to the ingenious machinery by which Asmodeus unveils to Don Cleofas the secrets of Spanish life. In *The Adventures of a Guinea*, the author seems to have had before him both Le Sage and Smollett as models; but in the result he exhibits little of the gay good-humoured touch of the Frenchman, and nothing of the cordial merriment of the Scot.

Sterne is perhaps the only one of our great novelists who has found an imitator of genius, in Mackenzie (1745–1831); for although in his *Man of the World*, and *Julia de Roubigne* Mackenzie has deviated from the manner of Sterne, and formed a composite manner, in which the characteristics of several writers are blended with his own, yet there can be little doubt that the spirit of Sterne, in his pathetic passages, in a great measure inspired *The Man of Feeling*, and prompted that "illustration of the richer and finer sensibilities of the human breast," which Sir Walter Scott points out as the "key-note" on which he formed his tales of fictitious woe. In some obvious respects, no doubt, Mackenzie improved upon his model; as in rejecting the licentiousness of Sterne's wit, retrenching his episodic digressions, his numerous impertinences, and intrusive buffoonery, and keeping the strain of feeling which he wishes to create more unbroken; but as writers of genius, there surely can be no comparison between them. Mackenzie has none of those charming touches which hover with such a fine ambiguity between the pathetic and the humorous,—like Toby's opening the window and liberating the fly which had been buzzing about him all day,—and which operate like spells upon the heart.

The *Rasselas* of Dr Johnson (1709–1783), though it wears the form of a tale, has but slender pretensions to be included amongst the class of novels, for it has neither progressive incident nor character. It is a series of dialogues and moral reflections, very solemnly and beautifully written, tinged with that tone of mournfulness and despondency so likely to be the prevailing feeling of his mind in the composition of a work intended to defray the expenses of a mother's funeral. *Rasselas* is, in fact, the *Vanity of Human Wishes* in prose; and its incidents, if such they may be called, have even less pretensions to connected interest than those of *Candide*, to which it may be regarded as a moral and philosophical antithesis.

Judging, indeed, from *Rasselas*, and from the other writings of Johnson, it may be safely assumed that his success as a novelist would not have been much greater than as a dramatic poet. He has nowhere shown the least power of creation, by stepping out of himself, and putting on by the force of imagination the nature of others. Through the disguise of all the successive characters which he is obliged to assume in the *Rambler*, the sturdy, controversial, and somewhat pompous moralist stands confessed; and whether he writes as a fine lady, a fop, a blood, or an elderly gentleman, still, like Puck, "we know the man by the Athenian garments he hath on." Independently of this, his views of life would certainly have been untrue, inasmuch as they were one-sided. Far from being disposed "to make the happiness he could not find," the tendency of his mind,—in consequence, perhaps, of a con-

Romance.stitutional melancholy,—was rather to unmake and neutralize the elements of comfort by which human life in the average is surrounded. Had he devoted himself in earnest to fictitious composition, he would have lent his eloquence and power of forcible statement to shape the world of romance according to the gloomy fashion which the reality presented to his eye; and in an inky coat, indeed, or a drab-coloured suit at best, very unlike the peach-blossom of his friend Goldsmith, he would in all probability have arrayed it.

Horace
Walpole.

About 1769 we witness the revival, though in a new shape, of the old taste for romance. The delineation of life as it actually existed was found to afford too little scope to minds who aspired after the imaginative and poetical, and who could not see why natural delineation of character and manners might not be combined with striking events, and with the picture of the higher passions; why, as Walpole expresses it, in his preface to the *Castle of Otranto* “the fancy might not be left to expatiate through the boundless realms of invention, and thence to create more interesting situations, while the mortal agents in the drama still conducted themselves according to the rules of probability.” In the first shape, however, in which romance re-appeared after this temporary slumber, the delineation of character occupied, it must be owned, but a very subordinate place. A little more attention was given to verisimilitude of manners, and much was done to abbreviate the tedious style of the old prose romance, and to throw life and movement into the narrative by dialogue, and by the omission of unimportant incidents not bearing on the catastrophe; but the main efforts of our first modern romance writers were directed chiefly to the excitement of that feeling of love of the marvellous which exists more or less in every human breast. They chose for their favourite themes the varieties of the supernatural.

“Somnia, terrores magicos, miracula, sagas,
Nocturnos lemures, portentaque.”

We admit that the author of the *Castle of Otranto* did not trust exclusively to such materials of interest. But granting that the general outlines of “his feudal tyrant, his distressed damsels, his resigned yet dignified churchman,” are sufficiently correct, we are at a loss to perceive in any of his characters that individuality which gives to such pictures their chief value. To us they seem light, sketchy, and somewhat vague, although we think it quite possible that the effect produced by greater truth and distinctness of feature in the mortal agents of the piece might not have harmonized with the extravagant demands upon the imagination which the author makes by his supernatural machinery. We agree with Sir Walter Scott in thinking Walpole acted with judgment in leaving his machinery without those attempts at explanation introduced by Mrs Radcliffe, always inadequate, and even throwing an air of ridicule over the mysteries of the piece upon a second perusal. But we cannot concur with him in his toleration of the extent to which Walpole has carried the marvels and improbabilities of his romance. The apparition of Alfonso in the moonlight, dilated to a gigantic form, is impressive, and in certain moods of the mind even the skeleton ghost in the hermit’s cowl may have its terrors. But Clara Reeve was certainly right in the protest which she enters in her preface against the introduction of such machinery as that of a sword so large as to require a hundred men to lift it; a helmet that, by its own weight, forces a passage through a court-yard into an arched vault, and crushes a boy to death; or a picture walking out of its frame. The effect of such violent instruments of terror is suicidal; they destroy the very feeling they were intended to create, and give to the romance the air of a nursery tale. Indeed, were it not for the singular charm

of the style, which, like all Walpole’s compositions, is of the purest and most idiomatic English, and terse and condensed in a very high degree, we feel persuaded that the *Castle of Otranto*, although the first specimen of the modern romance, would at the present day find few admirers.

In some respects, then, we think the *Old English Baron* Clara of Clara Reeve was an improvement on the *Castle of Otranto*. For there the marvellous was brought within some limit of proportion; “the extravagant and erring spirit hied to his confine;” and consequently, so far as regarded the creation of an impression of superstitious terror, or giving an air of probability and keeping to her narrative, we must admit that her ghost of Lord Lovel, who is always exhibited under the obscurity of a dim religious light, did, in our youthful days, produce upon us a certain species of awe. In other respects we rather fear the apprehension which is expressed in her preface,—namely, that in avoiding the defects of Walpole the spirit of his wild composition might evaporate,—was not altogether without foundation. The style of the narrative in her hands became heavy, often dry and vulgar, like the ancient chronicle she professes to follow; her dialogue is peculiarly flat and cumbrous, and the plot deformed, and rendered tedious by trifling incidents which now appear to us needlessly homely; and yet the strong interest with which, as we can state from experience, this romance is perused at an early age, is a proof that in the cardinal point of exciting curiosity and a feeling of mysterious interest, the ruder narrative of Clara Reeve effects, in a great measure, what all the liveliness of style, the deeper antiquarian reading, and more creative fancy of Walpole failed to attain.

But this species of romance-writing was probably carried to its perfection by Mrs Radcliffe (1764–1823), who, in her own walk of fiction, has never been excelled, though opinions may differ as to the comparative rank which she holds among writers of fiction, and also as to the soundness of that principle of composition which led her systematically to unravel her own spells, and to attempt an explanation by natural means of effects which we had at first been encouraged to refer to the agency of supernatural causes. Indeed, we might rather say that, in regard to this last point, there is no room for doubt, and that this system of explanations is exposed to every possible objection;—as totally inadequate in general to account for the effects ascribed to it,—as running counter to the whole tone of sentiment created up to the period of explanation,—as disappointing the pride of the reader, who feels offended at the thought that he has expended so much anxiety and terror on a mere “painted devil,” and a succession of mockeries; and is consequently annoyed at this commonplace anti-climax after his nerves have been tuned for grand wonders, instead of the discovery of paltry images of wax-work. Indeed, it is one of the strongest proofs of the redeeming genius which Mrs Radcliffe has thrown into her tales, constructed as they are upon so unsatisfactory a plan, that they bear a second perusal at all; or that, having discovered in one or two cases the inadequate and puerile nature of what appeared at first so appalling and formidable, we still feel eager for the solution of the remaining mysteries, and can hardly persuade ourselves but that something strange and fearful does lurk, after all, within her deserted chambers and beneath her faded tapestry.

Yet it is wonderful what a magical power she exercises within the field to which she restricts herself. No one ever seems to have understood better the art of preparation, the attunement of the mind to the key of the supernatural, by a long train of half-heard sounds, and glimpses of sights, which the fancy, amidst night and silence, works up for itself into images of things which it fears to contemplate,—

Romance.

"Like one that on a lonesome road
Doth walk in fear and dread;
And having once looked round, walks on,
And turns no more his head,—
Because he knows a frightful fiend
Doth close behind him tread."

And perhaps the strongest proof of her judgment is to be found in the economy and reserve with which she employs the talisman of terror. In her hands slight circumstances and half-hints are made to produce all the effect of fearful witcheries or scenes of bloodshed and horror. The clang of a distant door, a footfall or a track of blood upon a staircase, a strain of music floating over a forest, a figure pacing a platform in silence, some wandering voice following us, "with airy tongue that syllables men's names," through the passages of a decaying chateau, the heaving of the tapestry of a bed in some deserted chamber, nay, at last a very rat behind the arras, become invested with a mysterious dignity, and work upon the imagination like spells.

Mrs Radcliffe may claim the merit of being the first to introduce landscape-painting into her romances as a component part of the interest of the piece. The frequency of her pictures of external scenery, and their want of distinctness and local truth, have indeed been blamed by many who would willingly, on Puff's principle, have abridged her descriptions of the rising sun, and dispensed with a great deal about gilding the eastern hemisphere. But it is certain that these descriptions, though occasionally tedious, and sometimes too obviously brought forward upon a principle of melo-dramatic contrast, have a powerful effect in heightening the impression communicated by the incidents or the sentiments. Set off against the calm beauty of a summer evening, or the magnificent gloom of a thunder-storm, her pastoral or banditti groups stand out with double effect; while to the charge of vagueness of description it may be answered, that Mrs Radcliffe is by no means vague where distinctness of imagery is, or ought to be, her object; as any one may satisfy himself who recalls to his recollection her description of the lonely house by the Mediterranean, with the scudding clouds, the screaming sea-birds, and the stormy sea, the scene selected for the murder of Ellena; or another picture, in the best manner of Salvator, of the first glimpse of the castle of Udolpho rising over a mountain pass, with the slant sunbeam lighting up its ancient weather-beaten towers. Indeed, the whole description of that Apennine fastness, both without and within, is in the best style, not of literal indeed, but of imaginative painting,—
"Fate sits on those dark battlements and frowns:" the very intricacy of its internal architecture, and its endless passages,—a mighty maze, and we fear without a plan,—only serve to deepen the impression of imprisonment and bewilderment and gloom.

To be fully enjoyed, the romances of Mrs Radcliffe must be perused in youth. In after age they appear too uniformly visionary, and the straight-laced stiffness of her heroines, who never manifest the least warmth except in poetry, "female punctuation not permitting them to do more," as Mrs Malaprop observes, suggests the recollection of the pruderies of the pastoral and heroic romance. But when these tales are read in youth, and only remembered in manhood in their better portions, they leave upon the memory a pleasing impression of a varied pageant of gloomy castles and caves, moon-illuminated streets and palaces, "dance and Provencal song and sun-burnt mirth," ærial music floating over haunted forests, or the chant of monk or nun borne to the ear over the waters of some Italian lake, amidst the stillness and the shadows of evening.

We have devoted a larger space to Mrs Radcliffe than some may think justly due to the rank in fiction which she occupies, but we have done so,—first, because we think justice has seldom been done to the real genius which she

threw into the style of fiction she chose to adopt, whatever may be its precise order of precedence in the calendar of fiction; and secondly, because, although that style became more universally popular and more generally imitated than any which had preceded it, she herself, with two exceptions only, which we shall notice, remains the solitary writer of genius by which it has been adorned. The truth is, that the sarcasms which have been directed against the puerile horrors of Mrs Radcliffe ought justly to have been confined to the extravagances of her successors, who imitated her manner without either her imagination or her judgment, and conceived that the surest means of producing effect consisted in pressing the springs of the terrible as far as they would go.

The two exceptions from the general dulness and commonplace of the imitators of Mrs Radcliffe are the *Monk* of M. G. Lewis, which appeared in 1796, and the *Montorio* of Maturin, published in 1807, and among the last romances written on that now antiquated plan. Much injustice, we believe, was done to Lewis at the time. A single unfortunate remark of an irreligious tendency, and some descriptions of undue warmth, pardonable in a youth of twenty, and retrenched in the second edition, gave a blow to the popularity of this romance from which it never recovered. And yet the traces of considerable genius are visible both in its plan and in the execution of several of its powerful scenes. The mere hint of the story—that is to say, the general idea of the gradual corruption of a proud, and enthusiastic, and self-relying nature,—was taken, as Lewis acknowledged, from that of the Santon Barsisa in the *Guardian*; the incident of the escape of the baroness from the banditti was an expansion, executed with much skill, of the scene in the hut in *Count Fathom*; for the story of the bleeding nun he was indebted to a German legend; while he has borrowed several hints for his wandering Jew from the incomprehensible Armenian of Schiller. But to these hackneyed materials he has given a force and look of novelty that are surprising: the escape; the conjuration scene, where the Jew, withdrawing the black ribbon, unveils the burning cross on his forehead; the procession of St Clare by torch-light, where the abbess is torn to pieces,—once read, are not easily forgotten. Lewis also avoided Mrs Radcliffe's error; his ghosts are real and his devil genuine; though, as is not uncommon, we believe, in practice, he takes the form of a woman, instead of appearing, as Defoe has it, "in all his formalities and frightfuls."

The *Montorio* of Maturin was also a boyish production, Maturin, which the writer affected at a more advanced period of life to despise. Yet it appears to us to exhibit more genius, mingled, no doubt, with a deep vein of extravagance and false taste, than his more elaborate attempts to picture real manners and passions in his *Woman*. There was originality even in the conception, hideous as it was, of the hero employing against the brother, who had deceived him, the agency of that brother's own sons, whom he persuades to parricide by working on their visionary fears, and by the doctrines of fatalism; and then, when the deed is done, discovering that the victims whom he had reasoned and persecuted into crime were his own children. And though Maturin's machinery in no respect differs from that of his brethren, though he labours to explain away in the close all that had appeared supernatural in the beginning, and of course with total want of success, yet the impression left on the mind by the perusal of the work, in the three thickest volumes we believe that modern romance has to boast of, though gloomy and unsatisfactory, is certainly that of an inventive genius in the author. Such was the effect it produced on Sir Walter Scott, who was the first to direct attention to it by a criticism in the *Quarterly Review* for 1810: "We have strolled," says he in a lively introduction, "through a variety of castles, each of which was re-

Romance.

Romance. gularly called Il Castello; met with many captains of condottieri; heard various ejaculations of Santa Maria and Diabolo; read, by a decaying lamp, and in a tapestried chamber, dozens of legends as stupid as the main history; examined such suites of deserted apartments as might set up a reasonable barrack, and saw as many glimmering lights as would make a respectable illumination. Amidst these flat imitations of the *Castle of Udolpho*, we lighted unexpectedly upon the work which is the subject of the present article, and in defiance of the very bad taste in which it is composed, we found ourselves unusually involved in the perusal, and at times impressed with no common degree of respect for the powers of the author."

Moore. Of the *Zeluco* of Dr Moore, which appeared about 1785, we have already spoken in our biographical article. (See MOORE, *Dr John*.)

The influence of such works as Goethe's *Sorrows of Werther*, written seemingly with a view of reversing Pope's maxim, and proving that whatever is wrong, becomes very obvious in our literature of fiction towards the close of the eighteenth century. For in truth such speculations, embodied in an imaginative form, were found highly congenial to that spirit of restlessness and discontent with political institutions which was everywhere abroad, perplexing nations with fear of change, and leading men of genius to dress up moral paradoxes in the shape of narrative, and to employ their eloquence in attacking those principles of society which tend to make men happy, or which keep them so. This tendency appears sufficiently obvious in the novels of Bage, a sceptic in religion, and a latitudinarian in morals, whose crude theories, we think, might have been allowed to repose in that oblivion to which they had been consigned, without being revived in such a work as the *Novelist's Library*. Their introduction at all into a work intended to embody only the classical works of fiction, seems unaccountable; nor is the singularity diminished by the fact, that his best work, *Hermesprong, or Man as he is not*, is omitted, while three of inferior merit are re-published.

Robert Bage.

Godwin. But the social and political theories of the time found an abler exponent in Godwin, whose first work, *Caleb Williams*, appeared in 1794, in which, throwing aside the stimulus of the marvellous, he has trusted the effect of his tale entirely to a picture of the workings of the mind on two beings of very opposite natures, who are driven, by a species of fatal instinct, into the relative positions of persecutor and victim. The doctrines of the *Political Justice* furnished avowedly the primary source of the inspiration of *Caleb Williams*, intended, to use the words of the preface, "to furnish a general review of the modes of domestic and unrecorded despotism, by which man becomes the destroyer of man; that is to say, to show that, under the maladministration of English law, liable to be perverted by influence and wealth, the chances are all in favour of the escape of the real criminal and the conviction of the innocent,—a proposition notoriously untrue, and which is not even advocated with much art or plausibility in the series of persecutions to which Williams is exposed. Fortunately, however, for the real merit and permanent popularity of this singular work, the political design soon merges in a higher and more legitimate interest. The genius of the author kindles as he proceeds, and out of a hard and republican background brings forth the bright and chivalrous vision of the aristocratic Falkland, a being of a loving, noble nature, the victim of false honour and morbid refinement of feeling. Few scenes in romance exceed in breathless and entrancing interest the description of the progress of suspicion in the mind of Williams, till he extorts from his master the fatal secret on which hangs the whole of his future fate; the escape from prison in the grey dawn of a drizzling morning; and the last interview between Williams and his dying persecutor, sitting, corpse-like, to hear his secret dis-

Romance. closed to the world, and to suffer the agony of knowing that life and reputation are about to leave him together.

In none of his other works did Godwin evince the same grandeur of conception, and in none of his subsequent personations, except Bethlehem Gabor, did he exhibit that power of presenting demoniacal characters, such as Tyrrell and Gines, in a light which renders them, unnatural as they are, actual objects of terror, like a serpent in the path. The tone of his next novel, *St Leon*, is altogether more subdued than that of *Caleb Williams*. It has a mournful eloquence in harmony with the picture of desolation which it presents. Here, too, the author has imperfectly succeeded in working out the design which he announces he had in view,—namely, that of proving that the happiness of mankind would not have been augmented by the gifts of immortal youth and inexhaustible riches; for, in order to illustrate his position, Godwin is under the necessity of laying the scene in a remote age, and making the persecutions of St Leon arise from feelings of superstitious credulity, which we cannot help recollecting that the progress of intelligence has since exploded. The senior wrangler, who asked what *Paradise Lost* proved, would certainly therefore have been dissatisfied with Godwin's demonstration; but as the vehicle of a series of most touching and impressive scenes, his plot is far from deficient in interest, nor, granting its premises, in probability. None of his other tales have been popular.

No writer has come so near the manner of Godwin as Brown. Charles Brockden Brown, an American novelist, an imitator of the English author, but in a free and noble spirit of imitation. He certainly had not Godwin's power of mental analysis, and not much of that pathetic tenderness which, contrasted with the general sternness of his tone, shows like a rainbow against a troubled sky. He was altogether more prosaic; dealing, indeed, rather with the material than the moral sublime; producing his strong effects by scenes of sickness, danger, death, or the explosions of insanity; and often making his characters mere *phantasmata*, which interest us only as the means by which a series of agitating incidents are brought into connection. But he had a good deal of the same eloquence, and the same dark and mysterious power of imagination; a certain intensity of portraiture, whether of mental emotion or things external; great skill in working up a chain of singular events that keep curiosity and suspense upon the stretch, or impress us with a sense of danger and anxiety, and of which he loves to furnish an explanation from those phenomena in our nature which are little understood, such as somnambulism, trances, spontaneous combustion, or ventriloquism. In these respects *Wieland*, *Ormond*, *Edgar Huntly*, and *Arthur Mervyn* have all nearly the same character, nor do they differ materially in point of merit. Brown has singular power in the delineation of solitude of all kinds, whether the silence of lonely forests, broken only by the howl of panthers, or of deserted mansions dropping to decay. There is one picture of this kind in *Arthur Mervyn*, of an empty house, evacuated during the yellow fever in Philadelphia, silent and dark in the day-time, with the sunshine streaming in through the closed doors and shutters, and faintly discovering that everything remained undisturbed since its desertion, which produces a strong feeling of awe, and oppresses the spirits with unaccountable sadness.

No other novelist of any ability can be said to have adopted the manner of Godwin with success, except his accomplished daughter, the authoress of *Frankenstein*, a production of much originality in its conception, though the execution of the work is unequal, and the whole portion which relates to the self-education of the monster, who is the creation of the new Prometheus, almost ludicrously improbable.

Several female novelists, towards the close of the eighteenth century, deserve notice, whose tales, though now little read, have the merit either of pathetic or humorous

Mrs Shelley.

Romance. delineation. In the first of these classes are Mrs Inchbald and Charlotte Smith; in the latter Madame D'Arblay, or, to use the name by which she was best known, Miss Burney.

Mrs Inchbald. The fame of Mrs Inchbald rests upon her *Simple Story*. The title perhaps is but of doubtful application to a novel which is really complicated with strong and varied passions, which turns on the fate and fortunes of persons placed in very peculiar relations to each other, and, like Shakspeare's *Winter's Tale*, unites two distinct stories relating to different personages, between the action of which "time has slid o'er sixteen years." It is a proof of considerable merit in the novel, that so hazardous an experiment as that of transferring our sympathies to actors in a great measure new to the scene, has not been unsuccessful; that the interest is, notwithstanding, kept up, partly by the real pathos of some of the scenes, and partly by the natural traits of passion in others. Her second novel, entitled *Nature and Art*, has been generally and justly reckoned much inferior to the *Simple Story*.

Charlotte Smith. Charlotte Smith (1749-1806), though her novels are extremely defective in plot, betraying marks of haste, and tinged with a melancholy easily to be accounted for from the depressing circumstances under which they were generally composed, cannot be confounded with the ordinary day-labourers for the circulating library, "who turn a Persian tale for half-a-crown." Sir Walter Scott, in one of those kindly notices by which he delighted to cheer the heart of struggling genius, or to do justice to the memory of talents which time was consigning somewhat too rapidly to oblivion, has given her credit for great powers of satire mixed with pathos, and characters sketched with "firmness of pencil and liveliness of colouring." The satire indeed seems to have been pretty indiscriminate, since it extends to her own husband, whose pecuniary improvidence and sanguine temperament are glanced at in the character of the projector who hoped to make a fortune by manuring his estate with old wigs. But apart from satire, the *Old Manor House*, the only one of her novels with which we are acquainted, is really entitled to the character of an interesting and well-written tale. We have a lively recollection of the *Manor House* itself, its neighbourhood, its sea-side scenes, the strange domineering lady of the manor, Mrs Rayland, whom Sir Walter Scott describes as a sort of Queen Elizabeth in private life, and the natural interest which she has succeeded in giving to the love story which is going on within the ancient walls.

Miss Burney. The popularity once enjoyed by the novels of Miss Burney appears now to have been somewhat overrated; at least we are at a loss to discover anything in her first work, *Evelina*, except the extreme youth of the writer, then only eighteen, to account for that burst of approbation with which it appears to have been received in 1778 by such men as Burke, Reynolds, and Johnson. She wrote no doubt with sprightliness, with some humour of a broad and superficial kind, and undoubtedly possessed considerable talent in drawing bores and personages of low manners or odd habits from vulgar middle life; in imagining scenes of awkward mistakes in society, and exaggerating the teasing distresses thence arising to her heroines and other personages of more refined manners or higher pretensions. Indeed, to mimicry she appears, from her father's account, to have had a strong leaning from her childhood; but when she rises from mere manners and habits to paint feelings, we see little but indecision on the one hand, or exaggeration on the other. Within the field where she excels too she is much of a mannerist; the same characters under other names, the same incidents under a thin disguise, reappear in *Evelina*, *Cecilia*, and *Camilla*. Even the graces of style which she had shown in her earlier works in a great measure forsook her in her last novel, the *Wanderer*;

a tissue of improbable distresses and silly refinements of sensibility, conveyed in language which is neither good English nor good sense.

The *Canterbury Tales* deserve notice on account of the interesting and highly original story of "Kruitzner," or the "German's Tale," by Harriet Lee, on which Lord Byron founded his *Werner*. The tales contributed to the work by her sister Sophia, such as the "Two Emilys" and the "Clergyman's Tale," though less striking, are written with genuine feeling and tenderness.

It may be observed, however, in those female novelists to whom we have last adverted that, though the marvelous is thrown aside, and the characters are taken from common life, the sentiments and tone of feeling are yet decidedly strained beyond the natural pitch. The characters display a degree of romantic affection and a prodigal expenditure of sensibility for which the cares and distractions of real life, we fear, afford but little leisure. It remained for Miss Austin (1775-1817) to show what a charm might be imparted to truthful pictures of life, as we really see it around us in the quiet monotony of domestic arrangements, with its interchanges of poetry and prose, business and strong feeling, and dialogues at balls and parties alternating with the secret griefs of the heart; just such a picture, in short, as Asmodeus would present, could he remove the roof of many an English home, and place us beside the hearths of the Knightleys, Bennets, Woodhouses, and Bertrams by whom they are inhabited. No species of novel-writing exposes itself to a severer trial, since it not only resigns all Bayes' pretensions "to elevate the imagination and bring you off in some extraordinary way," but by professing to give us pictures of our ordinary acquaintances, in their common garb, places its productions within that range of criticism where all are equally judges, and where Crispin is entitled to dictate to Apelles. And yet with such fine perception and perfect truth of keeping has Miss Austin performed her task, that we never miss in her novels the excitement of uncommon events, and rarely feel her simple annals of English life to be tedious or unworthy of the dignity of fiction.

All the novels of Miss Austin closely resemble each other; but *Northanger Abbey*, and *Sense and Sensibility*, are of a more puerile cast than the others, and betray a more unformed taste. *Pride and Prejudice*, particularly in the characters of the Bennets, was an improvement on the two former, but *Emma*, *Mansfield Park*, and *Persuasion* are justly regarded as her most finished works. Some scenes in *Persuasion*, the last work of this gifted authoress, have always appeared to us models of unobtrusive tenderness.

Some one has described the novels of Miss Edgeworth as a sort of essence of common-sense; and the definition is not inappropriate, for she is the most anti-sentimental of novelists. The sway of the stronger passions she has almost excluded from her Tales. Love is indeed the only one which has found entrance, and to qualify him for admission, his wings have been sorely clipped and trimmed, and reason constantly placed as a gentleman usher over him. Miss Edgeworth has even less toleration for splendid faults or bursts of enthusiasm than Miss Austin. Her chief aim is to rebuke folly by ridicule and comic humour; to unteach bad habits of mind, to substitute in their stead prudence, firmness, temper, perseverance, and habits of absolute truth, a process which she generally represents as effected by a gradual series of efforts and consequent ameliorations, which are within the power of all minds of ordinary resolution. Her favourite characters are either persons of well-balanced minds with sound heads and a smattering of physical science, who act rightly and honourably, but always think twice before they act, and weigh in the scales of utility what are generally considered as

Romance. matters of feeling, like the Percys: or they are personages who, spoiled by indolence and bad education, succeed by a course of self-discipline, in curing their intellectual or moral maladies, and becoming useful and honourable members of society, like the hero of *Ennui*, Lord Glen-thorn. Miss Edgeworth brings to her task the results of much observation of character, particularly that of her countrymen; a quick perception of the humorous, a dramatic liveliness of dialogue, a high sense of all that is honourable and decorous, with a scorn of meanness and evasion, and that tone of good society which her pictures, often drawn from fashionable life, demand. If her novels are at times too obviously monitory and didactic, and the ferule peeps out rather alarmingly behind the schoolmistress, this defect, we fear, is in a great measure inseparable from the very qualities which constitute the strength of her mind, and from the conception she had formed for herself of the ideal of novel-writing.

Sir Walter
Scott.

At the period when Sir Walter Scott (1814) produced the first of that long file of romances which have since obtained a more than European reputation, the public taste, in regard to novel-writing, seemed to have sunk to a low ebb. Miss Edgeworth indeed was popular; for the wit and good sense of her dialogue, and her happy pictures of Irish character, found favour in the sight even of the readers of circulating-libraries; but the merits of Miss Austin's more unobtrusive pictures of life were comparatively unknown. At best she was confounded with the writers of "Winters in London," or "Winters in Paris," and shared a dubious favour with the romantic effusions of Francis Lathom and the other labourers of the *Minerva* press, so called, we presume, upon the *lucus a non lucendo* principle, from the goddess of wisdom having so little to do with its productions. Translations, too, from Augustus La Fontaine's homely but rather vulgar pictures of little German *Krah-winkel* towns, or the broad and indecent extravagances of Pigault Le Brun, tended still further to degrade and vulgarize the public taste. Everything in fiction, in short, looked unpromising and exhausted. The appearance of a great writer, who should strike out a new path through this much-trodden waste, seemed at that moment in the highest degree improbable. And yet this was at once effected by the author of *Waverley*, in such a manner as to raise the romance from the lowest level to the very highest position in literature.

The resemblance of Scott's mind to that of Shakspeare has been often remarked, and with some justice; for though even the most enthusiastic admirers of the romance-writer, will hardly venture to claim for him an equality of powers with Shakspeare, there were strong kindred features in the character of their minds. In both we are struck with the same general and almost universal sympathies, leading to impartial and kindly views of all men and all opinions, the most remote from their own; a cheerful, healthful tone of feeling, which brightens existence about us, instead of dwelling on its evils; an avoidance of all moral casuistry, or treading on the borders of the forbidden, either in the creation of characters or of incidents; the feeling of the humorous as strongly developed as the sensibilities of the imagination; great self-possession, and a noiseless exertion of power, working out its end, not by sudden bursts, or high-wrought passages, but by a silent and steady progression, like the dawn brightening into the fulness of day.

If Scott possessed any excellency in a greater measure than Shakspeare, it lies in the wonderful art with which he has contrived to impress the reader with the reality of the scenes which he describes at their several historical periods. He has been able to mark most distinctly the age to which each separate story belongs, by a modification in the style and language of the dialogue, by a careful avoidance of

Romance. anachronisms, by representing his characters as knowing neither more nor less than was appropriate to personages in their respective spheres, and by the most minute and careful attention to manners and costume. His extensive miscellaneous reading and great antiquarian research no doubt contributed much to his success in this important point; but we must also allow to him the possession of an innate faculty of producing *vraisemblance*, almost amounting to an instinct, no matter what period of history he selects for his tale; whatever that may be, he carries us back to the precise age which he has determined to illustrate; and the shadows which he summons from the vast realm of his imagination speak, think, and act, move and have their being, precisely as we have been accustomed, though more faintly, to create for ourselves ideal images of their prototypes. Does he take us to the time of the Crusades?—how chivalrous in its tone, yet how mingled with ignorance and ferocity, is the conversation of the mail-clad barons; how tinctured with barbaric thought and feeling is the utterance of the serfs and thralls! Does he bid us tarry at the era of the Reformation?—how marked are the natural differences of the priest and preacher, how vivid are the pictures of the savage moss-troopers, of the turbulent and ambitious nobles, of the euphuistic courtier who has taught himself to speak in the stilted language of the Arcadia! Does he introduce us to the period of the civil wars?—Cavalier and Puritan start to life again as they moved before the fight at Naseby! Shakspeare, on the contrary, very rarely, and never strongly, indicates *period* by language. His characters for the most part might belong to any age; sometimes they are even made to talk absurdly and incongruously. The bleeding soldier in *Macbeth*, who relates to King Duncan the issue of the battle with the Norwegians, speaks in a style totally out of keeping with his character. There is no antiquity about *Cymbeline*; even *Hamlet* does not mark its era. Shakspeare certainly did possess in a very high degree the faculty of depicting national differences of temperament, and even national differences of scenery. The cold, stern, Norse-like tone of *Hamlet* is in marked opposition to the warm colouring of *Romeo and Juliet*. But he did not reproduce the past with anything like the vividness of Scott. Many subsequent writers have attempted in this particular to rival the great Scottish novelist, but never with complete success. The most famous of them, Sir Edward Bulwer Lytton, has in two at least of his works, *The Last Days of Pompeii*, and *The Last of the Barons*, striven hard to give them an impress of entire *vraisemblance* corresponding to the peculiarities of the time; but it is no disparagement to the acknowledged powers of that eminent writer to assert that, in this respect, he is decidedly inferior to Scott. With the one it is an effort conspicuous in every page; the characters being too antique, and too elaborate in their antiquity. They are too carefully primitive in their talk, like masquers who strive to the uttermost to keep up a show of what they are not, without hoping to impose upon their audience. We at once can detect the modern under the ancient garb, by the very pains which he takes to stalk solemnly on the cothurnus. With the other there is no effort whatever. He waves his wand more potent than that of Prospero, and the shadows of the olden time appear before us, and we absolutely believe in their re-animation.

Setting aside this notable peculiarity, we may remark that the works of Scott produce their effect rather by the combination of many qualities than the predominance of any. His strength lies in the possession and harmonious adjustment of most of the qualities requisite to the novelist, none engrossing the whole mind, none excluding another, but all working together in kindly unison: learning arrayed in the most picturesque combinations; observation of life embodied, not in abstractions, but in living forms; humour

Romance. springing out of tenderness, like smiles struggling through tears; the spirit of ancient knighthood leavening the worldly wisdom of modern times; and the imagination of the poet adorning, without impairing the common sympathies and good-humoured sagacity of the man.

The department in which this combination of qualities has been most successfully displayed by Scott was that of the historical romance—a class of fictions which he may truly be said to have created. For although fictions bearing the title of historical romances were by no means uncommon in English literature before the time of Scott, such as the *Recess* of Miss Lee or the *Scottish Chiefs* of Miss Porter, it is apparent that they stand in a totally different class; not being, in fact, historical except in the names of the characters. Obvious as the idea now appears, Scott was in truth the first to show how much invention might gain by a union with reality; what additional probability, interest, and importance might be given to the fortunes of imaginary heroes, by interweaving their destinies with those of historical personages; nay, how much of romance in its finest forms lies in the characters and events of history itself, invisible to the prosaic or merely philosophic observer, but obvious at once to the eye of imagination. He has carried the picturesque of history to its perfection; for without imparting to his portraits the deep and subtle traits by which Shakspeare so wonderfully individualizes the beings of his dramas, he never fails at least to present consistent and striking pictures of his historical personages in their habit as they lived, and to dispose the light and shadow about them with the most felicitous adjustment—dress, look, gestures, manner, and the outward accompaniments of scenery being all made important accessories to heighten the effect of well-known peculiarities, or to hide the want of those over which Time has dropped a veil which even Imagination can hardly raise.

In description indeed, generally, Sir Walter Scott was unrivalled. Whatever he sees with the eye of the mind shapes itself into words which enable us to see it too. His pictures combine in a singular way breadth and minuteness; for while he painted the details with sharpness and firmness, no one understood better the art of arrangement in masses, so that he never fails to give the spirit as well as the form of the spot, making us *feel* the solemnity and gloom of castles and druidical forests, the calm produced by the still beauty of a Highland lake from which the morning mist is disappearing, or the healthy elevation of spirits with which we travel up some mountain height, whence we see far into the country beyond, and “feel the breath of heaven fresh blowing.”

We offer no remarks upon his characters except this, that making every allowance for repetitions, no writer of fiction since Shakspeare has enriched the portrait gallery of invention with more originals, of which we have a distinct conception; and that though his female characters have less variety and less truth than his male personages, we know no writer except Shakspeare to whom the same remark may not justly be applied.

The plots of Scott, speaking generally, are neither remarkable for excellence nor the reverse. Examples may, in fact, be found in the long list of his romances both of skilful and defective plots. *Ivanhoe*, *Kenilworth*, and the *Bride of Lammermoor*, for instance, are proofs how artfully he could at times arrange his plan; the two latter having all the compactness and steady progression of the drama. Others again, such as *The Monastery*, *St Ronan's Well*, and *Rob Roy*, are in a high degree loose and inconsequential.

Fertile and inventive as was the genius of Scott, it cannot, we think, be denied that, during the latter half of his career as a writer of fiction, he appeared to less advantage.

No wonder, indeed, when, in addition to the limits by which all invention is bounded, we consider under what depressing circumstances many of his later works were composed, that in these even the elasticity of genius itself should be somewhat outworn and deadened; that the conventional, both in character and incident, should occasionally supply the place of invention, and that mere imagery, and not always very appropriate illustration, should be substituted for the natural turns which at first enlivened the dialogue. “If there be a mental drudgery,” to use his own words in his notice of Charlotte Smith, “which lowers the spirits and lacerates the nerves like the toil of the slave, it is that which is exacted by literary composition when the heart is not in unison with the work on which the head is employed.” When he breaks up new ground, as in *Nigel*, *Quentin Durward*, and *The Crusaders*, his genius indeed suffers little diminution; but in *Redgauntlet*, *Anne of Geierstein*, and *The Betrothed*, the practised skill of the mechanist, re-composing old materials in new shapes, is far more visible than the freshness and spontaneity of an original inspiration. With the publication of *Kenilworth*, indeed, the sun of his fame may be said to have “touched the highest point of all its greatness;” but like that luminary during a polar summer, it seemed for a time rather to revolve than to descend, and its rays continued to look bright and beautiful long after it was journeying towards the west.

No writer ever exercised so great an influence over the public mind, or led to so much conscious or unconscious imitation. His influence on Italy, France, and Germany, we shall afterwards have occasion to notice. On the literature of Great Britain we believe it to have exerted on the whole a most beneficial effect; not, indeed, that any professed imitation of his manner has yet appeared which possesses great claims to genius, but that he has carried a higher spirit into novel-writing; taught us how the simple feelings of peasants, and the homely pathos of humble life, and the relings of feeling amongst the outcasts of society, might be made to blend with scenes of high imagination; that his writings are calculated to strengthen the ties of our common humanity; that they never tend to foster a bad, or to throw ridicule upon a good or generous feeling; while, speaking of them in a merely literary point of view, they taught lessons of simplicity, good taste, moderation, and skill in seizing the best points both of character and description, which have not been without their effect even on those by whom the mere manner of Scott or his choice of subjects have been studiously avoided.

The professed imitators of Scott have been numerous, but not successful. As usual, they have magnified his defects, urging his conventional personages, such as dwarfs, fools, gypsies, and bores, into caricature; multiplying instead of retrenching those similes which, even in the original, were so obtrusively frequent as to remind us of Bayes' rule for writing dialogue, “ever make a simile when you are surprised;” and overlaying the plot with minute descriptions of dress and scenery, which the reader, after a little experience, is wise enough to avoid.

The best imitation of Sir Walter Scott's manner with James and which we are acquainted is the anonymous romance of Cooper. *Forman*, of which he speaks with respect in his criticism on Mrs Radcliffe. The romances of Mr James, too, though not indicating much depth, are pleasing, always written with good feeling, and with a plot which excites a sort of quiet interest, if it does not keep the mind in the chain of curiosity or suspense. The novels of Cooper, who is probably better known than any other of the imitators of Scott, seem to be considerably overrated. On ship-board, or on an Indian heath, he is striking and picturesque; but among civilized society, and, above all, in his attempts

Romance. to catch the ease of fashion, we must regard him as singularly unsuccessful.

Hope.

A strange contrast to the spirit of Scott's novels was exhibited in the sceptical and dreary tone of *Anastasis*. Without force of character-painting, with much languor in parts, and too prolonged a detail of heartlessness and villainy, the work fascinates by its strength, and towards the close, when the character of the hero deepens, by its irresistible pathos. Commencing with the levity of a Greek *Gil Blas*, it modulates into a key of sadness and desolation of spirit which reminds us of the close of *St Leon*. Fiction has few pictures which will bear comparison with that of *Anastasis* sitting on the steps of the lazaretto of Trieste, with his dying boy in his arms.

Many other authors, of considerable literary reputation about this time entered the field of fiction; indeed, very few entirely abstained from wandering in that direction.

Moore.

Thomas Moore produced one novel, *The Epicurean*, in which some of the excellences and many of the defects traceable in his poetical style are apparent. We believe, indeed, that the original intention of the author was to have framed a metrical romance, but that he was induced to alter his plan and adopt the vehicle of prose, on account of its more extensive popularity.

Wilson.

The *Lights and Shadows of Scottish Life*, by Professor Wilson, is a work which still retains in a great measure its earlier popularity. It is a book *sui generis*; not perhaps accurate in its delineations, but marvellously attractive as an idealization of peasant life by one who was a true poet, and who invested every subject which he touched with the light of his varied genius. Scarcely less popular and attractive is his other romance, the *Trials of Margaret Lindsay*, a most pathetic story, the perusal of which cannot fail to excite feelings of the deepest emotion. It is somewhat remarkable that this great writer, who possessed in an eminent degree the faculty of humour and the power of expressing it (as witness his inimitable *Noctes Ambrosianæ*) should nevertheless have shrunk, with an almost superstitious dread, from exhibiting it in his more elaborate writings. Nothing can be more certain than that the union or alternation of humour and sentiment, the mixture of the comic and tragic elements, has a charm unattainable by the exertion of one faculty only; and we consider this self-imposed abnegation of half his power to be the reason why Wilson's popularity as a novelist is inferior to that which he has attained as a miscellaneous writer.

Galt.

Of a very different stamp was John Galt, who, possessing little pathetic power, revelled in descriptions of the ludicrous and absurd, chiefly as displayed in commercial life and among the middle classes. Galt drew accurately from nature in so far as character was concerned; and it is not too much to say that he has no rival, even at the present day, in framing portraits which, while absolutely true, are irresistibly comic and captivating. In this respect he is infinitely superior to Mr Dickens, whose characters are for the most part caricatures. Galt was no caricaturist. He drew accurately from the life; his secret being, that he thoroughly understood, appreciated, and enjoyed the foibles of that class of persons which he selected for illustration, and very wisely abstained from exaggerating, where, in truth, exaggeration would have spoiled rather than augmented the effect. His range is no doubt very limited; for it extends chiefly, if not altogether, to citizen life in the west of Scotland, and therefore the fidelity of his portraits can hardly be appreciated by those who are unacquainted with the class which he describes. But it may fairly be questioned whether even Sir Walter Scott has exhibited more truthful delineations of Scottish character than Galt has done in his Sir Andrew Wylie, Leddy Grippy, and Dr Pringle.

Another writer of nearly the same date rivalled Galt in

his peculiar walk. We allude to Mrs Johnston, authoress of *Clan Albin*, and of a tale called the *West Country Exclusives*, which is not nearly so well known as its intrinsic merit deserves.

Romance.
Mrs Johnston.

Several novels of great merit appeared when the reputation and popularity of Scott was at its zenith, and, though they did not absolutely suffer adumbration, were yet, in some measure, less regarded than they probably would have been had the great planet not been in the ascendant. The fact is, that Scott had acquired nearly a monopoly in fiction; for his fertility was so great that the reading public had scarcely digested one work of his before another was laid before them, and the established favourite gained simply from his popularity an immense advantage over any new competitor. That was the natural and well-earned result of his incessant labour and versatility.

The novels of Miss Ferrier, which are three in number, *Miss Ferrier's Marriage*, *Inheritance*, and *Destiny*, are decidedly of a high class, and have much interest, from the art of the writer in depicting shades of character. With a keen appreciation of the ludicrous Miss Ferrier combined the utmost delicacy of sentiment; so that her pictures are never overcharged, though abounding in native humour. One great charm of her novels is their thoroughly religious tendency, and the wholesome lessons which they convey, not obtrusively paraded nor pharisaically set forward, but tempering and pervading the whole with a benignant Christian spirit. Her main object was to illustrate, through fiction, the uses of adversity, and to prove how worthless are the riches, honours, and ambition of this world in comparison with a mind tranquillized by the influences of religion, and in the enjoyment of that inward peace which passeth all understanding. Of her success there can be no doubt; for in the whole library of fiction there are no works which can be more safely recommended for the perusal of the young, as calculated at once to improve, delight, and amuse, than the novels of Miss Ferrier.

The novel of *Cyril Thornton*, by Captain Hamilton, brother of the distinguished philosopher and metaphysician, Sir William Hamilton, is of sufficient merit to demand especial notice. So also are the novels of Mr J. G. Lockhart (Sir Walter Scott's son-in-law and biographer), *Valerius*, *Reginald Dalton*, and *Adam Blair*. The first of these, *Valerius*, which is a story of imperial Rome, is one of the best attempts which have been made by modern romancers to depict society in times which are purely classical. A fine and elegant scholar, without being in any degree a pedant, possessed of a vivid imagination, and master of a polished style, Mr Lockhart was peculiarly fitted to undertake the task, or rather the experiment, of reviving classical associations through the medium of fiction. Our deliberate opinion is, that complete success in such an attempt is impossible. Historical periods which are little known to the great mass of readers, and in which individual characters loom largely, though undefined, in their outline, like objects seen through a mist, may be selected by the romancer for illustration with the happiest results. Thus Scott, when he introduces us to Richard Cœur de Lion in Palestine, chief of the Christian army encamped around the walls of Acre, is like an enchanter who dispels a cloud which our own imagination, for lack of perspicuity, has never penetrated; and presents to us a spectacle of which we had never formed any conception. But there is no such cloud between us and imperial Rome. Her history, constitution, games, customs, magnates, manners, are known to all who are imbued with the slightest touch of the classical spirit; or, if not known absolutely, in the strictest acceptance of the word, they have been imagined by us; so that each of us possesses a floating Roman microcosm of his own. The

Romance. consequence is, that each individual reader being beforehand provided with a distinct picture of his own, tests the work of the modern resuscitator by comparison with that picture; and, as the two representations can never be exactly the same, he will not accord to the romancer that amount of credence or fictitious interest without which no story can be read with positive pleasure or absorption. He laughs at Prospero, and has no real belief in his power of evoking the spirits. These remarks may explain why classical novels have never been popular in England; and they may serve, moreover, as a practical illustration of the adage, "*Omne ignotum pro magnifico*." Certainly it was not from want of talent or descriptive power that *Valerius* did not prove a general favourite. *Reginald Dalton*, though it contains some powerful passages, is loosely put together; but *Adam Blair* is beyond all question Lockhart's greatest effort. It is a story harrowing to read, verging upon limits which prudery would shrink from, but true to nature; and, in the field of romance occupying nearly the same place which the plays of George Lillo hold in the dramatic literature of England.

Fashionable novels. The public taste having been attracted to prose works of fiction as the most agreeable form of light reading, a whole host of labourers offered themselves as candidates for employment in the vineyard. The immense circulation of the novels of Scott, and the high remunerative price which he was known to have received from the publishers, proved as irresistible a temptation to literary adventurers as is the discovery of a new gold-field to the unemployed population of a continent. Ingenuity was racked for subjects. Fashionable life was supposed, not without reason, to have some interest for those of the middle classes, always furnishing a large number of readers, who lived beyond its pale; and accordingly the market was inundated with novels, each in three volumes, purporting to give glimpses of the serene existence of the arbiters of Almack's, and containing revelations of the mysteries of the boudoir and the ball-room. It is no exaggeration to say, that neither before nor since has there ever been such a deluge of absolute inanity. The few debutants in print who really had the means of describing such society from actual knowledge, were for the most part needy dowagers, illiterate dangles, or very impudent pretenders; yet such was the rage, at one time, for anything which savoured of high life, that large sums were given by a certain class of publishers for novels of the most trashy description, provided the author or authoress had a name recognisable in the *Court Guide* or in the *Peerage*. Such exclusiveness, however, in dealing with an exclusive subject, could not be maintained; and novels purporting to depict the etherealization of fashion, the sayings and doings of the earthly Olympus, were fabricated by clever rogues, who drew their inspiration from the pot-house. We are bound to say that, in point of talent, the mere imitators excelled those who professed to draw from reality. Both were most ludicrous caricaturists; but while we yawned over the platitudes of the one class of writers, mirth was actively excited by the preposterous misconceptions of the other.

Sir E. B. Lytton. A few brilliant exceptions, however, redeemed the fashionable novel from the charge of utter inanity. Sir E. B. Lytton, now unquestionably the greatest living novelist of England, laid the foundation of his fame by the publication of *Pelham, or the Adventures of a Gentleman*, a work which we are constrained to place in the fashionable catalogue, though much of its interest arises from scenes and characters remote from the fashionable ken. *Pelham* contains more than the promise of genius; it is a very remarkable and able work, which, though inferior in artistic skill to some of the author's later productions, is full of freshness and power, and after the lapse of thirty years still retains its popularity.

The fashionable novels of Mrs Gore, of which *Cecil* is certainly the best, at one time attracted much public attention, and though singularly deficient in plot, exhibited much vivacity in the dialogue, with considerable shrewdness of observation. Romance. Mrs Gore.

To this class also belong the novels of Theodore Hook, a man of talent and versatility rather than genius, but possessed of a ready and sparkling wit, effervescent and exhilarating as champagne. Unfortunately, from imprudence and the pressure of untoward circumstances, he was compelled to undertake a larger amount of literary task-work than is compatible with the production of works deliberately planned and artistically executed. Hence his writings are very unequal—some being nearly worthless, while others are of excellent quality. *Gilbert Gurney* is, in our opinion, the best novel that he produced. Theodore Hook.

After a time, that portion of the reading public which is the mainstay of circulating-libraries became wearied with the fashionable frivolities and tiresome iteration of scenes pertaining to the *beau monde*. The demand for such literary syllabubs declined, and the value of copyrights dwindled. Then arose a new school of novelists, who sought to win the public ear, disgusted with drawing-room prattle, by converse of another kind. They selected their heroes, not from the frequenters of the saloon or boudoir, but from the denizens of the haunts of vice and profligacy. They had recourse to the caves of a modern Adullam, and, with the *Newgate Calendar* as their guide, tried to cast a halo of romance around the persons of executed thieves and murderers. Ruffians whose lives had been justly forfeited to the outraged laws of their country were depicted as men of daring, honour, and noble emprise; and their miscellaneous amours with women of the most abandoned class were detailed, not satirically, as Gay did in his *Beggar's Opera*, but seriously and minutely, in a manner which was at once a scandal to literature and an outrage upon public decency. Fortunately, however, the public taste, though not always discriminating or fastidious, revolted from so nauseous a dose; and after a very brief period, the Newgate novelists were hooted into silence, but not before they had done serious mischief by the repetition of their immoralities in a dramatic form, through low theatres and the like, thereby materially contributing to the population of the jails. Writers of this kind have been fain to take shelter under what they call the authority of the great masters of fiction. They say that, because Scott has made interesting and romantic such lawless characters as Robin Hood or Rob Roy, they are entitled to do the same by their recent despisers of the laws. The answer is very plain: Robin Hood and Rob Roy were outlaws and freebooters in times and countries when law was not established or recognised. Their period is mythical to us, and has long since passed away; but the thief, and housebreaker, and resetter, if not the highwayman (for railroads have interfered with that branch of the predatory business), still exist among us; and it can hardly be expected that we should take an interest in the chivalry of crime, which, any night, might be exhibited to ourselves through the medium of the dark lantern, with its concomitant the crowbar. Newgate novelists.

It would be tedious to note all the forms of the modern novel, for their number is literally legion. We have military, nautical, artistic, musical, commercial, religious, political, and sporting novels in abundance; in fact, there is no phase of society which has not been thus illustrated. Among living English novelists, the following hold the highest place:—Sir E. B. Lytton, Charles Dickens, William Makepeace Thackeray, Samuel Warren, Charles Lever, and the Right Hon. Benjamin Disraeli. These stand in the foremost rank; and it is a remarkable proof of the consideration which is now accorded to literary men that two of them are Cabinet ministers, not less distinguished by

Romance. their ability as statesmen than by the genius exhibited in their works.

Italian romance.

No country has produced more novelists than Italy; but the Italian novel bears little analogy to what we understand by the term. Their novels were, in fact, originally prose versions of the same short tales, sometimes heroic, but more frequently turning on themes of gallantry or comic adventure, which formed the favourite subjects of the Trouveres. They were Fabliaux translated into Italian; and this character they retained for five centuries, from Boccaccio to Gozzi (1313-1786). The incidents are generally briefly given; there is little development of character or sentiment; or, where these are found, they exhibit rather separate scenes of life than anything having the interest of a compact whole. But if the incidents and characters have little development, the Italian novelists have indemnified themselves for this confinement by indulging in the utmost license of a pompous, circuitous, and unmeaning style. The facile beauty of the Italian language, "*Che spandi di parlar si largo fiume*," has been the bane of their novelists. Boccaccio, the first and by far the greatest of the Italian novelists, indeed manages to impart to it a sort of garrulous grace; but in the hands of his imitators the contrast between the poverty of the idea and the rich garb of words with which it is invested assumes a ludicrous effect.

Never, perhaps, among so many novelists, was there so little of novelty. Instead of imitating nature, their avowed principle was to imitate Boccaccio, who, imparting to everything a soft and rose-coloured glow, was himself not remarkable for the closeness of his adherence to it. And hence, regarding the novel merely as a theme upon which they were to display all the brilliant variations of which the music of Italian speech was susceptible, they were contented to repeat in a great measure the same themes, to borrow, with a sort of easy impudence, their incidents from Boccaccio or from each other; and more anxious for the purity of their Tuscan than of their tales, of which by far the greater number turn on scenes of licentiousness or low humour, they seemed to think all other merits in the novel subordinate to that of being "written in very choice Italian."

Beyond the limits of Italy, Bandello (1554) and Cintio (whose *Hecatommithi* appeared in 1565) are almost the only novelists whose names are known to foreigners, if we except the *Belphegor* of the versatile Macchiavelli; and the chief interest connected with these novelists consists in the hints or materials furnished by them to Shakspeare, Massinger, Beaumont, and Fletcher, and our dramatic writers of the time of Elizabeth and James, to whom, indeed, these works, particularly those of Bandello, afforded a perfect storehouse for plots. Among the nine volumes of Bandello's works contained in the Novelliero, some interesting and a few pathetic tales may be pointed out; but Cintio's can have no interest in themselves except for those who love to sup full of horrors; for he was one of those wholesale dealers in the terrible who thought that poetical effect was to be produced by a vigorous operation on the nerves rather than the feelings, and therefore piqued himself, like the schoolmaster in *Gil Blas*, on massacring all the personages of his tragedies, even to the prompter.

Towards the close of the last century, a taste for novels in a style somewhat resembling our own appears to have gained ground, and several tales of a melancholy kind made their appearance. With these we do not profess to be acquainted; nor has any one which appeared prior to the *Promessi Sposi* of Manzoni attained the least reputation beyond Italy, with the exception of the *Ultime Lettere di Jacopo Ortis*, an early production of Ugo Foscolo (1802), and the result partly of a melancholy event occurring in his own family, and partly of the study of Goethe's *Werther*, by which the enthusiastic mind of Foscolo ap-

pears to have been very powerfully affected. Like *Werther*, it is a story of love and suicide, full of fervour, violence, and, to speak the truth, of absurdity; yet delivered with a species of eloquence, and a certain appearance of conviction, which, so far at least as regarded the expression of mental discomfort, and the misery arising from a total want of all fixed opinion, was perhaps sufficiently real. To the Italians, who knew little or nothing of Goethe, this stormy effervescence of an impassioned temperament, and all this eloquent "questioning of fate," possessed even an air of originality; and being the first successful attempt to introduce the sentimental romance of the school of Rousseau and Goethe into Italy, it naturally awakened a degree of enthusiasm which now appears somewhat disproportioned to its real merit.

The *Promessi Sposi* of Manzoni certainly approaches much more nearly to the idea of a good romance than anything which Italy has yet produced; but, after all, it too is essentially an imitation. If we had had no Scott we should have had no Manzoni. The idea of illustrating a subject connected with the Italian history of the commencement of the seventeenth century; the introduction of historical characters, such as that of Cardinal Borromeo, who is the *deus ex machina* of the piece; the antiquarian lore displayed in the way in which the bread-riot in Milan (a close parallel to the insurrection of the Liegeois in *Quentin Durward*), is wrought up; the account of the plague in the Milanese, in which Manzoni has tried to imitate at once Boccaccio and Scott,—all concur to satisfy us that Manzoni, though an able lyric poet, has no great share of original invention, and that though he can make a good use of materials furnished by others, he is one of those literary commercialists who require to borrow the main portion of the capital with which they are to trade. We are far, however, from denying the real merits of this performance of Manzoni, in which the characters of Cardinal Borromeo, and the peasant hero and heroine, Renzo and Lucia, are naturally and pleasingly drawn, and in which some of the scenes, such as the opening scene at Don Abbondio's house, the riot in Milan, the interview between the unknown and the Cardinal, and some of the incidents and descriptions connected with the plague, are of vivid interest.

Since the appearance of the romance of Manzoni, who has lately abandoned both fiction and poetry for religion, many attempts have been made by Rosini, D'Azeglio, Guerazzi, Tommaseo, Belmonte, and others, to transfer the historical romance to an Italian soil, and to give a romantic interest to the delineation of the Italian feudal history of the middle ages, or of periods somewhat later. The first, and we believe the best, of these appears to be the *Monaca de Monza* of Rosini, who has founded his story on an episode in the *Promessi Sposi*. Were we to form a judgment from a few of these attempts which we have read, as to the merits of those of which we remain ignorant, we should be inclined to say, generally, that nothing is more remarkable than the total want of interest which Italian subjects possess in Italian hands; a result which appears the more singular since at one time it was only necessary in our English romances to transfer the scene to Italy, to enlist at once our warmest sympathies in favour of the story. Now-a-days, we think, when the subject is almost entirely in the hands of native novel-writers, the very idea of embarking on an Italian story of the middle ages seems to act upon the fancy as the most powerful refrigerative. Strangely enough, too, it is to be observed that the Italian novelists of modern times never appear to greater advantage than in the description of the most furious battles, carried on with all the determination and bloody-mindedness of an Esplandian or a Bobadil, as in *Ettore Fieramosca*, by Massimo D'Azeglio, a son-in-law of Manzoni, or *L'Assedio di Firenze*, by Gualandi; an expenditure of

Romance.

Romance. valour on paper which we fear is scarcely justified by the fact, since, if we are to give credit to the accounts of Guacciardini, many of their most doughty encounters were as harmless in their results as the protracted passage of arms between Gymnast and Tripet in *Rabelais*, as to which uncle Toby, after listening to an endless detail of the various complicated manœuvres, declared that one homethrust of the bayonet would have been worth them all.

Spanish romance.

In Spain, which, though not the birth-place, had certainly become by adoption pre-eminently the country of the chivalrous romance, and where, perhaps, its extravagances had been less redeemed by talent than anywhere else, it is well known that a revolution in taste was effected by the inimitable satire of Cervantes (1547–1616), which Montesquieu, with amusing extravagance, describes as the single admirable book in the Spanish language which shows the absurdity of all the rest. So effectually, indeed, did that work (published in 1605) attain its end, or rather one of its ends, that after its appearance no romance of chivalry appeared in Spain, and the old ones so entirely ceased to be printed that it is with difficulty that copies of them are now to be obtained. The “ultimus Romanorum,” the last adherent of the good old romance, was Don Juan de Silva y Toledo, who published his *Don Policisnè de Boecia* in 1602, three years before the appearance of the *Don Quixote*.

Cervantes.

But had that book been solely devoted to the object of exploding the old romances of chivalry, it would probably have shortly been forgotten with the extravagances it exposed. The charm which has given a perennial life and continued popularity to *Don Quixote* is the deeper idea which it contains of illustrating in comic colours the contest between imagination and reality; the danger, both to its possessor and to others, of all misdirected enthusiasm, whether it take the direction of reviving an extinct age of chivalry, or any other course plainly running counter to the current of society all around it, by means of which a constant collision is produced, in which, whatever becomes of the world, the visionary himself is sure to be the sufferer. For the fuller development of this idea he has placed beside the knight, who represents the imagination without the common-sense, a squire who is the type of the vulgar common-sense without the imagination. Between these children of his brain he parcels out the treasures of his mind, bequeathing to the knight his own high spirit and courage, his learning, his generosity, and his love of truth; and to the squire the solid riches of his good sense and his peculiar humour; that humour which, as it exists in Cervantes, is among the rarest of human qualities,—the very poetry of the comic, founded on tender sympathy with all forms of existence, though displaying itself in sportive reflection; and issuing not in superficial laughter, but in still smiles, the source of which lies far deeper.

The characters and fortunes of these contrasted companions he has linked together in such a way as to impress on the mind the feeling how indispensable each is to each as the complement of the other,—the learning, high-mindedness, and strong imagination of the knight as the creative and moving power in human life; the practical good sense, and even selfishness, of the squire as the controlling force; from the judicious union of which opposites arises the harmony, and from their separation the discords of society. He paints also, with great knowledge of human life, the effect which these reciprocal influences, constantly exerted on each other through vicinity and a common pursuit, have in modifying even the original character itself, and gradually making the enthusiast more rational, and the commonplace man of the world more imaginative. The sound philosophy, the impartial and kindly spirit, with which Cervantes has wrought out this conception, in which justice is done at once to the higher and the more common ele-

ments of our nature; the flood of humour with which he surrounded it,—which has tempted many a one since the days of Philip IV. to imitate the pantomime of the student on the banks of the Manzanares,—are as obvious to the least refined of readers as they are models of art worthy of the admiration and profound study of every writer of fiction. Like human life itself, the story unites and harmonizes the opposite extremes of the pathetic and the ludicrous, the vulgar and the elevated,—for from the midst of the comic ground-work, the striking scenes in the Sierra Morena, the episode of Cardenio and Dorothea, the story of the captive, the sweet pastoral of Marcelia, the marriage of Camacho, and many other passages, rise up, rich in pathos, grandeur, or imagination; so that, in fact, there is no work in which, while the aim at first might appear to be to destroy the romance of life, passages of more purely romantic beauty are to be found. The truth is, that Cervantes, though anxious to explode a vicious taste in literature, was far enough from wishing to direct his satire against the creations of high imagination or against the spirit of chivalry. The admiration he expressed for Amadis and Palmerin shows that he was not insensible to the beauties by which even this branch of literature was occasionally redeemed. His own adventurous career of glory and misfortune had no doubt deeply impressed upon his mind the contrast between the dreams of imagination and the realities of life; he saw the poetical capabilities which such a contrast afforded,—and he has painted them with an unshrinking and some may think a merciless hand. But even beneath the veil of ridicule with which he has invested his crazed and battered hero, we perceive his own inextinguishable love of the exalted principles by which he is actuated; and the abiding impression which remains with us after the comic effect of the romance has passed away is, that truth and nobleness of character will continue to command our love and veneration, though displayed in actions with which the world cannot sympathize, and placing their possessor in situations which excite our ridicule, even while his motives attract our admiration.

Cervantes seems to have intended his moral novels (*Novelas Ejemplares*) to be to Spain what the short tales of Boccaccio and his followers had been to Italy, only with the advantage of a purer morality. They are unequal; some being mere satirical trifles, such as the *Licenciado Vidriera*; others, like the *Jealous Estremaduran* (which English readers will recognise in the common farce of the Padlock), the *Gipsy*, and the *English Spanish Lady*, highly interesting in themselves, and characteristic of Spanish manners, laying open to us, as Sismondi says, the hearts and houses of its inhabitants. One novel, the *Tia fingida* (Pretended Aunt), though undoubtedly written by Cervantes, was not included in the original collection, probably from the disagreeable nature of the subject.

Novelas Ejemplares.

The remaining work of fiction by Cervantes, the *Perisiles* and *Sigismunda*, is only remarkable as the last work which he wrote, and as being quite as absurd and extravagant as any of those romances of chivalry against which his powerful satire had been directed. No work has occasioned a greater division of opinion. While some of the Spanish critics speak of it in terms of extravagant praise, it is described by Viardot, a French critic, as “a tissue of episodes interlaced with each other, like those of one of Calderon’s intrigues, consisting of extravagant adventures, silly rencontres, astounding prodigies, preposterous characters, and extravagant sentiments.” It retains little or nothing indeed of Cervantes but the charm of his style. Yet, like Corneille placing his *Nicomede* before the *Cid*, or Milton his *Paradise Regained* before his *Paradise Lost*, Cervantes seems to have given the preference to this child of his old age over the masterpiece of his manhood.

The fashion of short novels in the Italian taste which

Romance.
Lope and
the Spanish
novelists.

had been introduced by Cervantes was followed by Lope, Canizares, Zayas, Montalvan, and by a host of imitators, whose very names the Spanish critic Lampillas declares that he is unable to enumerate. The loss of the catalogue is little to be regretted; for even among the names which are known it would be difficult to point out one, even including the great Lope, which rises above mediocrity. Nature indeed seems to have given Cervantes his revenge for the triumph of his rival in the drama by the failure of Lope as a novelist, for in this department the talent and rich invention which he displayed on the stage appeared in a great measure to desert him. The best of his novels is the *Fortunas de Diana* (Fortunes of Diana), first printed in the Filomena in 1621; next to which we should place his *El Zeloso hasta Morir* (Jealousy till Death); but, truth to say, neither are remarkable. Indeed, if we except Cervantes, the same remark which we have ventured to make on Lope is generally applicable to the Spanish novelists. Nearly in proportion to the success of the nation in the creation of an original drama is its signal deficiency in original contributions to the literature of romance. It is not often indeed, as Tieck remarks in his Preface to Bulow's *Novellenbuch*,¹ that the dramatic and novelistic power are found combined in a national literature to the same extent as in England.

Romances
in the
Gusto Pi-
caresco.

In fact, the only species of prose fiction, with the exception of *Don Quixote*, in which the Spaniards have displayed anything like original invention, is in the novels written in what is called the *Gusto Picaresco*, or the romances of roguery, of which the first example of any merit, and, with one exception, the best of the whole series, was furnished by the *Lazarillo de Tormes* of the celebrated Don Diego de Mendoza, and is said to have been written by him while a student at Salamanca, and first printed in 1553. It is rather singular, no doubt, to find a man of rank devoting himself to those pictures of want and miserable knavery, or a nation affecting so much external pomp and ceremony relishing these exposures of the real filth, meanness, or starvation which often lurked under the cloak of the whiskered knight of Calatrava. But the Spanish character is distinguished by a very peculiar vein of dry humour intermingled with a tinge of orientalism in their notions of birth and pride of ancestry and personal dignity; and hence the Spanish novelists seem to have been perfectly alive to the ridiculous features of their countrymen, while sharing very probably in the same exaggerated pretensions themselves. Accordingly, along with the adventures of rogues, and beggars, and gipsies, who, during the reigns of the Austrian Philips, appear to have literally swarmed in Madrid, are interspersed ample illustrations of this union of poverty and pride, and the stratagems with which many a pompous cavalier, walking the streets, as Lazarillo says, like the Duke of Arcos, is occupied at home in order "to procure a crust of dry bread, and having eat it, to appear with due decorum in public, by the art of fitting on a ruffle so as to suggest the idea of a shirt, and adjusting a cloak in such a manner as to make it be believed there are clothes under it."² Mendoza's novel contains a sketch of one of these shirtless and famished hidalgos eagerly devouring some crusts which Lazarillo had begged in the morning, on pretence of trying whether the bread was sufficiently wholesome, which gives an image of starvation in which the painful is strangely blended with a sort of sombre gaiety.

Aleman
and
Quevedo.

Equal, if not superior, to Mendoza's romance is the *Guzman d'Alfarache* of Matteo Aleman (1599), which, though dealing in the same gloomy pictures of want and misery, has

more variety in its pictures, and a more severe and caustic character in its sarcasm. It has been erroneously supposed to have furnished many particulars to Gil Blas; in fact it would be difficult to point out one, except the incident of the parasite who obtains a supper at the expense of the eighth wonder of the world. In the same taste is the *Gran Tacano* of Quevedo.

The merit of having supplied Le Sage with much of his materials may be more plausibly claimed by Vicente Espinel, the author of the *Vida del Escudero Marcos de Obregon*, printed in 1618. Indeed, while the superior grace, spirit, and gay philosophy of Le Sage are apparent, it is impossible not to make a considerable deduction from his mere invention after reading the work of Espinel. The prologue, the adventure of the parasite, the dispersion of the company at Cacabelos by the muleteer, the adventure of the robber's cave, the surprise by the corsairs, the contributions levied by those pious hermits, Don Raphael and Ambrose de Lamela, the service with the Duke of Lerma, and many of the other incidents, have nearly an exact parallel in the ruder and drier work of Espinel. Even some of the witty points, which we might be disposed at first sight to believe were Le Sage's, turn out to be the property of the Spanish chaplain,—such as Don Matthias de Silva's reply, when asked to fight a duel early in the morning, that he never rose before one even for a party of pleasure, and could not be expected to rise at six to have his throat cut.

This much, however, must be said for Le Sage, that he shows no desire to conceal the source of his obligations, for one of his characters is termed Marcos Obregon, and the Sangrado of his novel is undisguisedly the Sagredo of Espinel. Le Sage, however, knew that after every deduction was made on the score of invention, the merit of his novel would remain much the same. He threw lightness and sunshine into the mean and gloomy pictures of the Spaniards, taking care to efface the recollections of folly and knavery in his adventurers by a cheerful and respectable termination of their career; and though the graduation of the fool into the knave, and the knave into the honest man, upon a mere principle of utility, be not perhaps in itself a very lofty moral, it is at all events far more agreeable than that of the Spanish novelists, where the rogue continues such to the last, and his only advancement is to a higher degree in the curriculum of knavery. A romance of a more pleasing and political cast than these tales of knavery was the historical romance, the *Civil Wars of Granada*, by Gines Perez de la Hita, printed in 1604, turning on the dissensions of the Zegrís and Abencerrages during the reign of Boabdil, and giving occasion, as might be expected, to many fine descriptions of tournaments, feasts of canes, Moorish palaces and gardens, and the contrast between the Christian and the Moorish chivalry. From this romance Florian has mainly borrowed the idea and materials of his *Gonsalvo of Cordova*.

One other work of fiction deserving notice, though taking more of the nature of the satire than the novel, is the *Fray Gerundio* (Friar Gerund) of the Jesuit De l'Isle, —a severe, but rather tedious satire upon the absurdities and bad taste of the popular preachers of the time. In romantic literature the Spaniards at the present day seem to be entirely deficient. Translations of the popular French and English novels abound, but native talent or invention appears to be at an end.

In France the pastoral romances of D'Urfé and his imitators, and the heroic romances of Gomberville, Scudery,

French ro-
mances and
novels.

¹ Das Novellenbuch, oder hundert Novellen nach alten Italienischen, Spanischen, Französischen, Lateinischen, Englischen, und Deutschen, bearbeitet von Eduard von Bulow, Leipzig, 1834. An excellent anthology, from the shorter literature of romance in the above languages; and not a mere translation, but in many cases a dexterous rifacimento, true to the spirit, while avoiding the dulness or indecency of the original.

² Dunlop's *History of Fiction*, vol. iii., p. 119.

Romance. and Calprenede, whose object was "peindre Caton galant et Brutus dameret," were succeeded by an inundation of Fairy tales. *contes des fées* and *voyages imaginaires*, appearing about the close of the seventeenth and the commencement of the eighteenth century. This species of nursery literature, which, like the character of the fair Arricidia in *Clelia*, was "furieusement extraordinaire et terriblement merveilleux," seemed peculiarly well suited to the frivolous tastes which then pervaded French society; and its temporary attraction was perhaps based in some degree upon the very want of reason and common-sense which rendered its permanent popularity impossible. When the sage Oglou in Voltaire asked the sultanas, "Comment preferez vous des contes que sont sans raison et que ne signifient rien," the answer of the sultanas was, "C'est precisement pour cela que nous les aimons."

Perrault,
D'Aulnoy,
Murat,
La Force.

The chief writers in this school of fiction, with whose compositions most of us have in our early days been rendered familiar through the little gilded volumes of Mr Newberry or his successors, were Perrault, the Countess D'Aulnoy, Madame Murat, and Mademoiselle de la Force, of whom Perrault is decidedly the best, his tales being distinguished by a simplicity and naïveté of style indispensable in this style of writing, and in which the productions of the ladies are deficient. No great share of original invention is displayed by any of them. The chief storehouse from which they drew was the *Notti Piacevoli* of the Italian novelist Straparola, and the very remarkable Neapolitan collection by Giambattista Basile, entitled the *Pentameron*, of which the first edition appeared in 1637.

A slightly different direction was given to this taste for marvels by the translation into French of the *Arabian Nights* by Galland, and of the *Persian Tales* by Petit de la Croix and Le Sage, which led to a host of oriental imitations. And the childishness and absurdity of the whole of this department of literature was exposed with great wit and liveliness by Count Antony Hamilton in his *Fleur d'Epine*, and in his unfinished tale of the *Four Facardins*.

Marivaux.

But this same period was distinguished by the productions of some writers of a higher order: Marivaux (1688-1763), Prevot (1697-1763), and Le Sage (1668-1746). Marivaux had a good deal of Richardson's power of delicate portrait-painting, by an accumulation of miniature touches; nor is he deficient in the power of managing the interesting situations with which his *Marianne* especially abounds. And certainly, if we except Mademoiselle La Fayette's pleasing romance of the *Princess of Cleves*, he may claim the merit of having been the first in France to reduce the novel from mere extravagance, both of incident and character, to the standard of natural feeling, and to present us with real beings instead of fantastic creations of the imagination. His chief faults are his intolerable minuteness in trifles, and the affectation of the style, which is worthy of the society of the Hotel de Rambouillet. His best novel, too, the *Marianne*, terminates abruptly and inartificially, with a conclusion like that of *Zadig*, "where nothing is concluded."

Prevot.

Prevot had a much higher and more romantic imagination than Marivaux. He threw into the novel something of the gloom and grandeur of tragedy; and hence he has been termed by some of his countrymen the Crebillon of romance. A visionary disposition and an ardent temperament had hurried him through a restless and passionate life, in which good and evil, suffering and enjoyment, had been scarcely blended; so that to the task of composition he brought the results of a mournful experience in aid of the resources of the imagination. To use the expression of Voltaire, "Il n'était pas seulement un auteur mais un homme, ayant connu et senti les passions." Prevot is not a great inventor of character; for to all his heroes, Cleveland, Patrice, even the Chevalier des Grieux, he appears

to have lent much of his own feelings and his own peculiarities of mind. Though an extremely voluminous novelist, none of his works appear now to be read or recollected except this painful but powerful story of *Manon L'Escaut*, a tale of crime and profligacy, strangely blended with generous feeling, which has been translated into English by Charlotte Smith. *Manon L'Escaut*, though little more than an episode, thrown off apparently with an easy negligence, bears the impress of genius, which it would be difficult to recognise in an authentic form in any of the larger productions of Prevot. Opening in the most unpromising manner, with what appears to be the common-place history of a vicious and discreditable connection between Des Grieux and Manon, in which weakness of principle on the one side is made the dupe of profligacy and vanity, united with personal charms, on the other, the stream of feeling, at first polluted and turbid, works itself purer as it runs; and the scenes rise into elevation just as the character of Manon herself, the "fair mischief" of the romance, around whom Prevot has thrown no common fascination, changes from the selfish mistress into the faithful companion, following the fortunes of her husband, whom her charms had ruined, into disgrace and banishment, and dying by his side among the wilds of America.

Love also forms the subject of the novels of Madame de Tencin (died 1749), the *Siege of Calais* and the *Count de Comminges*, which are admired for their tenderness and delicacy,—qualities we should hardly have anticipated from a lady who stood in so confidential a relation to the Cardinal Dubois, and who left her illegitimate child, D'Alembert, to the tender mercies of the public.

Madame de
Tencin.

The greatest of the French novelists, however, is Le Sage. Sage. Even in his first romance, the *Diable Boiteux*, the plan of which has been suggested by the *Diablo Cojuelo* of Luis Valez de la Guevara, and which appeared in 1707, the wit, the graceful lightness, and the good-humoured sagacity of observation, which distinguished the character of Le Sage, were evident. The conception, in particular, of his esprit follet, a "diable bon-homme," with so much more gaiety than malice, that at times we are tempted to think him rather amiable than otherwise, was a great improvement on Guevara's; and the effect of the work was heightened by the skill with which he contrived to interweave with the story, if such it can be called, a multitude of contemporary allusions. Such indeed was its popularity and immediate sale, that two young men are said to have fought a duel in a bookseller's shop about their right to the only remaining copy; a well-attested anecdote, so much in the spirit of those satirical traits in which Asmodeus indulges that, as Sir Walter Scott remarks, it deserved to be recorded by the demon himself.

The reputation as a novelist which these most amusing revelations of Asmodeus had founded, was brought to its height by the production of the first three volumes of *Gil Blas*, bringing the history down to the retirement to Lirias,—a work, with the exception of *Don Quixote*, perhaps the most universally popular in fictitious writing, pleasing equally whether read in youth, in manhood, or in age, and containing, as has been justly said, more "useful knowledge" than twenty scientific and moral treatises. Le Sage's celebrated novel represents the level of life as it appears in a large capital, without either its brightest lights or its darkest shadows. He exhibits the average state of feeling among such communities,—loving virtue and good conduct within due bounds, but at the same time with that natural toleration for selfishness, servility, vanity, or occasional deviations from the path of strict integrity, which in such society is certain to be engendered and countenanced. As he saw nothing like an elevated morality in the world with which he was best acquainted,—the Parisian public,—so he has not attempted to introduce any such exalted tone of

Romance. feeling into his romance. His hero is an adventurer, to whom a hundred parallels might probably have been pointed out any evening among the audiences at the Foire, with fair abilities, with a kindly heart, and naturally good inclinations, but little moral firmness; by no means so enamoured of the straight road of right as not to turn aside occasionally when the deviation suits his purposes; duped at first by his own vanity, and then availing himself of his dear-bought experience to take his revenge on others in the same coin, but still with a gradually increasing preference for good conduct and virtue, and a secret determination, when a favourable opportunity offers, and his fortune is made, of becoming in due course an honest man.

To this conception of an agreeable rogue, refined partly by good feeling, and partly by calculation, into a better being, Le Sage has imparted a wonderful air of particular combined with general truth; for though *Gil Blas* is the representative of so wide a class, that almost all must acknowledge at times some common, and perhaps not very flattering features of resemblance between ourselves and him, he preserves throughout his whole career the most distinct individuality of character. Nor are the other subsidiary agents of the novel deficient in distinctness and clearness of portraiture. Sangrado, Scipio, the sleek Ambrose de Lamela, the eloquent but apoplectic archbishop, are made to stand before us. The historical personages have the same look of truth. Lerma and Olivarez, in particular, are admirably painted; so much so, that some Spanish critics, like De l'Isle and Llorente, have zealously maintained that Le Sage merely translated from some unknown Spanish manuscript which he had plundered. These critics reason, in fact, in such an ingenious way as to make the accuracy or inaccuracy of Le Sage's Spanish pictures equally available for their argument. If he be perfectly correct in his portraits of manners and his allusions to Spanish customs, that part of the work, they maintain, could not have been written by any but a Spaniard. If he falls into mistakes, it is equally clear that these apparent slips were introduced by him on purpose to hide the source of his depredations, and to confuse, like Cacus, the traces of his retreat. It is needless to say that the statement, at least as made in this unqualified form, is totally incorrect. Le Sage had no doubt thoroughly imbued himself with the spirit of the Spanish humour, as it appeared in Cervantes and the writers of the Picaresco school; and, as already said, he borrowed liberally incidents from various Spanish romances; but he lent to the whole a point, gaiety, and philosophy, which presented the old materials with all the appearance of novelty, and the charm of an original invention. "All is easy and good-humoured, gay, light, and lively; even the cavern of the robbers is illuminated with a ray of that wit with which Le Sage enlightens his whole narrative. It is a work which renders the reader pleased with himself and with mankind; where faults are placed before him in the light of follies rather than vices; and where misfortunes are so interwoven with the ludicrous that we laugh in the very act of sympathizing with them. All is rendered diverting, both the crimes and the retribution which follows them."¹

Though Le Sage rightly considered his characters as his chief object, he was well aware of the pleasing relief which might be given to his story by the judicious combination of the repose of landscape-painting with the bustle of incident; and though he does not succeed in bringing before us with the vividness of Cervantes the sombre and parched plains or rugged mountain scenery of Spain, his work contains some country pictures, in a style of placid beauty, which are models of stillness, comfort, and serenity. To whom, for instance, does not that modest demesne at Lirias, watered by the Guadalaviar, with its mansion-house

of four little pavilions, its garden bordered with orange trees, and ornamented with its basin of white marble, and the quaint, respectable, old Moorish furniture of the apartments, not to mention the *olla podrida* of Master Joachim, and the revenue of 500 ducats a year, rise up before the mind's eye as the very ideal of that happy rural retreat which, to each of us, is to be the Euthanasia of a life of carefulness and toil; making us long for the time when we may be able to say with its fortunate possessor,—

"Inveni portum; spes et fortuna valet
Sat me lusistis, ludite nunc alios."

It is unnecessary to dwell long on the romances of the younger Crebillon (1707–1777), as to which the only circumstance which is remarkable is, that so much frivolity of manner and real poverty of invention could have obtained a temporary popularity even by the license in which they indulged; yet that they were very popular for a time, we know; for Sterne represents his *fille de chambre* inquiring at a circulating library for the *Égarements du Cœur et de l'Esprit* in 1768. French writers, however, appear to recognise in his pictures some resemblance to the society of the time; for D'Alembert says of him, "he draws with a delicate and just pencil the refinement, the shades and the graces, of our vices."

Much higher talent, though, like Crebillon's, stained by Diderot, a shameful association with licentious and profligate pictures, appears in the romances of Diderot (1713–1784). His talent as a narrator, in particular, was scarcely inferior to Voltaire's. He had the picturesque particularity of Richardson, with a more condensed expression. It is not, however, in his larger and more notorious romances, such as the *Religieuse*, that this talent is displayed. In these the tedium is as conspicuous as the indecency and impiety. It is in such short tales as *L'Histoire de Mademoiselle de la Chaux*, or *Les Deux Amis de la Bourbonne*, short popular simple histories, contrasting strongly with that air of false simplicity, in reality tricked out with sentimental fard and tinsel, which Marmontel (1719–1798) has given to his Marmontel amusing but not very moral tales.

The romances of Voltaire (1694–1778), such as *Zadig*, Voltaire's the *Princess of Babylon*, *Babouk*, and *Candide*, have but slender pretensions to the title. They are chiefly satirical fictions or illustrations in the form of a tale of irreligious or antisocial opinions. Their wit, their biting irony, their familiarity with the baser parts of human nature, their power of rendering trifles pleasing by the art of narration, are undeniable; but we must not look in them for probable incident, for Voltaire generally chooses, as if on purpose, some extravagant oriental groundwork as his canvas, and borrows from Ariosto, from Gulliver, from the *Arabian Nights*, or any source which suits his purpose; nor for the delineation of natural characters, for both the incidents and personages are merely made the instruments for working out the preconceived theorem. They produce their effect, such as it is, not by their fidelity to nature, but by the ingenious malice with which its features are distorted.

From the time of Marivaux downwards, the tendency of the French novel had been to narrow the province of incident, and to extend proportionally that of sentiment. With Rousseau (1712–1778) this tendency reaches its height. The description of feelings, and particularly of such as, though often experienced, are seldom expressed in words, was his peculiar field. Invention, either of character or incident, he has none. To paint one strong passion, to invest vice with an air of insane but reasoning morality,—

"To make madness beautiful, and cast
O'er erring deeds and thoughts a heavenly hue
Of words like sunbeams, dazzling as they pass;—

this is the main aim of his *Julie*, and the only one in which

¹ Sir Walter Scott's *Lives of the Novelists*—Le Sage.

Romance.

Rousseau has been at all successful. Even in this respect, too, the declamatory tone, the continued delirium of feeling, the total want of repose, which characterize the work, combined with the pedantry of its dissertations, become painful and oppressive. "Ce sont des amans," said Rousseau himself, speaking of his characters, "et non pas des academiciens." Never was an apology more misplaced. The real fault of *Julie* and *St Preux* is, that they have both too much of the academician in their composition, and too little of the lover, so far as the expression of natural passion in simple words is concerned. We have never been able, in reading the romance, to persuade ourselves that its real eloquence was not as dubious as its morality. It is not easy, indeed, in perusing Rousseau's apostrophes to purity and virtue, to avoid thinking of the strange commentary which his practice furnished to his theory. It was said of Sterne with severity, but perhaps with some justice, that he could bestow upon a dead ass the pity which he denied to a living mother. And the man of nature and of truth, who expends his trembling sensibilities on paper, suffers a fellow-servant to be punished for the theft he had himself committed, and provides for his natural children in the foundling hospital.

The total corruption of an exhausted society, tottering to its fall, with the external varnish of gaiety and wit by which it tried to gild its decay, are aptly represented in the licentious romances of Louvet and La Clos; its still more vulgar profligacy in the coarse and incoherent, but occasionally striking and original novels of Restif de la Bretonne (1734-1806.) The works of the two former writers are unfortunately but too well known; the numerous and hasty productions of the eccentric printer, who was accustomed often to set up his strange compositions in type, without a manuscript, as the ideas occurred to him, are now almost completely forgotten. Yet Schiller and several eminent German critics have spoken with high approbation of the vigour and talent which they evince in some parts, however defective or revolting in others. "I have scarcely *imagined* anything," says Restif, in his *Drame de la Vie*; "I have simply related; my life has been so full of events, that I have made four-and-twenty volumes out of it." Any one, indeed, who writes, as Laharpe says of Restif, in his *Correspondence Russe*, under the persuasion that all that he had seen and thought, or learnt, deserved to be printed, and who acted faithfully on that principle, could hardly fail to produce compositions with very nearly the merits and demerits of the novels of Restif; that is to say, with the coarseness of feeling which was natural to the man, with the disjointed air which a set of unconnected incidents from life must present, and yet with that degree of freshness and truthfulness of painting which sketches from life almost invariably possess, however humble or disagreeable may be the department from which they are drawn. His best novel is usually considered to be the *Paysan Perversi*, which appeared in 1776.

Two writers may be pointed out, however, about this period, who were the representatives, if not of a better taste, at least of better feelings.

St Pierre.

Bernardin de St Pierre (1737-1814) may be regarded as the connecting-link between the eighteenth and the nineteenth century: a graft of Fenelon upon Rousseau. His pathos no doubt often merges in a weakly sentimentalism; but the calm idyllic beauty of the *Paul and Virginia* and the *Indian Cottage* (1789-1792) was not without its use in restoring to French literature a feeling for nature and its simple enjoyments, and the acknowledgment of a Providence, a belief which both philosophy and fiction had for some time past been labouring to obliterate.

The defects of St Pierre, with very little of his redeeming excellences, appear in the *Atala*, *Rene*, and *Natchez* of Chateaubriand. He is, no doubt, in some departments an original thinker, and a man of a poetical imagination, though

VOL. XIX.

a degree of vagueness and mysticism mingles even with the best of his works; but as a novelist, his sickly sentiment and exaggeration of feeling are fatal to his success.

Romance.

When the limbo of the Revolution, after its billowy heaving began to settle again into something like a calm, under the despotism of the Consulate, the novel took the direction of broad and extravagant humour, derived from the gaieties and vulgarities of middle life, and, as might naturally be expected, liberally sprinkled with indecency, in the voluminous novels of Pigault Le Brun,—to whom it would be unfair to deny considerable powers of broad mirth, and a fertility in imaginary burlesque situations which remind us of Smollett. But the questionable character of the novel-writing of this period is not universal. In the tales of Madame Cottin, the authoress of *Elizabeth and Mathilde*, a pure morality and feminine tenderness reappear; and though those of Madame de Staël, with all their eloquence, occasionally inculcate more doubtful lessons, her genuine admiration for pure and elevated feeling prevents her from willingly lending her talents to the palliation of vice. The novels of Madame de Staël, however, are far more German in their character than French.

The works of the literary veteran Nodier certainly owe Nodier. their attractions more to the charms of a beautiful style than to their substance. Throughout his whole course he has been but an imitator, putting on successively the manner of other writers. The *Werther* of Goethe appears to have first given the tone to his novels, and the passionate energy and wild complaints of the German suicide were reproduced in his tale of *Therese Aubert*. To the influence of Goethe succeeded that of Byron, and the spirit of the *Corsair* and *Lara* were infused into the bandit *Jean Sbogar*. From Byron he passed to Scott, whom he has imitated in his *Trilby, ou le lutin d'Argail*,—a production, the effect of which, though meant to be serious and pathetic, is unintentionally of the most comic kind, for the "tricksy spirit" of Argyle in the hands of Nodier becomes one of the most absurd of supernatural conceptions. In his *Smarra*, again, a Thessalian story in the manner of the sorceries and diableries in the Golden Ass of Apuleius, he seems to have been influenced by the German night-pieces of the school of Hoffmann; and he certainly succeeds almost as well as his German master in producing a strange ephialtic effect by a cloud of misty, murky phantoms, which pass before us as if in a feverish and uneasy dream.

With the restoration of the Bourbons, some degree of external decency at least distinguished the productions of the French press, though still the license which its novelists permitted to themselves in their comic works, and the extravagant and terrible cast of their more tragic stories, indicated at once a looseness of morality and a coarseness of taste which might, in some measure, have prepared the world for that strange and revolting spectacle which the literature of fiction has presented in France since the Revolution of 1830. The manner of Pigault Le Brun was imitated and improved upon by Paul de Kock; for, adopting his principle of drawing chiefly from middle life, and his love for the representation of comic mischances, he has thrown into the best of his novels scenes of simple humour, of tenderness, and even of powerful passion, to which the novelist of the Revolution had made no pretensions. To sneer at him as a Parisian cockney, or as the romance-writer of the Grisettes, is easy; but we are much mistaken if his tales, homely and even coarse as they may be, will not be read when the atrocities of Sue and Masson, and the delicate depravities of Balzac, are forgotten.

In the higher sphere of romance we have, during the Victor same period, the earlier productions of Victor Hugo, *Hans Hugo. of Iceland* and *Bug Jargal*. *Hans of Iceland*, wild and extravagant as it is, is evidently not the work of an ordinary writer. A stern, savage, northern spirit is breathed into

Romance. the romance. Spiagudry, Orugix, even the monster from whom the tale derives its name, strange and ghastly creations as they are, exercise a certain fascination over the mind; and the youthful poet has turned to great account the dreary wilds, gloomy lakes, stormy seas, and ruined fortresses of Scandinavia. *Bug Jargal* was decidedly inferior to *Hans of Iceland*. The essential improbability in the character of a Negro passionately in love with a white woman, and yet tempering the wildest passion with the deepest respect, is obvious; nor is that improbability disguised by the art with which Hugo has framed his story. There was more of genius, we think, in his *Dernier Jour d'un Condamné*, in which Hugo, like Sterne, has taken a single captive, shut him up in his dungeon, and then "looked through the twilight of the grated door to take his picture." In this little work he has shown how a profound interest might be given to a mere register of sensations, and a dramatic movement imparted to a monologue, in which the scene shifts only from the Bicêtre to the Conciergerie, the Hotel de Ville, and the Place de Grève. Hugo's great novel, *Notre Dame de Paris*, appeared in 1831. It is needless to speak of a work which has been more than once translated into English; and the characteristics of which, the mingled genius and extravagance, the poetical spirit in which it is conceived, and the want of nature in the characters which it portrays, resembling distorted and hideous masques rather than men, are now very generally and correctly appreciated.

The popularity of the romances of Scott led, about the same time, to a multitude of imitations by Jacob and others, of which the *Cinq Mars* of Alfred de Vigny appears to be generally considered the most successful.

We have no idea of entering on that mass of revolting performances, equally offensive to good morals and good taste, with which the French press has teemed since 1830; and which we are but too happy to consider, with the French themselves, as a literature of transition. This school of blood and voluptuousness, funereal horrors and drunken orgies, the transitions in which remind one of the stage arrangement in the *Rehearsal*,—"the coffin opens, and a banquet is discovered,"—we feel assured can be of no long duration; and already we believe that the French public begin to feel that they have had enough of the endless Balzac, and Janin, and Sue, and Soulié, and Masson, and the other labourers in this Montfaucon of fiction. As for Madame Dudevant or George Sand,—the Chevalier d'Eon of French literature,—a being whose sex it would be impossible to ascertain from her works, with the warm passions and headlong eloquence of the woman, and the audacious speculation of the man,—while the principles which she labours to inculcate are of the most odious nature, and the cynical hardihood with which she paints scenes from which any woman would turn aside, is perhaps the very worst proof which French literature at present presents of a degraded standard of delicacy and right feeling among the female sex,—we cannot deny that she appears to us to possess far greater talent, even genius, though misdirected, than any of the other ephemeral novelists to which we have alluded. In particular, she has an imagination singularly alive to natural beauty; her pictures of scenery are frequently captivating; and one evening landscape of Venice, in her *Lettres Venetiennes*, has the combined charm of deep sensibility and truth. By far the most pleasing of her novels, because it in a great measure keeps in the background her peculiar opinions, is *André*. And yet even the general purity and right feeling of the tale is marred and interrupted by some passages which English readers at least would wish to blot.

The field of the novel or romance is not that which has been cultivated in Germany with the most success. The

labourers indeed have been many; the produce most abundant; but the quality of the harvest is at best equivocal. Down to the time of Goethe and Tieck, the German literature of fiction was almost entirely imitative, deriving both its form and spirit from other nations. Since their time, if it presents a greater air of originality, it has generally assumed a character so fantastic, so unreal, so unlike all that we have been accustomed to associate with the idea of a novel, that it is extremely difficult to comprehend what is really the conception of the word entertained in Germany. Romance. German novels and romances.

As we have no very high idea of the German prose fictions, the space which we propose to devote to them will be extremely limited; for we shall confine ourselves to a mere indication of the successive phases which the German romance has presented. In doing so, it seems unnecessary to go back beyond the latter portion of the eighteenth century, or to revive the names of works and authors which even the Germans themselves have forgotten. The earlier part of the eighteenth century had been occupied with numerous imitations of the *Robinson Crusoe* of Defoe, or of the family pictures of Richardson, the merits of which are not of a nature to demand notice in the present sketch.

In the Greek romances of Wieland (1763–1812), such as the *Agathon*, the *Aristippus*, *Peregrinus Proteus*, and *Agathodämon*, the same didactic tendency is observable which distinguishes those of Voltaire, but without their cynical and mocking tone, and with a much greater power, if not of actually inventing character, at least of working up the scanty materials furnished by history into a consistent and plausible portrait of the historical personages of antiquity; as in his *Socrates*, and still more perhaps in his *Aristippus*. The main fault of his novels, besides this didactic tone, which pervades them all, is the frequent repetitions which they contain of the same views and personages. *Agathon* in one manner, and the *Abderites* in the other, contain the germ of almost all Wieland's other writings. The sceptical Hippias, for instance, only puts off the Athenian stole in *Agathon*, to assume the mantle of the *Calendar*; the *Danæ* of that novel revives again in *Theoclea* and *Devidassi*; the youth of *Athagon*, in *Delphi*, is the prototype of that of *Peregrinus* in *Parium*; and many such instances must occur to any one familiar with Wieland. He is a mannerist, in short, as to his matter, and the mannerism extends even to his style, which, though flowing and facile, has not a little of the solemn loquacity of Boccaccio. This diffuseness is less felt in his shorter tales, where his philosophy is not so obtrusively displayed; and for this reason we prefer his *Don Sylvio de Rosalva*,—the history of a Quixotic believer in fairyism, gradually converted to common-sense by the extravagant demands which are made upon his belief, assisted by the charms of a mortal beauty,—and his little romance of the *Salamander and the Statue*, to his more elaborate and aspiring compositions. Wieland.

The influence of the novels of Richardson and of Fielding re-appears about this time in a liberal effusion of family novels, some portraying the serious and sentimental, others the comic aspect of domestic life. Among the sentimental novelists, Augustus La Fontaine (1758–1831) may be considered as the most successful, and undoubtedly the most popular. He painted life as he had seen it in the little German towns, villages, and chateaux of respectable proprietors about him, or as he had witnessed it during his campaigns as army chaplain, without ornament or alteration, without any pretension to imagination; and though there is at times something vulgar and tawdry in his sentimentalism, there is also a great deal of quiet simple nature in such scenes of common life and domestic happiness as he has exhibited in his family of *Haller*; and a tone of frankness and La Fontaine.

Romance. good humour which carries the reader pleasingly along through incidents and characters that in themselves are common-place enough.

Comic romances. The comedy of family life found numerous representatives, of whom Wetzel, Müller, Schulz, and Hippel, attracted some notice in their day and generation. Even yet the *Siegfried von Lindenberg* of Müller, which appeared about 1779, and of which many editions have appeared, may be admitted to be a natural and amusing performance.

Richter. A union of the sentimental with the comic in these domestic pictures was attempted at a somewhat later date in the very singular novels of Richter (1763-1825), a man of high powers, which he knew not how to use, and which were alloyed in no common degree by false taste and an incurable affectation of singularity. His earliest novel, the *Grönländische Prozesse*, appeared in 1784. The tricks and clap-traps to which Sterne occasionally descends we find habitual with Richter. The very titles of some of his works, such as *Selections from the Papers of the Devil, or Recreations under the Cranium of a Giantess*, and the absurd devices by which he generally introduces his narration, as in the *Hesperus*, where a series of letters is represented as mysteriously conveyed to the author in letter-bags tied round the neck of a shock-dog, betray a mind anxious to astonish by fantastic conceits, and insensible to the beauty of simplicity. The constant recurrence of these instances of literary quackery, the want of connection which his chaotic narrations exhibit, combined with the visionary cast of his views, justifying his own remark, that the empire of the Germans was peculiarly that of the air, has been fatal, and we think justly, to all attempts to naturalize Richter in this country. His pathos we think in the worst style of false and often meaningless effusions of sentimentality; but as a quiet humourist, blending good feeling with his satire, he is sometimes not unsuccessful.

Feudal romances. A strong contrast to these pictures of ordinary life, whether serious or comic, was presented by the mass of romances connected with the feudal periods in Germany, which appeared from about 1780 to 1800, and formed the counterpart of the Ritter-stücken or chivalrous dramas with which the stage had been inundated since the example had been set by Goethe's *Goetz of Berlichingen* and Babo's *Otho of Wittelsbach*. Cramer, Spiess, Schlenkert, and Veit Weber, (Leonhard Wächter), were the favourite writers of this turbulent school of fiction, which in all probability took its rise from the popularity of the romances of Mrs Radcliffe. Their materials were the blood-stained period of Faustrecht and Vehm-Gerichte, feudal tyrants, suffering damsels, devoted knights, with abundance of single combats and splintering of lances, raising of trap-doors, escapes by sliding pannels, imprisonments in bottomless dungeons, murders, witchcraft, and apparitions; in short, all that apparatus of the terrible, which, even in such hands, has a certain fascination for the boy, but awakens only a feeling of the ridiculous in the man.

Another department of German fictions, likewise dealing with the marvellous, but fortunately cultivated by writers of a very different order of talent, was the Märchen, or legendary tale. Three different modes may be pointed out in which this class of subjects has been treated.

The first is exemplified in the *Volksmärchen*, or popular tales of Musæus, in which the groundwork of marvellous tradition which the writer has selected is treated, not in the spirit of belief, but of a laughing scepticism, and where the writer relies for effect, not so much upon the interest of his materials, as upon the wit, the satirical allusions, and the quaint description or broad drollery which he is able to infuse into the original legend. Whatever in such traditions

bordered upon awe or terror, Musæus rejected; he viewed even these creations of the fancy in a prosaic light, and selected only such features as could be wrought into his ingenious mosaic of fanciful marvel, picturesque description, and sly and somewhat irreligious pleasantry, in the style of Voltaire. What he attempted, however, he accomplished with success. Some of his tales, such as *Stumme Liebe* (Dumb Love), and *Melechsala*, might be cited as models of the art of combining the childish interest of a nursery tale with that show of irony or philosophy which affords even to grave personages an apology for the perusal of popular tales.

In this semi-derisive style of treating the traditional legends of his country, Musæus remains the solitary writer of talent. This natural tendency of the German mind towards earnestness and belief, even in the case of the marvellous, led to a very decided preference of the serious manner in the treatment of such themes. And undoubtedly at the head of this second mode of treating the legend stand Ludwig Tieck (born 1773). Questionable as we think his claims are to the highest distinction, either as a poet or a novelist, in the proper sense of the term, his success in the management of traditional marvels in a poetical spirit is undeniable. He seems without an effort to throw himself back into the spirit of primitive and superstitious periods, when the agency of an invisible world formed an article of belief, and exercised the strongest influence over the conduct of life; a time of supposed prodigies, and omens, and secret charms, whose agency pervaded and controlled the course of nature. In reading the best of these legends of Tieck, such as *The Fair Eckbert, The Love Charm, or Peter of Abano*, we feel that he has the power of carrying us back in advanced age into the very realm of Fairyland, and subjecting us anew to the influences of childhood. "These legends have a freshness about them like that of the earliest morning, a sweetness as of wild flowers, and a calm beauty, caught as it were from a radiant sunset or a rising morn. The reader of the *Runenberg* is brought face to face with the presiding spirits of the animal and vegetable kingdoms; now he feels as if he were embosomed in luxurious vegetation, bathed in fertilizing dew, and fanned by balmy zephyrs, and now as if he were transported to cavern depths or darkest mines, where mountain spirits exercise an unholy influence. All the other legends, *The Fair Eckbert, The Fairies, and The Trusty Eckhart*, have the same beauty and significance; but it is impossible by mere description to give any idea of their peculiar nature. They must be studied and felt to be at all understood."¹

We are here speaking of Tieck merely as the writer who has treated the traditional tale in the most poetical spirit. Within the domain of the novel, taking the term even in a very extensive sense, our estimate of his powers will be very different.

The mode of treating the legendary lore of Germany, of which the tales of Tieck had furnished the first example, as the most agreeable to the national character, soon found numerous, or, it might rather be said, numberless imitators. For the last thirty years the example of Tieck has been implicitly followed, and all the legendary novelists of Germany have been melancholy and gentlemanlike, after the pattern of the Phantasm. Of these, the writers best known to English readers, through translation, are the Baron de la Motte Fouque, the author of *Undine, the Magic Ring, and Sintram*; Chamisso, the author of *Peter Schlemihl*; and Apel, the author of the *Freyschütz*. It may be doubted whether better specimens of the German tale might not be selected from writers with which the English public is not familiar,—some of Henrich Steffens' short legendary stories in particular,—such as the *Sleeping Bride* (Die Schlafende

¹ Germany, by Bisset Hawkins, p. 126.

Romance. Braut), and the *Nightly Betrothal in the Church of Rörwig* (Die Nächtliche Trauung im Kirche Rörwig), which have not yet found a translator, appear not undeserving of the attention of the lovers of the marvellous. In the wild productions of Achim von Arnim, such as the *Countess Dolores* and *Isabella of Egypt*, traits of talent sparkle in the midst of absurdity. And from the works of Clemens Brentano, and of Zshokke, the author of *Abelino*, several interesting legends might be selected. In particular, we are surprised that the simple and beautiful legendary tale by the former, "The History of the Brave Kasperl and the Fair Annerl," is yet untranslated.

Hoffmann. The third form in which the Märchen was employed, but at the same time perverted from its proper purpose, and subjected to a more Mezentian union than it had submitted to even under the satirical despotism of Musæus, was in the fantastic or grotesquely terrible manner introduced by Hoffmann, and since his death so injudiciously and unsuccessfully imitated both in Germany and in France. Hoffmann's manner cannot be considered as entirely original, since an approach to it may be pointed out in the *Diable Amoureux* of Cazotte. It is singular, however, that his productions, such as the *Sandman*, the *Magnetizer*, the *Devil's Elixir*, and others of that class, deriving their whole interest and effect from their connection with the peculiar nature and idiosyncrasy of the writer's mind, and so incapable of being imitated with the least success by any one not possessing the same anomalous mental conformation and physical irritability with the Prussian judge, should have exercised a very decided though temporary influence over the literature, not merely of Germany, but of Europe; and it proves that, notwithstanding the extravagances, there does reside in them some charm,—something which appeals successfully, not, indeed, to the mind in its calmer mood, but to the imagination when in a state of temporary excitement. Only in such a mind as Hoffmann's, moulded into its existing shape by an ill-omened union of influences, mental and bodily, habitually haunted with gorgons and presentiments, seeing traces, as it were, of the devil's hoof in the commonest paths of life, and starting and trembling at the chimeras with which his imagination peopled solitudes—could the phantoms bred in his eccentric brain, and nurtured amidst the fumes of a Berlin tavern, have ever assumed that appearance of reality and belief which could render their introduction into a work of fiction at all practicable. Only by a mind accustomed, from a painful experience, to brood over and dissect the origin and connection of these strange phenomena, half mental half physical, which makes "life a dream," but with a nightmare accompaniment, could the possible connection of this phantasmagoria with real existence, in morbid minds, be rendered so far intelligible as to redeem them from the charge of the merest puerility. Hoffmann's tales, though they constantly suggest the idea that they have had their source in the inspiration of opium, seem really to be the only compositions in this style of grotesque horror which can be said to possess the redeeming quality of genius. They remind us of the images of our dreams, calling up before us, as in sleep, long perspectives of gloomy vastness, broken here and there by the light of the strangest *ignes fatui*, along which are seen, flitting in antic movements, bands of the most fantastic creatures, such as those which, in the pictures of Teniers, disturb the solitude of St Anthony, or which give a strange blending of the humorous and the horrible to the distempered sketches of Callot. Yet, as a proof that the talent of Hoffmann was by no means confined merely to the fantastic and the supernatural, we may notice his truthful and vigorous picture of the German burgher life of the middle ages, in his *Master Martin and his Apprentices*, and his *Mademoiselle de Scudery*, a tale of vivid and fascinating interest, founded on a historical groundwork, moving in the simplest

and most direct manner towards its object, and exciting the feeling of curiosity and suspense even to the last. Romance.

Some notoriety of an evil kind was obtained by a class of novels in which the attempt was made to invest sensuality with the graces of art, or to merge art in sensuality. Such were the *Ardinghello* of Heinse (1749–1803), in which painting was made the apology for the introduction of voluptuous pictures, and his *Hildegard von Hohenthal*, in which music was made to minister to a similar purpose,—no unfit sequel to a literary life which commenced with a translation of Petronius. In truth, in the whole range of the German novels, the tendency to an undue license of this kind is observable. In those of Goethe, though veiled by an appearance of decency, it is sufficiently perceptible; nor does Tieck appear free from the common taint. Many passages in *Wilhelm Meister* are highly objectionable; and such a novel as the *Wahlverwandschaften* we regard as untranslatable into English. Heinse.

Of Goethe's novels we have already expressed our opinion in our biographical article on Goethe himself. If the merits of a novel consisted, not in exhibiting an epitome of human life, more or less poetically conceived, according to the prosaic or imaginative turn of the writer's mind, but in speculating ingeniously on painting, agriculture, landscape, gardening, the rules of good composition, or the state of the theatre, connecting these speculations by a thread of mystical narrative, and introducing us to a set of beings without the least trace of reality about them, who all appear to be playing some theatrical part in a dreamy representation of life, which seems to have no intelligible object,—Goethe may be a great novelist. With an English public, demanding some firm basis of reality, instead of that unsubstantial cloud-land which envelopes us in the *Wilhelm Meister's Lehrjahre* and *Wanderjahre*, and accustomed to insist on a plain meaning as a preliminary to poetical embellishment, he never can be a favourite. A novel which does not explain its purpose without a commentary seems to violate the essential laws of such compositions; but a novel, in regard to the object of which no two commentators agree is an anomaly in literature. Most of the German critics, indeed, though professing a great admiration of these singular performances of Goethe, are careful to confine their observations in regard to the meaning or object of the novels to the merest generalities. They describe *Wilhelm Meister*, to use the congenial language of an English admirer, as a picture of "warm, hearty, sunny, human endeavour, a free recognition of life in its depth, variety, and majesty, but as yet no divinity recognised there." The latter portion of the sentence is intelligible, and is unfortunately true, but the rest reminds us of Mr Dangle's remark, that the interpreter appears the harder to be understood of the two. Goethe.

These observations apply, with slight modification, to the novels of Tieck, when he abandons the province of the traditional tale, and attempts subjects connected with real life; the characters, the incidents, the whole cast of the tale, appear so extravagant, that, but for the grave and laudatory criticism with which these effusions seem invariably to be received by his countrymen, it would be difficult to believe the author serious. His first romance, *William Lovel*, was a gloomy and revolting extravagance, and his later caprices, such as *Das Alte Buch* (The Old Book), the *Vogelscheuche* (Scarecrow), *Eigensinn* and *Laune* (Self-will and Humour), *Wunderlichkeiten* (Marvels), are utterly unworthy of a man of genius. Even the merits of his *Dichterleben* (A Poet's Life), have been greatly exaggerated. Any tale in which Marlowe and Shakespeare figure as actors has a certain interest for a Briton; but beyond some eloquent disputations on the drama, and the formation of a poet's mind, in which Shakespeare and his companions are made to utter modern German theories, the most opposite to English notions of the sixteenth century, we cannot perceive Tieck.

Romance. wherein the peculiar merit of this much-lauded performance lies. Tieck has said absurdly and presumptuously of Sir Walter Scott, that "it is surprising how little he wants to be a poet, but how much that little outweighs all that he is." Let any one who has read Tieck's *Aufbruch in den Cevennen*, in which he has come in competition with the Scotch novelist on an historical subject, judge whether he has himself made a nearer approximation to that character.

Schiller. The talent displayed by Schiller in his *Verbrecher aus Ehre*, and his fine fragment of the *Armenian, or the Ghost Seer*, excites regret that he did not give us less of philosophy, and more of fiction. The latter is an unfinished tale of mystery, of deep interest, the idea of which, it is supposed, was suggested by the juggleries of Cagliostro, and in which Schiller, though he never witnessed the scenery which he describes, has caught the spirit of silence and secrecy which seems to pervade Venice, with the same success as, in his *William Tell*, he has transported us into the mountain recesses of the Oberland. And Lord Byron has recorded the strong impression made upon his mind by the recollection of the incomprehensible Armenian, one of those conceptions which he was accustomed by anticipation to associate with the image of the city of the sea.

Several female novelists, too, have respectably supported the pretensions of their sex; such as Fanny Tarnow, the Baroness de la Motte Fouque, Johanna Schopenhauer, Henrietta Hanke, and Caroline Pichler, the able authoress of *Agathocles*. Many of their productions exhibit talent, grace, and facility of style; but we should be at a loss to name any for which the praise of genius could justly be claimed.

The class of romances called *Kriminal Geschichten*, turning on stories of secret guilt discovered by circumstantial evidence, has been a numerous one in Germany. At the head of this class of novelists stands Kruse, who certainly possesses in a high degree a power which at the present day appears to be rather a rare one, that of constructing an ingenious and complicated plot, keeping the curiosity constantly on the stretch, and defying conjecture as to the result, till the author himself chooses to furnish the solution. The *Ring, Oath and Conscience, Diodatis' Birth, the Dance of Death*, and the *Red Dragon*, are masterpieces in this style of invention, which, though of a sufficiently prosaic character, yet possesses at least this cardinal merit, that it is rarely tedious.

Historical romances have always been numerous in Germany; and after the appearance of those of Sir Walter Scott they became still more so. Some of the chivalrous pictures of Tromlitz, Van de Velde, and Blumenhagen, in this style, are spirited, but in general the historical romance of Germany does not rise above mediocrity. "Sunt bona, sunt quædam mediocria, sunt mala plura." Let us except the very remarkable tale of *Michael Kohlhaas*, by the unfortunate dramatist Kleist (1776-1811). In all of Kleist's tales there is too much of a spectral and fatalistic character; he delighted to contemplate and to delineate life as necessitated by a mysterious and iron destiny. *Kohlhaas* is not entirely free from a tinge of the supernatural, which harmonizes ill with the deep, humble, human interest of the tale itself; and nowhere does the idea of a grim and unrelenting fate appear in more saddening colours. There is truth, therefore, in Goethe's remark as to this romance, that "it brings prominently into view a dissonant principle in nature, with which poetry ought not to meddle, with which it cannot reconcile itself, let the handling of the matter be never so exquisite." And yet this vigorous and truthful picture from the Lutheran times must be to Eng-

lish readers an object of interest, from the contrast it exhibits to the usual style of the German novel; for it is told with a directness, a simplicity, a dramatic liveliness, and an absence of unnecessary reflection, which are qualities of rare occurrence beyond the Rhine.

Of late years the German, following the example of the English novelists, have somewhat enlarged their sphere; and have addressed themselves seriously to the portraiture of contemporaneous society, in its true living features, as contrasted with such vaguely sentimental, and decidedly erotic productions as the *Werther* and *Wahlverwandschaften* of Goethe. Several novels of this class have reached us, all of which exhibit more truthfulness and fidelity to nature than we find in the older writers; but, as a counterbalance, there is decidedly less imagination, and the characters, when original, and not borrowed from English authors, are commonplace and dull. The best of these novels is the *Sollen und Haben* (Debit and Credit) of Freytag, which is spirited, and conveys a faithful picture of life in Silesia, both in the noble and the mercantile circles. But it is impossible to read many pages of that novel without perceiving the extraordinary influence which the perusal of the works of Dickens has exercised over the mind of the author. *Issig the Jew*, and the old beer-drinking porter, are properties of Mr Dickens' which Freytag has unceremoniously appropriated. He has hit off the minute, quaint, and sometimes grotesque descriptive manner of the English novelist to the life; and in his more tragic situations the resemblance is so close as almost to have the effect of a parody. We may also notice a very pleasing tale of historical as well as domestic interest, entitled *Frederick the Great and his Merchant*, a good translation of which has recently been made by Lady Maxwell Wallace. The name of the author is not given; but if this is the first attempt of an aspiring novelist, we feel confident that it is only the precursor of greater works, and that Germany may yet (for she has not done so hitherto), produce a novelist worthy of a European reputation.

We must not exclude from this sketch a notice of Hans Andersen Christian Andersen, the Danish novelist, whose beautiful of Den- tales have been translated into German, English, Dutch, mark. and Russian. Without any pretensions to art, he has attained that which no study can give, a perfectly natural expression. Without resorting to the mechanism of verse, he touches intuitively and in succession the chords of human sympathy; and more almost than any other living author possesses the magical secret of endearing himself, through his works, to the reader, without exhibiting any trace of egotism or personal intrusion. Nor are high proofs of talent in the fictional department wanting in another region of Scandinavia. The Swedish novels of Frederica Frederica Bremer are well known in England through the medium of Bremer. the translations by Mary Howitt; and though curiosity regarding the customs of a land comparatively unknown to us might account for some portion of the interest which they excited, their intrinsic merit alone fully warranted the introduction. Her novels are of the domestic kind, simple, and true to nature, without much pretension in the way of plot, but always graphic in description, distinct in delineation of character, and in sentiment irreproachable and refined. Less known perhaps to English readers, but yet deserving of notice, are the novels of Madame Carlen, also a Swede, whose writings display a strong imaginative tendency; some lines verging on that dubious and undefined manner which we are contented to designate as the "melodramatic." (G. M.—R.) (W. E. A.)

ROMAN HISTORY.

SECT. I.—SITE OF ROME.

Site of
Rome.

THE site of Rome occupies a cluster of low eminences threaded by the winding stream of the Tiber. The Campagna, the modern name for the tract of land which encompasses it, stretching from the sea to the Apennines, is not a wholly level surface, but is generally varied with gentle undulations. At one or two points only, such as in the neighbourhood of Alba and of Rome, this tameness of character is broken by more abrupt and prominent irregularities. The Alban hills soar in several peaks to an extreme altitude of 3000 feet, and inclose two deep basins filled with water; but the hills of Rome hardly attain 150 feet, and the Tiber, running among them, serves to drain the moisture descending from their flanks. The presence of marine deposits in the gravel which composes a portion of their soil shows that these hills have been raised in primitive times from the bed of an ocean; while the configuration of the hills themselves bears token of the volcanic agency by which this revolution was effected. On the left bank of the river they form a large segment of a circle, rising for the most part almost imperceptibly from the Campagna beyond, but falling more suddenly into the interior crater; while at either extremity, to the North and South, they descend abruptly into the bed of the Tiber. On the right they extend more irregularly along the river bank, rising at one point to a somewhat greater elevation; while the ridge of the Monte Mario, less closely connected with them, in the rear, reaches to a height of nearly 500 feet.

In the hollow formed by the circumvallation of the left bank stands a single hillock with a level summit and steep sides, well defined, and of figure nearly rectangular, measuring about 500 yards by 400. Removed about a quarter of a mile from the bank of the river, and almost screened from it by the advancing horns of the circumjacent ridge, screened still more effectually in early antiquity by the thick jungle which choked the valleys all around it, this hill—the Palatine, as it came in after ages to be called—could hardly be detected by the eyes of a stranger from beyond the limits of the inclosure. Such a site might naturally tempt the wandering brigands of Central Italy to fix on it their permanent settlements. Though traces may be discovered in the later manners of the Italians of their original descent from a race of nomades, yet we find them distinguished at the first dawn of history by the general adoption of settled habitations. The idea of the city, and of municipal institutions, was as strongly developed in Italy as in Greece; and in this respect the earliest known inhabitants of either peninsula were equally distinguished from the Gaul, the Briton, and the German. The strongholds of these people were the summits of bold eminences, such as rose sometimes in clusters, sometimes with insulated projections, from the plains or the scarped ridge of a mountain spur; and the cultivators of the little territory around them resided generally within the shelter of their walls. But the domain of the first fortress on the Palatine was limited by the conflicting claims of the occupants of similar retreats on almost every height around it. The Tarpeian hill, looking northward up the stream of the Tiber, was the site, according to an early legend, of a town denominated Saturnia; the Janiculan, across the river, bore a city of its own name; the Quirinal, which stood next in order to the Tarpeian, was settled by a tribe of Sabines, the people of the district reaching north-eastward to the Apennines; the Latins, who held, with a confederacy of thirty states, the great

plain of the Campagna to the south-east, had a place of meeting on the Aventine; the whole of the right bank of the Tiber belonged to the still more powerful nation of the Etruscans. The earliest legends of Rome indicate the seizure of the Palatine by an offset from a Latin tribe, and its conversion into a stronghold for the unsettled brigandage of the neighbourhood. But this confined and secluded eminence afforded a retreat indeed, but no sustenance, to its primeval occupants; and from the first the Romans were compelled by the sternest necessity to fight with every neighbour for their daily living. If constant warfare was thus, on the one hand, from the first the law of their existence, not less were they compelled in self-defence to seek alliances and cultivate peaceful relations on the other; and they soon learned to relax the rigid exclusiveness of manners and family ties which characterized the politics of the Italian races. While the martial temper of the Roman people was formed in the school of perpetual aggression or defence, they had the good fortune to be driven by circumstances to fraternize liberally with their allies and dependents, and the habit of admitting fresh infusions of foreign blood continued to be maintained by a necessity ever increasing as the sphere of their foreign relations widened. It was the remark of their own statesmen, as well as of later students of their history, that the illustrious career of Roman conquest was maintained by the seasonableness with which, however reluctantly, the franchise of the city, with all its privileges and burdens, was conceded at every crisis to strangers.

Political
History.

SECT. II.—DERIVATION OF THE ROMAN PEOPLE FROM ETRUSCANS, SABINES, AND LATINS.

Extending our view beyond the cluster of hills over which the name of Rome was eventually to be extended, we may observe, with the map of Italy before us, how critically the future mistress of the world was placed with reference to the powers around her. Three considerable nations, the names of which have been already mentioned, met just at this point. The Tiber, descending almost due south from the Apennines to the Mediterranean, and making with that sea an acute angle on the right, an obtuse one on the left, separated the country of the Etruscans from that of the Sabines and of the Latins. Again the Anio, running west from the central ridge of the peninsula, and striking perpendicularly upon the Tiber three miles above the spot just designated, formed the line of demarcation between the Sabines and the Latins themselves. Rome, therefore, was placed almost at the point of junction of the three rival nationalities.

The institution of the fortified city as the nucleus of the political combination, such as we find it to have existed throughout Central Italy in these early times, may be taken as a sign that the country is in possession of a foreign race, which has subdued the original inhabitants and holds their lands by the right of conquest. Wherever a tribe has settled upon soil hitherto unoccupied, we find that it has spread itself along the sides of the rivers and over fertile plains, clearing the forest rood by rood, and planting its scattered habitations securely on every spot to which chance or convenience has conducted it. Thus the inhabitants, first known to us, of Gaul and Germany, may seem to have been the aborigines of the land. They found perhaps on their arrival no prior possessors of the soil on which they planted themselves, and they had no need to defend their

Derivation
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acquisitions by the establishment of fortified posts and armed garrisons in the centre of every plot of ground they occupied. But in Italy, on the contrary, both tradition and early ethnological traces confirm our natural inference from the mode of its ancient inhabitation, and assure us that neither Etruscans, Sabines, nor Latins were aboriginal possessors of the peninsula, but were themselves intruders upon the heritage of feebler and probably more peaceful races. The early connection of these aborigines with the Greeks appears from the identity of many of their words, such especially as refer to agricultural usages and ideas. The formation of the Latin tongue is also closely allied to the Greek. This apparent identity of race we signalize by giving to the Italians the name of Pelasgians. But it is in these fragments of their language only that we can trace the character of this primitive people. The Sabines and Latins have conquered and degraded them; these new-comers have long maintained themselves in their fortified and inaccessible citadels, like the Norman barons in their castles, in the midst of their conquered serfs; and the institution of the city, remains to attest the fact of conquest, long after the elements of resistance which first suggested it have been trampled into the dust. Throughout the territory of the Etruscans the conquest has been even more complete. Here the conquered people have not left even a feeble trace of their existence in the language of their conquerors.

Resembling one another in this main feature of their politics, the Etruscans, the Sabines, and the Latins are distinguished in other important particulars. Whatever may have been the course of migration which led the Etruscans to their final seats in Central Italy, their early connection with the East seems proved from the character of their institutions. Their religion was a mystery and a craft, like the Egyptian and other eastern systems, jealously guarded and professionally communicated; though its priests were no longer on the freer soil of Italy a special caste like the Druids, the Magi, and the Brahmins, but were at the same time the warriors, the proprietors, and the statesmen of the commonwealth. Such was the Etruscan Lucumo, king, priest, soldier, and landlord, and such he maintained himself in spite of the advance of commercial ideas among the people, some of whose cities on the Tyrrhene coast had become emporia of the traffic of the Mediterranean. But in the eighth century B.C. the power of the Etruscans had already sustained a blow; they had lost their hold of the countries they once possessed north of the Apennines; the connection with their advanced posts in Latium and Campania seems to have been dislocated; they were confined to a confederacy of twelve cities in Etruria proper, strictly allied, and still by far the strongest and most important section of the Italian communities.

The Etruscan religion was a refined theosophy. It claimed the existence of a Supreme Being, a Providence or Fate, who was rather the soul of the world than a person exterior to it. The lesser gods, like those of Egypt and India, were emanations from this being. The world itself was subject to periodical mutations; men and things had their appointed courses; there was a future state of rewards and punishments. The Etruscans conceived, like other heathens, that the will of the divinity and the course of future events might be ascertained by the observation of omens. Their soothsayers drew auguries from the flight of birds, but they had a special gift of interpreting the signs of victims' entrails and of meteoric phenomena.

The religious ideas of the Sabines and Latins, on the other hand, were less refined, and affected less mystery. The indigenous cult of Italy had regarded the daily and common wants of men: the husbandman worshipped the genii of the winds and skies, the shepherd those who protected his flocks from the wild beast or the murrain, the warrior those by

whom his arrows were wafted to the mark or the crafty stratagem suggested. It was also domestic, and concerned the preservation of property, the guardianship of family rights and affections, the prolonged existence of the spirits of the dead. The Sabines maintained these ideas in the greatest purity and simplicity; the Latins seem, from their position on the coast, to have had an earlier connection with the Greeks, some of whose colonies were planted on their soil; and they partook more than their ruder neighbours of the Greek devotion to moral abstractions, such as wisdom, power, and beauty. But they both agreed in the infinite multiplication of their objects of worship. Every city had its guardian divinity; every wood and stream its Genius, its Nymph, or Faun; every family offered a special service to the patron of the house, the deified spirit of its earliest ancestor. The maintenance of this family worship was a solemn obligation descending to the heir of the estate, and in default of natural heirs the practice of adoption was enjoined for its preservation. The cult of the Lares and Penates, the domestic fetishes of the house, seems to have been common, with some variety of usage, to Etruscans, Sabines, and Latins.

The religion of the Sabines and Latins was simple and impulsive; that of the Etruscans philosophical and reflective. The one bowed with submission to the gods, the other inquired into their nature and explored their will. But whatever difference we may trace between them, we find them amalgamated together in the cult of the Roman people, who were placed, as we have seen, at the point where these ideas might first come in contact and coalesce. We shall find the threefold origin of the state marked no less strongly in its political institutions. From Etruria came the division into tribes, curies, and centuries; the array of battle, the ornaments of the magistracy, the laticlave, the prætexta, the apex, the curule chairs, the lictors, the triumphs, and public games, the whole apparatus of the calendar, the sacred character of property, the terminal science, and, in short, the political religion of the state. From Latium the names of prætor and dictator, the institution of the fœcials; the habits of husbandry and respect for the plough; and, finally, the Latin language itself. From Sabellia were derived the names of military weapons, and of the spear or *quiris*, which gave one of its designations to the Roman people. The Roman title of Imperator seems to be a popular application of the Sabine word *em-bratur*. The patriciate and patronship belonged more or less to all the nations which surrounded Rome, and so did the habit of dwelling in cities, and the institution of municipal governments. Such was the case also with the division into *gentes*, clans, or septs, and the remarkable extent of authority accorded to the father and the husband. This mixed formation of Roman society is mythically represented to us by the legends which describe the first and third of the kings as Latins, the second and fourth as Sabines, the fifth and two following as Etruscans. But there is probably some historic truth in the claims of the chief families to descent from one or the other people respectively. It is interesting to trace the Julii, the Tullii, the Servilii, the Geganii, the Quinctii, the Curiatii, the Clœli, to Alba; the Furii and Hostilii to Medullia; the Coruncanii to Cameria; the Porcii and Manilii to Tusculum,—all in Latium. The Appii, Postumii, Valerii, Marcii, Fabii, Claudii, and Calpurnii were Sabines. The Cîlnii and Licinii came from Arretium; the Cæcinæ from Volaterra; the Vettii from Clusium; the Pomponii, Papii, and Coponii from other places in Etruria. (Duruy, *Hist. des Romains*, i. 89.)

SECT. III.—LEGENDS OF THE FIRST FOUR KINGS AND THE
POLITICAL INSTITUTIONS ASCRIBED TO THEM.

The early history of Rome, as written for us by Livy

Political History. and Dionysius, has no claim to be considered as a record of actual facts, and such truths as it really may contain cannot be sifted with any certainty from the mass of fiction with which it is embedded by the science of the historian or the political philosopher. We can only regard it as an attempt to account, under the guise of history, for existing institutions and political phenomena at Rome, at a period when the consciousness of the people was aroused to seek the origin of their own life and being. The primitive legends of the flight of Saturn to Latium, the advent of Hercules, the arrival of Evander, the settlement of Æneas at Alba, are attempts to explain the apparent presence of an Hellenic element in the language and usages of Italy. The story of the birth of Romulus and Remus from Mars and Rhea illustrates the warlike spirit and victorious career of the Roman nation; the suckling of the twins by the wolf, the slaughter of the wicked uncle, the collection of a horde of outlaws, the opening of an asylum for fugitives and robbers, the quarrel of the brothers, the rape of the Sabine women,—all combine to represent the fierce and aggressive spirit of the race of conquerors whose hand was to be against every man, and every man's hand against them. The contest of the Romans and Sabines for the Tarpeian citadel, and the final pacification and alliance between them, soon followed by the accession of the Sabine Numa, the founder of law and religion, indicate a consciousness of the early introduction of a Sabine element into the Roman polity. The wars of Tullus with Alba shadow forth the ancient conquest of territory eastward of the city, and the first extension of the Roman domain beyond the walls of Rome. The establishment of a Sabine colony on the Quirinal, a Latin on the Aventine, an Etruscan on the Cælian, all finally comprehended in a single inclosure, testify the rapid growth of the city by the fusion of the three rival nations at their point of junction. The legends of the death of Remus and the slaughter of Horatia seem to aim at explaining the origin of actual religious ceremonies, and if we knew more of the domestic antiquities of Rome, we might trace perhaps the ideas which gave birth to many other stories, such, for instance, as the treachery of Tarpeia. The murder of Romulus by the Senate typifies a protest of the commons against the violence of the aristocracy, while the accompanying legend of the victim's exaltation into the heavens justifies the hero-worship of the state and of the Gentes. On the other hand, the reign of Numa is evidently painted by the faction of the nobles. Numa is the founder of the rites and institutions of Rome; and these are the charter of the Roman aristocracy. The death of Tullus Hostilius, the third king, is another instance of this class of legends: he is struck with lightning for abusing the legitimate worship of the gods, of which the nobles are the guardians and expounders. Ancus, however, his successor, is the king after the people's heart; his reign is contrasted with that of Tullus, as that of Numa with his predecessors, as an epoch of peace instead of war; but Ancus, unlike Numa, is celebrated for the favour he extended to the lower unprivileged classes, for his courting the breeze of popular applause, and publishing the mysteries of the aristocratic religion; nevertheless he is the founder of the prison under the Tarpeian hill, long known to the citizens as the terror of the oppressed and degraded as well as of the wrong-doer, a chief instrument in maintaining the hateful ascendancy of the oligarchs. (Michelet, *Hist. de Rom.* i.)

The classes opposed to one another throughout political history are the nobles and the commons. The aristocracy and the people are known in the Roman records by the special name of *patricians* and *plebeians*. The first founders of the commonwealth, whether by settlement on vacant soil, or by conquest of a more primitive population, formed

the original body of citizens, with equal rights of dealing of marriage, of suffrage, among themselves. Such were the patricians of Rome. The subjects of this dominant race, whether by original conquest, or by later acquisition, including such as ranged themselves, of their own free will, under the powerful protection of the Roman city, became known by the general name of plebeians (the *plebs*), and were admitted to no share in the government, to no equal rights, social, political, or religious, with the citizens. They remained, according to the significant expression of a Roman patrician, "without auspices, without families, without ancestors." They were distinguished, however, from the slaves of the Roman household, having their personal freedom, property, and liberty to exercise handicraft trades for their own benefit. They were subject also to the military conscription. But such immunities as they enjoyed were secured to them, not by law, but by the protection of the patricians, to whom they stood individually in the relation of clients to patrons. Thus every plebeian was originally the client of a patrician; but as the plebeians gradually acquired legitimate civic rights of their own, the status of the client was transferred to the ever-growing class of subjects who were not citizens at all.

The political institutions ascribed to Romulus must be regarded as affecting the patricians only. This Roman people was formed, we are told, into three tribes,—the *Ramnes*, the *Tities*, and subsequently, but with inferior rights, the *Luceres*. It is conjectured that the first of these represents the original Latin people of the Palatine, the second the Sabines of the Quirinal, the third an Etruscan element in the population, which, according to tradition, was settled on the Cælian hill. Each tribe was subdivided into ten *curiæ*, and these bodies met in general assemblies, or *comitia*, called after their name *curiata*, in which resided the sovereign power of the state deputed by it to a king. The Senate was a body chosen from the *curiæ* as a council of state, consisting first of 100 members, soon afterwards doubled by the incorporation of the Sabines; but the *Luceres* were not originally admitted to a share in this dignity. Each tribe was bound to furnish 1000 men on foot, and 100 to serve on horseback; and this body formed the legion. The horsemen, originally designated *Celeres*, became in course of time a distinct order in the state, under the well-known title of *Equites* or Knights.

As Romulus, the founder of Rome, whose name is connected with the Greek word *ῥώμη*, *strength*, was the author of the military institutions which upheld the fabric of the state, so Numa the Sabine, a name which must remind us of the Greek *νόμος* and *νόμος*, *law*, was regarded as the framer of its religious rites, the foundation of law and order. He appointed as the guardians of the national religion four pontiffs, the first of whom was specially designated the Pontifex Maximus; he assigned two Flamens to the special service of the tutelary gods of Rome, Gradivus and Quirinus, and a third to that of Jupiter. He instituted the College of Augurs and of the Salii, who bore on their heads the sacred shields of Mars; and established the priesthood of the sacred Virgin, who tended the never-dying flame on the altar of Vesta, brought from the shrine of the goddess at Alba, the mother city of Rome. Numa is also said to have built the temple of Janus, the double God, whose faces looked both before and after, and to have closed its portals in sign of peace. He appointed also a long series of ceremonial observances connected with the seasons of the Roman year, and first completed the calendar by the addition to it of the two months of January and February. The year of Numa consisted of twelve lunar months and one day over, making 355 days in all. In all these institutions he sought and enjoyed the counsel of the Camena, or goddess Egeria, a deity of the Sabines, and the grotto

Political History.

Political History. at which he was wont nightly to meet her, near the *Porta Capena*, continued to be shown at Rome for many ages.

SECT. IV.—THE THREE LATER KINGS.

The three later kings. The first four reigns represent the struggles of Rome with the Sabines and the Latins, and she is described as victorious throughout a succession of wars. The next period bears a different character. Rome is now under the sway of an Etruscan dynasty, and to this epoch are ascribed certain works, still partly existing, which attest more surely than record or tradition the fact of an Etruscan domination on the spot. The chiefs under whom the low grounds of the city were drained by the vast Cloaca, and the national temple erected on the scarped brow of the Tarpeian rock, under whom the Seven Hills, crowned with separate fortifications, were united within one continuous inclosure, were assuredly Etruscans; and they must have exercised their authority with the strong hand of conquerors and despots. The legends, however, say nothing of an Etruscan conquest of Rome. Tarquinius Priscus, or the Elder, is represented as the son of a Grecian refugee who removed from Tarquinii in Etruria to Rome, by the advice of his wife, the prophetess Tanaquil. Appointed tutor to the sons of Ancus, he succeeds, on the king's death, in supplanting them on the throne. Rome receives from him her first architectural embellishments—he establishes the circus for national games—constructs the Cloaca, and commences the Capitol. The expense of these great works is supposed to be defrayed, not by the forced labour of a nation of serfs, but by plunder seized from the Latins and Sabines. Tarquin celebrates the first Roman triumph after the Etruscan fashion, in a robe of gold and purple, and his chariot is drawn by four white horses. Many of the ensigns both of war and of civil office are assigned to this epoch. And now we meet with the admission of one hundred plebeians into the Senate, and the formation of three new centuries of knights. The opposition of the patricians to this democratic innovation is signalized in the legend of Attus Navius, the augur, who resists the policy of the sovereign, and confirms his resistance with the sanction of a miracle. A statue of Attus, standing for many centuries in the Forum, attested the stroke of the augur's razor, which cut the stone at Tarquin's bidding.

These attempts at relaxing the stern exclusiveness of the Roman polity were continued, it is said, and effected more triumphantly by the next king. Servius Tullius, described in one account as originally a slave, is said to have married a daughter of Tarquin, and to have gained the throne by the contrivance of Tanaquil. Another, and probably the Etruscan legend, represented him as a soldier of fortune from Etruria, who attached himself to Cæles Vibenna, the founder of an Etruscan city on the Cælian hill. His original name, Mastarna, was changed to that of Servius, by which alone he became known in the native history of Rome. Servius connected the Viminal, the Quirinal, and the Esquiline, the three Sabine hills, with the Palatine, the Tarpeian, now called Capitoline, the Aventine, and the Cælian, thus completing the fated number of seven. The *agger*, or mound, with which he defended this city to the north, may be traced to this day; and some vestiges have been discovered of the massive stone walls which encompassed it in other quarters. He divided the city thus completed into four regions, the Palatine, Suburran, Colline, and Esquiline.

The chief external event of this reign, according to our records, was the formation of an alliance with the thirty cities of Latium, confirmed by the erection of a common temple to Diana on the Aventine. The lands which Servius won from the Veians and Etruscans he divided among the plebeians, thereby incurring the hostility of the patri-

cians towards a foreign dynasty, and especially to the slave-born sovereign himself, the patron of the upstart commonalty. For the policy of Servius was directed to raising the subjects of the state to a political equality with their rulers, and carrying out the liberal views already indicated by his predecessor. His plan, however, was not, we are told, to raise the plebeian families to patrician rank, and introduce them into the special assembly of the curies, but to create a new general assembly, under the name of the *centuries*, which should comprehend both classes alike. The Servian constitution, such as later ages loved to picture it, though confessing that it never really came into practical operation, was the enrolment of the whole body of the citizens, patrician and plebeian, in one great military array, according to their census or means, and the arms which they could bring into the field. Thus enrolled and accoutred, they were to assemble in the Field of Mars, outside the city, and decide on all the gravest affairs of state, of peace and war, of laws and ceremonies, with the full powers hitherto enjoyed by the curies alone. But though this division into classes existed only on paper in the histories of a later age, the division of the people into its tribes, from twenty to thirty in number, was an actual fact, whether rightly ascribed to Servius or not. The tribes of Romulus were only three, and were confined to the patricians; those of Servius embraced the great body of the plebeians. The former referred only to birth; the latter defined the habitation of the members belonging to them. Of the Servian tribes, four only were in the city, the rest were assigned to country localities in the domain of the state. The names of most of these tribes, which continued to exist with various additions to a very late period, have been mostly preserved to us; but though they formed the basis of another assembly of the people which played a great part in the subsequent history of Rome, so little interest or importance attaches to them that even their number at this and at later periods is involved in the greatest uncertainty. The legend of Servius brings him to the wonted end of a democratic reformer. Assailed by his own children, the favour of the multitude is unable either to defend or to avenge him. The people can do no more than consecrate his memory in undying tradition, and mark the day of his assassination by a religious ceremony repeated every month. The street in which the abominable Tullia drove her car over her father's body continued ever after to bear the name of "The Accursed."

The reign of the second Tarquin, or the Proud, is an attempt to usurp the power both of the nobles and the commons, and establish a pure despotism on the ruins of the democratic monarchy. Wars are waged with the Latins and Etruscans, but the lower classes are deprived of their arms, and employed in the servile occupation of erecting monuments of regal magnificence, while the tyrant recruits his armies from his own retainers and the forces of foreign allies. The completion of the fortress-temple on the Capitoline confirms his authority over the city of Rome, and a connection by marriage with the dictator of the Tusculans secures him powerful assistance in the field. He reigns with bloodshed and violence, oppressing the poor by his exactions, and crushing the rich by slaughter and proscriptions. The outrage of his son Sextus on the chaste Lucretia at last precipitates a revolt; and L. Junius Brutus, supported by the injured husband and father, proclaims the fall of the foreign dynasty, and the establishment of a republic. The name of Brutus was given in the Latin language to an idiot; and hence arose a legend that the hero of the Refuge, or flight of the kings, had simulated madness to deceive the Tarquins, in whose house he had been bred. Another conjecture has been hazarded by modern critics, that the term means a slave, especially a revolted or fugitive slave, and indicates in this story the

Political History.

A. U. 24
B. C.

Political
History.

insurrection of the commons, oppressed and degraded slaves of the monarchy, against the tyranny of their foreign masters.

But the legend of the Tarquins does not terminate with their fall from power. Banished from the city, they take refuge with their allies at Tarquinii and Veii, and intrigue for the recovery of their throne. While the citizens were organizing their commonwealth, appointing Brutus and Collatinus their first consuls (*prætors* they were originally called), with powers hardly less than regal, but limited to a single year, the emissaries of Tarquin engage the sons of Brutus in a plot to restore him, the execution of whom, when discovered, by their own father's decree, was recorded as a striking instance of the sternness of the ancient patriotism. A second attempt with an army of Veians and Tarquinians was not more successful, though Brutus himself fell in the combat which gave victory to the Romans. Tarquin made a third effort, with the aid of Porsenna, chief of the whole Etruscan confederacy, and this powerful ally penetrated to the Tiber, and would have followed the flying Romans into the city, but for the courage with which Cocles defended the bridge till it could be broken down behind him. This ancient peril of Rome was illustrated by the popular traditions of Mucius and Clælia; but though it continued to be confidently believed that the invader was compelled to retreat discomfited, later inquirers professed to have discovered documents proving that the city had in fact capitulated to him, that the Romans had been subjected to Etruscan authority, and forbidden, like the Israelites under the sway of the Philistines, the use of iron even in their domestic implements.

To continue the popular story, however: we next read of Tarquin betaking himself to his allies at Tusculum, of a great Latin confederation for his restoration, and of the battle at the Lake Regillus, in the which the exiles were finally defeated by the assistance of Castor and Pollux, who fought on the side of the Romans, conspicuous on white horses. The Latins make peace with Rome, abandoning Tarquin to his fate; and the old king dies eventually, fourteen years after his expulsion, at the court of the Grecian tyrant of Cumæ.

SECT. V.—REMARKS ON THE FOREGOING ACCOUNTS.

Remarks
on the fore-
going ac-
counts.

The kingly power is said to have been overthrown in the year 244 of the city; the reigns of seven kings having filled up this long interval, the average of the six first, four of which are cut short by violent deaths, being thirty-six years to each. In addition to the startling improbability of such a series of protracted lives, there are other chronological difficulties in the narrative which the ancients themselves tried in vain to remove. In modern times these inconsistencies gave the most powerful, if not the first, incitement to the spirit of historical scepticism which has resulted in an almost entire renunciation of the early Roman records as genuine historical documents.

We shall consider presently, from an examination of the sources of genuine information which were really open to the Romans themselves, what amount of credence may reasonably be given to the reputed facts of their story. In this place it will be sufficient to point out that the so-called history of the kings presents an outline common to the early annals of most states of antiquity, the growth of a commonwealth by war and conquest till its ruler, at the head of a veteran army, and in possession of a central stronghold, sets himself above the laws, and plays the despot with selfish violence, till stricken down by the people whose patience he has outraged. To this kingly period succeeds generally, as at Rome, an epoch of popular government, in which the regal name is detested as the symbol of violence and tyranny, and the supreme power,

which the rudeness of the times requires to be lodged in strong hands, is guarded against abuse by distribution among two or more possessors, with limitation to a single year's tenure; when in cases of emergency this power is still more concentrated in a single hand, the limitation of tenure is reduced just in proportion to six months. From this time, secure of their freedom as against their rulers, the citizens plunge into a series of struggles among themselves, class against class. The second period of Roman history corresponds with the ordinary course of political affairs, and is marked by a long and fluctuating contest between the aristocratic and democratic elements of a republic. The verisimilitude of the general outline commands our attention and respect; but we must still hold ourselves fully on our guard against giving credence to the details, confused, contradictory, romantic, and repeated with little variation over and over again, with which it is set forth and enlivened.

Political
History.

SECT. VI.—BEGINNINGS OF THE REPUBLIC.

The first circumstance which strikes us in the received account of the beginnings of the republic is, that the victory of the people over their tyrants turns to the advantage of the aristocracy only. We hear no more of the popular constitution of Servius. The patricians are masters of the Senate and of the curies; while by their wealth and the number of their clients, they retain the chief influence in the centuries, and as expounders of the state religion, hold in their hands the most potent instrument of political warfare. The struggle, however, which soon ensues between the patricians and plebeians is no longer represented as arraying two races or castes against one another: Rome has entered upon a second phase of political existence; the rich proprietors are struggling to maintain their ascendancy over the poorer classes. The patrician generally represents the man of family and civic honours, residing in the city, but owner of domains in the territory of the state; the plebeians, the small farmers and petty tradesmen, and those who made their living by their own thrift and industry. The patrician had also secured to his own exclusive use the public lands, the ownership of which the state reserved to itself. At this time, indeed, if we may follow the traces of the accredited history, these conquered domains had shrunk to very small dimensions, for the limits of the Roman state, as well as its external relations and influence, appear after the Regifuge in very circumscribed proportions.

But the struggle between these classes is dated back to the very first year of the commonwealth. One of the two consuls is represented as a plebeian. Valerius Poplicola, the first champion of the popular order, is supposed to have acquired his name by the zeal with which he maintained its claims. In the same spirit of mythical history, Poplicola is said to have opened to the plebeians the competition for the consulship, and proclaimed the penalty of death against any aspirant to the tyranny. Poplicola requires the consuls to lower their fasces, the rods and axes borne before them by the lictors, in the assembly of the people. Within the city, indeed, the axe is to be removed altogether, to show that the regal power of life and death over the citizens is withdrawn at home, and only exercised in the camp abroad. But these restrictions on the outward show of power have no effect in controlling the substantial preponderance of the patricians, who for many years together held exclusive occupation of the consulship, who, whenever their prerogatives are threatened by popular impatience, create a dictator with absolute authority for its repression, and who forbid any amalgamation of the two orders by intermarriage.

It is in the nature of things that men should long bear

Political History.

with social inequalities and political disabilities, and the history of the republic corresponds with ordinary experience when it relates that the first struggle of the two orders was caused, not by a sense of abstract inferiority on the part of the plebeians, but by the pressure of poverty, and a tyrannical law of creditor and debtor. The decline of the power of the republic would imply a very general impoverishment of the citizens, and the wealthiest would be likely to turn the hardness of the times to their own advantage. The poor would need ready money to supply themselves with arms, as well as to till their land and pay their taxes; the rich would lend to them at exorbitant rates of interest, and on their failing to repay, would indemnify themselves by seizing the debtor's person and reducing him, or his children in lieu of him, to slavery. We are assured, indeed, that the Roman law allowed the creditor to kill his insolvent debtor, or if there were several creditors, to cut his body in as many pieces. Harassed by cruel exactions and still more cruel punishments, the plebeians at last refused to enlist in the annual campaign against the Latins. They had discovered the weak point in the patrician armour. It was necessary to suspend the severity of the law for the moment, with a promise to alter it at the conclusion of the war. But the popular consul Servilius, who made this concession, was denied the triumph he had earned by the hands of the plebeians, and the patricians relapsed again into their old tyranny.

Secession of the plebeians to the Mons Sacer, A.U. 260, B.C. 494.

Origin of the tribunate.

Not once or twice only are the plebeians and their generous champions among the nobles thus cajoled and disappointed. At last the plebeians, choosing themselves generals, one of them a Brutus, and renouncing the authority of the consuls, march forth under arms to the hill on the junction of the Tiber and Anio, two miles from Rome. Here they resolve to settle and form a new city. The patricians deliberate, and under the hot counsels of their haughtiest advisers, are almost prepared to accept this defiance, and allow Rome to be split asunder. But this peril was averted by the prudence of more moderate leaders; and the sedition was appeased, according to the legend, by the skilful eloquence of Menenius Agrippa, who related his apologue of the belly and the members. The seceders required a substantial guarantee for their future security; and this, we may believe, was the origin of an institution destined to become one of the chief elements in the Roman polity, the Tribunate of the Plebs. The citizens were authorized to nominate two tribunes annually, who should have a veto on the decrees of the Senate, and protect the personal liberty of the commons. Their own persons were to be inviolable; and that they might be always at hand to defend their constituents, they must never leave the city for a day; their houses were to be open day and night to receive every application for assistance. It is remarkable that the election was given in the first instance to the centuries, among which the patricians continued, through their clients, to enjoy a large measure of authority. The number of the tribunes was afterwards increased to ten, and as any one of them could interfere to prevent the action of all the others, it became the easier for the Senate to divide and paralyse its opponents. But the election had previously been transferred to the assembly of the tribes, which were more independent than the centuries of patrician influence.

We may remark in the institution of the tribunate the fatal vice of the Roman polity, which sought to create a permanent balance of powers by arraying the different orders of the commonwealth in precisely equal force against each other, instead of combining them together, with joint interests and privileges. If, instead of playing off the tribunes against the consuls, it had secured an equal share in the consulships and the Senate to both patricians and plebeians, it might have effected a harmonious co-ope-

ration between parties which were henceforth ranged in constant strife and jealousy one against the other. As it was, the struggle between the two parties continues, according to our accounts, to rage more violently than ever.

The first victory is on the side of the plebeians. C. Marcius, a brave patrician, who has acquired the surname of Coriolanus, from the capture of the Volscian town Corioli, falls a victim to the jealousy of the people. His haughty bearing had given offence to the multitude; they find means of urging unjust or invidious charges against him; they require him to defend himself before the assembly of the tribes, in which the power of the plebs predominates, and drive him into exile. He returns at the head of the Volscian armies which he has so lately defeated, routs the Roman legions, and prepares to lay siege to his native city. Herald, magistrates, priests, are sent out successively to sue for peace; but he remains inexorable, requiring humiliating terms of concession to his new allies. At last his wife and mother present themselves, with the Roman matrons, in his camp; to them he yields, and withdraws his troops from the attack, assuring them, at the same time, that in sparing the city he has forfeited his own life. The legend closes appropriately, in one account, with the statement that his foreign friends turn in anger upon him and slay him; another story represents him, less poetically, as surviving still in exile to an old age.

It is needless to point out the marks of poetical invention in this famous narrative. As a tradition of the power and the deadly jealousy of the commons, it was to be paralleled by a rival story from the opposite quarter. Spurius Cassius, a patrician, and three times consul, resolved to become the benefactor of the plebeians. He proposed an agrarian law,—that is, a division of the public domains among the poorer citizens, or at least a common right with the patricians, who now usurped the occupation of it, a constant source of dispute from this time forth, as will be hereafter explained, between the two classes. The authority of the proposer was sufficient to carry this law; but the patricians contrived to thwart its operation, while they watched an opportunity of avenging themselves upon him. He was accused, as soon as his consulship expired, of granting too favourable terms to the national enemies, and of seeking to make himself tyrant of his native city. He was tried, found guilty, and condemned to the traitor's death by scourging and beheading.

The wars of Coriolanus and Spurius Cassius against the Volscians and Hernicans, two Sabine tribes who lay to the eastward of the Latins, indicate an extension of the area of military operations. Partly through their league with the Latins, partly also from the increase of strength gained to the republic by concession to the plebeians, the Romans are advancing again in the career of conquest. The campaigns of the following years are directed against the Volscians, the Æquians, and the Veientes; but the progress of victory is still checked from time to time by the refusal of the plebeians to serve until an agrarian law is not only carried but executed. The contest of the classes is not now for a relief from debts, or for an equalization of political rights, but for admission to a common right of property in the public land. If we could accept an hypothesis of Niebuhr, the transplantation of the Fabii, a numerous and old patrician house, to Cremera, where they were all slain by the Veientes, might be added to the incidents of the agrarian feud; for that historian supposes them to have migrated from mortification at failing, notwithstanding their high character, and their seven successive consulships, to bring about the passing of a modified law of property. But our authorities at least know nothing of any such tradition; and the whole affair is far too uncertain, as a matter of history, to bear the weight of any conjecture of the kind.

Political History.

Coriolanus, A.U. 266, B.C. 488.

Spurius Cassius, A.U. 269, B.C. 485.

The Fabii at the Cremera, A.U. 277, B.C. 477.

Political
History.

Genucius,
A.U. 286,
B.C. 468.

But soon after the reported date of this event follows another attempt at effecting an agrarian settlement by a tribune named Genucius, accompanied by an impeachment of the consuls for frustrating the operation of the law. Against this attack another method of defence is adopted. Genucius is suddenly found dead in his bed; and from this account we infer the popular belief that he was murdered privily by the opposite party. After some further manœuvres, a compromise is at last effected, by the settlement of a plebeian colony on the conquered lands of Antium.

SECT. VII.—HISTORY AND LEGISLATION OF THE
DECEMVIRS.

History
and legis-
lation of
the decem-
virs.

We have remarked already that there is much of a poetical, much of what may be called a conventional, character in the history of the kings; and the same features continue strikingly to pervade the records of the early period of the republic. To some extent, indeed, these latter accounts present superior marks of authenticity, in the regular recurrence of family names, wholly wanting in the former, and in the frequent mention of such domestic occurrences as pestilences and portents. These incidents seem to show that the families and the priests pretended at least to possess some private registers of the events most interesting to them; the first indeed may be mere fabrications of a later date, but the others are not apparently of a character to be deliberately forged. It may be added that there certainly existed, at a much later epoch, some monuments of early history, though we cannot vouch for their genuineness; such as the brazen plates on which were engraved the treaties made by Rome with Porsenna, and also with the Hernicans. Polybius knew of a third, which recorded a treaty between Rome and Carthage, in the first year of the republic. However we may suspect, from considerations hereafter to be offered, the genuineness of these documents, it is right to mark the first signs on the part of our authorities of a reference to historic testimony.

Such meagre incidental notices say little, however, for the authenticity of our details of foreign wars or domestic revolutions, and the minute accounts we have received on these subjects should only serve to put us more on our guard. Some remarks of Sir G. C. Lewis may put in a clear light the grounds of our suspicion:—

"It is a peculiarity of the constitutional history of Rome, as it is related to us, that after an agitation of some years for one demand of the popular party, another demand succeeds, without any apparent redress of the former grievance, or any distinct explanation of the reason why one claim is abandoned and another takes its place. The first grievance of the plebeians is the law of debt, which produces the first secession; but Livy and Cicero both describe this movement as leading only to the establishment of the tribunate, and not to a remission of debts, or to an alteration of the law of insolvency. Yet from this time the complaints about the law of debt cease, and the agrarian movement takes place. Both historians represent the patricians as making a successful stand against a division of public land among the plebeians, until the sending of a colony to Antium in 467 B.C.; nevertheless, from this year the agrarian question falls into the background, and another subject steps into the most prominent place. Livy and Dionysius, indeed, differ as to the course of the agrarian agitation; for whereas the former conceives the tribunes as proposing a series of laws, all of which are successfully resisted by the patricians, the latter states that the Senate in the year of Cassius passed a general measure for the division of the public lands, but that the successive consuls would never carry it into effect; that a solemn compact made between

the Senate and the plebs was broken; and that the efforts of the tribunes were directed exclusively towards procuring the execution of the unexecuted decree. In the practical result, however, that the division of the public lands was averted by the patricians, they concur." (*On the Credibility of Early Roman History*, ii. 165.)

Such, then, being the close of this series of agrarian discussions, the old questions suddenly fall into abeyance, and are superseded by a third. The tribune Terentillus Arsa demands a code of written laws. We are told that during the monarchy the kings were the supreme dispensers of justice, and acted therein at their own caprice or discretion; that the consuls succeeded to this along with the other kingly prerogatives; and that accordingly up to this time there was not only no written code of law and procedure, but that no gradual accumulation of precedents had settled into a definite system of acknowledged usage. The Romans had to begin their law-making from the beginning, and with this view the demand of the plebeians soon shaped itself into a proposition for sending commissioners to Athens to bring home the laws of that state, and make them the basis of the new code of the republic. The demand, indeed, of Terentillus was resisted and evaded, and it was not till the year 300 that such commissioners, three in number, were actually despatched to Greece. In the meantime, we may notice one exception to the remark just made in the agrarian law of the tribune Icilius (A.U. 298) for assigning lands on the Aventine to the plebeians. This interval contains also some other events of interest: the surprise of the Capitol by Herdonius the Sabine, with a troop of slaves and Roman exiles, implying the continuance of mutual violence between parties of the state, and the repeated banishment of their leaders; again, the campaigns of the republic against the Æquians and Volscians, in the course of which the brave and frugal Cincinnatus was taken from the plough and made dictator, according to a romantic legend, to lead the forces of the state against the foreign enemy.

On the return of the commissioners in the year 303, so runs the story, it was resolved to appoint a board of ten, called decemvirs, to arrange the Roman laws. The patricians insisted that all these officers should be chosen from their own order, and having gained this point, required both the consuls and tribunes to abdicate their functions, and leave them free scope for concerting and enacting their measures. The decemvirs accordingly were not legislators only, but the rulers of the state; and they were too well satisfied with the prerogatives they wielded under their extraordinary commission to acquiesce in the prospect of resigning them. They procured the prolongation of their office for a second and again for a third year; and it was not till the year 305 that, in pursuance of a course of arbitrary violence and license, Appius Claudius, the most tyrannical and selfish of the number, provoked the people to rise in indignation and abrogate it by an abrupt revolution. The story of the lust and cruelty of Appius, the peril, under a colourable procedure of law, of the fair Virginia's honour, which her father could only preserve to her by stabbing her to the heart in his despair, is one of the most striking of the poetical legends of Rome, the more deserving of attention as it is accompanied by none of the supernatural incidents which usually throw suspicion on its stories of valour, patriotism, and self-devotion. Nevertheless the incident is related with a circumstantial minuteness which alone seems to warrant us in rejecting it as a true narrative; and indeed the discrepancies and improbabilities which surround the whole account of the decemvirate render its history extremely questionable both in substance and in details.

The fragments remaining to us of what the later Romans themselves regarded as the genuine laws of the Twelve

Political
History.

Terentillus,
A.U. 293,
B.C. 461.

Cincinnati-
tus,
A.U. 296,
B.C. 458.

The decem-
virs,
A.U. 303,
B.C. 451.

Appius
Claudius
and Vir-
ginia,
A.U. 305,
B.C. 449.

Political History.

Question of the credibility of the received accounts.

Tables are exceedingly slender. Dr Arnold thus describes their purport (*Hist. of Rome*, i. 291):—"1. That there should be an appeal to the people from the sentence of every magistrate; 2. That all capital trials should be conducted before the comitia of the centuries; 3. That *privilegia*, or acts of pains and penalties against an individual should be unlawful; 4. That the last decision of the people should supersede all former decisions on the same subject; 5. That the debtor whose person and property were pledged to his creditors *nexus*, and he who remained the free master of both, *solutus*, should be equal in the sight of the law; that is, that the *nexus* should not be considered as *infamis*. . . . A sixth enactment is expressly ascribed to the last two tables, which Cicero describes as full of unequal laws (these were a later addition to the first ten, and were considered more harsh and unjust to the people), namely, that between the burghers and the commons there should be no legal marriages; if a burgher married the daughter of a plebeian, his children should follow the mother's condition, and were not subject to their father, nor could inherit from him if he died intestate." Upon which the same author further remarks,—"With no further knowledge than of these mere fragments, we can judge but little of the tenor of the whole law; but yet, if we had the entire text of the twelve tables before us, we should probably find in them no direct mention of the great constitutional changes which the decemvirs are with reason supposed to have effected. Their code of laws was the expression of their legislative rather than of their constituent power; it contained the rules hereafter to be observed by the Roman people, but would not notice those organic changes by which the very composition, so to speak, of the people itself, was so greatly altered."

These are the remarks of a writer who is deeply imbued with a persuasion of the fundamental authenticity of the history of this and of much earlier times; but to others the pretended legislation of the decemvirs seems hardly less apocryphal than the narrative by which it is accompanied. The fall of these tyrants was followed, we are assured, by a strong popular re-action; so much so, that the new consuls, bearing, it may be observed, the mythical names of Valerius and Horatius, are enabled to restore the tribunate, increased in number to ten; to rehabilitate the comitia of the tribes, degraded by the laws of the decemvirs; to secure for the decrees of this assembly (*plebiscita*) a force binding on all the orders of the state; and yet the prohibition of intermarriage, the most galling mark of class inferiority, is not only suffered to remain, but is even published by them as the last legacy of the tyrants, and remains as a brand upon the face of the plebeian order for many years to come. "The decemviral legislation," says a bold but candid inquirer of more recent date, "was, as we have seen, a measure which originated with the plebeians; but it was turned to their oppression, and was overthrown by their resistance. It was intended to remove the inequalities between the two orders, but it seems to have added to them. The decemviral government having sprung out of the demands of the plebs, is put down by a plebeian secession; an extreme measure, and only one degree short of insurrection or civil war. When the plebs return, they appear to be able to dictate their own terms; the consuls chosen are devoted to their interest, and introduce important legislative measures of a popular character. The only real equalization of rights effected at this time is that which follows the decemviral legislation; the twelve tables themselves did nothing for effacing the privileges of the patricians and the disabilities of the plebeians. . . . The description of the outburst of plebeian power, of the fears of the patricians lest they should be made the subjects of vindictive impeachment, . . . renders it quite unintelligible why the laws of the two tables prohibiting marriages be-

tween patricians and plebeians should have been passed after the fall of the decemvirs, or if it had been enacted by the decemvirs, why it should not at this moment have been repealed." (Lewis, *On the Credibility of Roman History*, ii. 253.)

Nor, it may be added, looking again at the reputed legislation of the decemvirs, can we conceive why it should have been necessary to resort to Greece and Athens for principles of law which issued in a series of enactments of so local and national a colour. The matters upon which the decemvirs are supposed to decide are precisely those which have been ever in debate between the two orders of the Roman people, and their methods of solution are the same which have been already ventilated and discussed, according to our authorities, in its assemblies. We shall have occasion to notice hereafter how gratuitously the first writers of Roman history sought to establish a connection between primitive Rome and the more cultivated world of Greece; and there seems much reason to believe that this pretended commission to the land of Solon was a pure invention either of Grecian vanity or of Italian admiration. An attempt indeed is made by some modern critics to establish a distinction between the military and political history, such as we have received them, of early Rome. "While the sceptical conclusions of Sir G. C. Lewis," says Dr Liddell, "may be conceded in full for almost all the wars and foreign transactions of early times, we must yet claim attention for the civil history of Rome in the first ages of the republic. There is about it a consistency of progress, and a clearness of intelligence, that would make its fabrication more wonderful than its transmission in a half-traditionary form. When tradition rests solely on memory, it is fleeting and uncertain; but when it is connected with customs, laws, and institutions, such as those of which Rome was justly proud, and to which the ruling party clung with desperate tenacity, its evidence must doubtless be carefully sifted and duly estimated, but ought not altogether to be set aside." (Liddell's *History of Rome*, Preface.) The same distinction had been previously drawn by Niebuhr and Arnold, and made the ground for an inferential re-construction of Roman history, after the rejection of a large proportion of its details. We have indicated in the preceding paragraph the nature of Sir G. C. Lewis's argument to show that the pretended records of constitutional progress of the republic bear the same marks of confusion and invention as those of her external career. The people who elaborated the wonderful system of Roman jurisprudence had no doubt a peculiar instinct for investigating the causes and origin of their political institutions; and they naturally demanded from their annalists a solution of the phenomena of political usage not less urgently than an account of their families and their conquests. In the entire absence, as we shall presently see, of all authentic history or genuine tradition upon both these subjects, they were perhaps as prone to throw themselves upon pure invention for the one as for the other.

SECT. VIII.—THE GAULS AT ROME.

We shall content ourselves accordingly with passing as The Gauls lightly over the political as the military history of the years at Rome. next ensuing. On the one hand we may observe, the patricians are represented as strengthening themselves by the establishment of the office of censors, two magistrates appointed at intervals of five years to hold a census of property and population, to revise the roll of the knights and senators, and determine the civil status of every member of the commonwealth. These arbiters of rank and privilege were to be patricians only. On the other hand, we read that the tribune Canuleius obtained a law for removing the disabilities which attached to marriage between the

Political History.

Political
History.

Military
tribunes.

Sp. Mælius,
A.U. 315,
B.C. 439.

Camillus.
Capture of
Veii,
A.U. 358,
B.C. 396.

The Gauls
in the Cis-
alpine.

Battle of
the Allia,
A.U. 360,
B.C. 394.

two classes. At this period commenced the practice, which continued for a series of years, of appointing military tribunes, six in number, in the place of the two consuls. According to some accounts, this was a contrivance for evading the necessity of opening the consulship to plebeians; other authorities alleged that it was demanded by the multiplication of wars in which the commonwealth was now constantly engaged. In the year 315 (B.C. 439) Cincinnatus was created dictator a second time to quell a fresh sedition of the commons; and his master of the horse, or second in command, Servilius Ahala, performed the notable exploit of cutting down the demagogue Spurius Mælius, accused of aspiring to the tyranny. Thirty years later, the plebeians are said to have forced themselves into the quæstorship, the first of the curule magistracies, the lowest step in the career of honours, through which the candidate for the consul's chair was ordinarily required to pass. Humble as this privilege was, it is said to have been regarded by them as a great prize, inasmuch as it opened the way to the long-coveted eminence—the command of armies, and the glories of a triumph. Meanwhile the wars of Rome were waged, for the most part, as before, with the Volscians, the Æquians, and the Veientes, with a general success only occasionally chequered by defeat, but brought no apparent extension of her frontiers. The final conquest of Veii in the year 358, after a ten years' siege, by the great Camillus, attended by many circumstances which bespeak a legendary origin, was speedily followed by the first authentic event in Roman history, the capture and burning of the city by the Gauls.

While the victorious Romans were pressing upon the declining power of the Etruscans in the south, the advance of the Gauls of the great Cisalpine plain had harassed them in the opposite quarter. Two centuries had elapsed since the barrier of the Alps had been burst by a great Celtic immigration, and the valley of the Po, once the seat of numerous Etruscan colonies, had been overrun and occupied by the northern barbarians. The Senones, the vanguard of the Gaulish invasion, had penetrated to the banks of the Æsis and the coast of the Adriatic, and had threatened for more than a century to take advantage of the increasing weakness of Etruria, and descend upon the smiling valleys of lower Italy. At last 30,000 warriors of this tribe, having threaded the passes of the Apennines, appeared before the walls of Clusium, and demanded an assignment of lands. The Clusians implored the intervention of Rome, —such it seems was the authority of the warlike republic at 150 miles from its frontiers,—and the Senate dispatched, not a military force, but three distinguished envoys, to require the intruders to desist from their attack. But when the Gauls refused to hearken to these demands, the envoys, not content with delivering their message in the character of ambassadors, violated the law of nations by actively joining the Clusians in the defence of their territory. The barbarians indignantly broke up their leaguer, and poured the full tide of invasion down the valley of the Tiber. The Feciales or heralds, as interpreters of international law, urged that the treacherous envoys should be surrendered in expiation of the national sin; but the influence of the illustrious Fabian house, to which the culprits belonged, prevailed to protect them, and engaged the people to repel the assailants by force. The armed militia of the city sallied forth to the encounter; but on the banks of the Allia, eleven miles from the gates of Rome, was routed with bloody and disastrous defeat. So completely was the strength of the republic broken by this single overthrow that it was impossible even to defend the walls. The flower of the citizens threw themselves into the Capitol, but the mass of the population, remaining below, was exposed to the fury of the barbarians; and while the priests and vestals carried off the sacred images to the friendly city of Cære in

Etruria, an hundred aged senators, who refused to leave the city in whose service they had grown gray, were murdered in the Forum or in their houses. Rome was given up to pillage and conflagration.

This terrible catastrophe followed quickly upon the exile of Camillus, whom the people in their ingratitude had accused of various misdemeanours, and who, in quitting the city, had imprecated a curse upon it. Camillus had retired to Ardea, and now watched his opportunity to relieve the state on which the gods had so signally avenged him. The fugitives from the Allia and those from the city had rallied at Veii; and, re-assured by some successful skirmishes, they invited Camillus to put himself at their head, and assume the office of dictator. To confirm this appointment the consent of the Senate and curies was required; so punctually did even the legends of Rome respect the claims of constitutional usage. A young plebeian, Pontius Cominius, undertook to communicate with them, and scaled the rock of the Capitoline unperceived by the enemy. The Gauls, hitherto unable to find an access to the summit, tracked his footsteps, and surprised the garrison by night. The defenders were sleeping securely; even the dogs were lulled in slumber; but the geese, sacred to Juno, clamoured at the noise, awoke the guards just in time; and Manlius distinguished himself above the rest by the vigour with which he repelled the assailants, and hurled them from the ramparts. The Romans, however, in their impregnable fortress were suffering from scarcity. Camillus delayed to appear; they were compelled to treat with the Gauls, who on their part were anxious to withdraw for the defence of their own country against an attack of the Veneti. It was agreed that the invaders should withdraw with 1000 lb. of gold as the ransom of Rome. When this sum was som of the being weighed out, the barbarians were detected in using false weights; but when the Romans remonstrated, Brennus the Gaulish chief cast his sword into the scale against them, exclaiming, "Woe to the vanquished!" But this insolence met its due reward. Camillus, having at last collected and trained his forces, attacked the foe on his route homeward, routed him with great slaughter, and recovered the ransom of the city. The people, he declared, had had no right to pay it without the consent of the dictator. The sum thus restored was placed in the vaults of the Capitol, to be there preserved as a sacred deposit, and never expended except in repelling a future invasion of the Gauls. Such an occasion never again presented itself, but the treasure, it was said, was centuries later rifled by the man who conquered their country, and made invasion for ever impossible.

From first to last poetical justice is satisfied on all sides. The story of the capture of the city is the most perfect in all its parts of the poetical rhapsodies in Roman story. Yet that the legend has a groundwork of actual truth, there can be no reasonable doubt. That Rome was once sacked by a sudden irruption of Gauls from beyond the Apennines, must be regarded as proved by an authentic tradition. The manner in which the city was rebuilt, so hastily and inconsiderately, that the lines of the new streets often crossed the sewers of more ancient construction, was a visible proof of this event to a later generation. To modern criticism it is attested by the evident loss of almost every monument of history and antiquity beyond this date. No such catastrophe occurred again, and accordingly we seem at this period to get hold at last of the extreme link of the chain of genuine tradition; and though we shall find reason still, for at least another century, to question much of the details of the history, we may believe that the main foundation of events, of names, and of dates, is preserved continuously from henceforth through accredited records, whether public or private. Camillus, the second founder, as he was gratefully entitled, of the city, was in fact the original founder of historic Rome.

Political
History.

Burning of
the city.

Pontius
Cominius.

Manlius
defends the
Capitol.

The ran-
som of the
city.

Political History.

Political History.

SECT. IX.—UNION OF THE TWO ORDERS BY THE LICINIAN AND PUBLILIAN LAWS.

Agrarian laws of Licinius and Sextius, A.U. 377, B.C. 377.

Union of the two orders by the Licinian and Publilian laws.

"Yet still," says Arnold, "no period of Roman history since the first institution of the tribunes of the commons is really more obscure than the thirty years immediately following the retreat of the Gauls. And the reason of this is, that when there are no contemporary historians, the mere existence of public documents affords no security for the preservation of a real knowledge of men and actions. The documents may exist, but they give no evidence; they are neglected or corrupted at pleasure by poets and panegyrists; and a fictitious story gains firm possession of the public mind, because there is no one to take the pains of promulgating the truth. And thus it has happened that the panegyrists of Camillus and of the other great patrician families, finding ready belief in many instances from national vanity, have so disguised the real course of events that at no other period of Roman history is it more difficult to restore it."¹

To attempt any such restoration, even did it appear feasible, would not be within the scope of this sketch of history. It will be sufficient to make a passing reference to a few striking incidents recorded, all of which have probably a foundation in truth, though disguised no doubt, and encumbered by many fictitious adjuncts. On the retreat of the Gauls, the Roman people entertained, it is said, the thought of abandoning their ruined homes, and migrating in a body to Veii. Camillus in vain conjured them not to desert the soil of their ancestors, but a passing omen, the voice of a centurion exclaiming "Plant the standard here, here we had best remain," determined them to stay. We can easily believe that the losses of this Gallic war were the occasion of an addition of four new tribes to the city, comprising the free inhabitants of the lands taken from the Veientes. The state was invigorated by this increase in its numbers, and enabled to prosecute a fresh series of campaigns with the Volscians and Æquians, as well as with the Gauls, who, notwithstanding their alleged retreat homewards, and the disastrous defeat which is said to have attended it, appear to have settled themselves in fixed habitations at Tibur on the Anio, and other stations on the Sabine frontier. To this period, and to this continued struggle with the northern barbarians, are referred some of the most romantic incidents of Roman story,—the winning of the golden collar by Manlius, and the aid vouchsafed by a heaven-sent crow to Valerius. Such were the pretended facts by which the family panegyrists explained the names of the Torquati and the Corvini, houses largely celebrated in the later history of the republic.

Manlius Torquatus, Valerius Corvus.

As, however, the external history is now little else than a repetition of such border contests as have been related more than once before, so the internal history presents us with a new edition of the old quarrels between the debtors and their patrician creditors, of the struggles for political equality between the rival classes, and for the establishment of an agrarian law. With respect to the first, the story still runs in its old channel. The people repine at the sufferings of their brave but impoverished veterans, and demand redress for the present and security for the future. On the one side murmurs and sedition, on the other the creation of a dictator. The gallant Manlius throws himself into the popular cause; he is accused of treason; the people are induced to repudiate his championship; and he is cast as a traitor from the Tarpeian rock. The house on the Capitoline, presented to him for his brave defence of the temple against the Gauls, is razed to the ground, and the Manlian gens forbidden from henceforth to use the præ-

nomen of Marcus. The next domestic occurrence is the carrying of an agrarian law by the tribunes Licinius and Sextius in 377, by which it is provided that no citizen shall hold more than 500 jugera (about 320 acres) of the public land, nor feed on the public pastures beyond a certain number of cattle. Finally, in the same year, the plebs achieves the great charter of its liberties, in the decree that one of the consuls shall be always a plebeian. Such an enactment supposes, of course, the revival of the consulship on its old footing; nevertheless the Fasti continue for several years to insert the names, not of consuls, but of military tribunes; and it is not till 388 that a plebeian consul is at last appointed in the person of Sextius himself. Our account of the way in which this change was effected is characteristic of the strain of domestic romance which forms the basis of so large a portion of our early history.

Q. Fabius Ambustus, a patrician of high rank, had married his two daughters, the one to Sulpicius a patrician, the other to the plebeian tribune Licinius. Visiting one day at her sister's house, the wife of Licinius was surprised at the formal ceremony with which a lictor knocked at the door of Sulpicius, who was then consular tribune. The consort of the privileged noble laughed at the ignorance of the plebeian's wife, who complained with tears to her husband and her father, and engaged them to combine in effecting a reform which should place her on a level with her haughty sister. Modern critics gravely assure us that this story must be a fiction, inasmuch as the plebeian's wife was daughter of a man who had been consular tribune not long before; and Licinius himself, though a plebeian, was as competent to hold the office and enjoy the services of the lictors as any patrician. If we felt that we were here upon historical ground, we should not regard this as any presumption against the truth of the story. The young wife may have been as inexperienced as a child. But the legend was never intended to challenge criticism.

We may conjecture that the interminable repetitions of similar phases of the great constitutional conflict,—the same complaints, the same concessions, the same evasions, the same reprisals,—have arisen from an attempt to reconcile the claims of various illustrious houses, some to having proposed popular measures, others to having baffled them; thus spreading over various epochs, and dividing among many individuals, the incidents of a political warfare really limited in duration, and confined to a few prominent actors. M. Michelet has pointed out a curious coincidence which may be thought to have some significance, in the repetition of the same names, as connected with these struggles. Thus a Brutus, a Valerius, and a Horatius, are more than once at hand whenever a popular movement requires a patron. A Spurius Cassius, a Spurius Mælius, and a Spurius Metilius, are all alike noble sufferers in the cause of plebeian independence. If the well-known later meaning of the word *Spurius* belong to it properly and originally, the name may have been applied by patrician annalists to those *false* aristocrats who betrayed the interests of their own faction; if, on the other hand, we assume its derivation from *super*, implying *true* greatness and nobility, we may ascribe its recurrence to the invention of the plebeians themselves in their zeal for the glorification of such unexpected champions. A son of Camillus, the first who held the office of prætor, created by the dictator as a compromise between the two classes, is also known by the prænomen of Spurius. The same is given also to Servilius Ahala, one of the most noted champions of the aristocracy; from whence we should the more readily infer that in all these cases it was alike applied in token of admiration by

Death of Manlius, A.U. 370, C.B. 348.

¹ Arnold, *History of Rome*, ii. 2.

Political
History.

the partizans of the person so designated. It is remarkable that this prænomen, so common throughout the period of these domestic struggles, occurs but rarely either before or after it. But whatever may be our scepticism regarding the early conflict of two classes, we may reasonably accept the date at which we have now arrived as the epoch of their actual union. The Temple of Concord, dedicated on this occasion by the aged Camillus beneath the slope of the Capitoline, constituted a visible record of the fact, of which some remains are still existing. During the next thirty years indeed the contest still continued fitfully; the patricians yielding step by step with reluctance, the plebeians pressing their advantage. It terminated, however, with the appointment of a plebeian dictator, Publius Philo, in 415, who carried enactments,—1. For enforcing the obligation of the plebiscita on the whole nation; and 2. For allowing both consuls to be plebeians as well as the prætors, and requiring the appointment of one of the censors from each class.

The Publilian laws,
A.U. 415,
B.C. 339.

The great
Latin war.
Decius
Mus.
A.U. 414–
416,
B.C. 340–
338.

A period of warfare with the Etruscans and some of the Latin tribes still accompanies this protracted struggle; but the Romans are strengthened by the conciliation of the commons, and the alleged addition of two new tribes seems to show an increase of numbers, probably from the submission and incorporation of foreigners. The Latin states, which had long since violated their ancient treaty with Rome, now seek to renew it; but Rome chooses rather to subdue her faithless allies than accept their alliance on terms of equality. The “great Latin war,” as the historians have entitled it, is rendered illustrious by its legends of the military execution of T. Manlius by his father, and of the self-devotion of Decius Mus. The result of the war is the complete and final reduction of Latium. “Three years,” says Dr Arnold, “were sufficient to finish for ever the *most important war* in which Rome was at any time engaged.”

SECT. X.—THE SAMNITE WARS, AND CONQUEST OF CENTRAL ITALY.

The Samnite wars,
and conquest of
central
Italy.

Roman history now enters upon a wider field. A branch of the great Sabellian nation, the inhabitants of the mountain tracts of central Italy, having extended their conquests far into the south, have made themselves masters of the Etruscan colonies in Campania. The Samnites are established in Capua, Nola, Cumæ, and other cities, and have here assumed the name of Campanians, from the country to which they have succeeded. Their influence extends throughout the Greek cities of the coast, Neapolis and Palæopolis, Stabiæ and Herculaneum; with the old name of Samnites they have lost their ancient language and national associations; and this offshoot from the parent race now finds itself arrayed in war against other branches of the same original stock, the Samnites of the mountains. The Campanians, as the weaker and less warlike of these nations may now be called, solicited the assistance of Rome against the attack of their hardier kinsmen, and offered to surrender their city to the republic as the price of her powerful protection.

A.U. 411,
B.C. 343.
Dawn of
genuine
history.

We have now reached the dawn of genuine history, and the narrative of events recorded by the historians assumes a new complexion. We lose sight from henceforth of the train of marvellous and romantic stories which imparted a seductive charm to our earlier records; but in return we obtain a glimpse at least of political combinations and strategic manœuvres which throws an air of truthfulness over the narrative that follows. Family pride indeed may have

coloured some of the details and suppressed others; but we have got beyond the era of mere fabrication. The Roman history is at least simply told from Roman sources and its very meagreness and obscurity may be accepted as a token of its substantial genuineness. Yet this was the period when the Romans first came in actual contact with the Greeks, the most curious and diligent of historical inquirers, who might have taught them to understand and describe events with greater spirit and precision. A Greek writer assures us that at this era the Romans sent an embassy, along with the Etruscans, to the great Alexander of Macedon.¹ Another Alexander, King of Epirus, had landed about the same time on the coast of Lucania, and defeated a Samnite army in the neighbourhood of Pæstum. The Romans hastened to form an alliance with this new comer, in the year 423 (B.C. 331). But from this alliance with one Grecian power they were soon led into hostilities against others. They engaged in war with the Greek cities of Neapolis and Palæopolis, inadequately protected by their dependence on the Campanians; but their means, perhaps, for reducing places defended and fortified by the rules of art were slender, and the war was protracted through more than one campaign. The Roman armies had now for the first time advanced so far from the capital that it was inconvenient to return home with the approach of winter. For the first time the consul in command was directed to hold his ground, and retain his place at the head of the legions, with the title of proconsul.

Political
History.

An interval of fourteen years had elapsed since the surrender of Capua and the first brief collision with the Samnites; but the second war, commencing in the year 428, was distinguished by a duration of more than twenty years, and by the terrible disaster of the Caudine Forks, where a Roman army was entangled in a defile, and compelled to lay down its arms and pass under the yoke, by the gallant Pontius Telesinus. The disgrace was harder to bear than the disaster. The city clothed itself in mourning; the consuls, who had submitted in person to this ignominy, dared not re-assume their places. Twice was a dictator nominated, but each time the auspices forbade his creation. At last Valerius Corvus, the interrex, or provisional chief magistrate, caused two of the most distinguished citizens, Papirius Cursor and Publius Philo, to be elected consuls; and Posthumius, one of the beaten generals, declaring that the republic ought not to be bound by the terms which in his distress had been extorted from him, insisted that he should himself be given up to the enemy, together with his colleagues the quæstors and tribunes, and every other officer of the legions who had signed the disgraceful capitulation. Pontius, indignant or generous, or possibly coolly calculating the consequences of accepting the proffered satisfaction for a deliberate breach of public faith, refused to receive these prisoners, and demanded the literal fulfilment of the terms they had exchanged with him. War recommenced. The Samnites gained some successes, but the Romans gradually got the upper hand; the consuls penetrated into Apulia, took Lucania, and recovered the arms, the ensigns, and the hostages captured at Caudium. Possibly the Romans fabricated the story of a complete defeat of their enemies, and the retrieval of their own dishonour by making the Samnites pass under the yoke in their turn. The brave Pontius, however, was carried captive to Rome. Nevertheless we hear soon afterwards of an irruption of the Samnites into the Roman territories in Campania, the defection of Capua, and the great defeat of the dictator Fabius Maximus at Lautulæ. These losses were balanced again by a second victory in 440, once more in the neighbourhood of Caudium, in which the Samnites were totally

A.U. 428,
B.C. 326.

The Caudine Forks,
A.U. 433,
B.C. 321.

Pontius the
Samnite.

¹ Strabo, v., p. 232; Arnold, ii. 172.

Political
History.

routed. Campania is now recovered; the enemy shut up in the Apennines; colonies established, as outposts of the Roman power, at Suessa Aurunca, Interamna on the Liris, Casinum and Luceria; and the Romans so far advance in enterprise and confidence as to commence the construction of a navy to overawe the distant seaport of Tarentum. In 442 (B.C. 312) a second Decius Mus gains a triumph, for the first time, over the Samnites; but this is speedily followed by a long succession of similar distinctions. An alliance of the Samnites with the Etruscans created at this moment a formidable diversion against Rome; but the vigour and fortune of the republic prevailed, and her outposts were advanced far forward in every direction before the Samnites sued for peace.

The second Samnite war was concluded in 450; the third commenced in 455. The Samnites had again combined with the Etrurians, and had extended their league to the Umbrians and other nations of central Italy. A fresh body of Gauls was secured to this formidable alliance. This was the crowning struggle for Roman supremacy in the peninsula. The great battle of Sentinum, in which victory was secured to the republic by the self-devotion of the younger Decius, resulted in the total overthrow of the Gauls and Samnites by Q. Fabius Maximus, and was undoubtedly one of the most important actions in which the arms of Rome were engaged. The alliance of the Italian nations was broken up; henceforth the contest became more desultory, and its details are imperfectly recorded. L. Papirius Cursor and Sp. Carvilius are now the most distinguished of the Roman generals. The brave Pontius is made prisoner, led in triumph, and cruelly executed, according to the established usage of Roman warfare. The Samnites submit for the third time in the year 464 (B.C. 290). They appear indeed once more in arms a few years later, but only as the subordinate allies of a new enemy. Their independence is now finally broken, and the Roman power is definitively established over lower Italy, with the exception of a few Grecian cities in Lucania and Bruttium. Latium, Campania, Apulia, and Samnium, have now fallen under the sword of the republic. In the north the Etruscans are still hostile, but cowed and dispirited. The Gauls still hover on the frontiers of the Roman dominion, and still shake from time to time, in a well-timed foray, the unsteady allegiance of the Umbrians and Pelignians. Bands of Samnites still maintain a guerilla warfare in remote districts, and agitate the untamed savagery of Calabria, a people formed, so both Greeks and Romans asserted, by the concourse of fugitive slaves in its woods and mountains. The Grecian cities on the Lucanian coast were trembling at the steady advance of the conquerors from the Tiber. Tarentum, the only one of them which now retained an active vitality, hastened, in its feverish excitement, to form a new coalition against Rome, in which some states of Etruria were induced to join. The prætor Metellus, with 13,000 men, fell in an attempt to succour Arretium, and at the news of this disaster the Gaulish Senones rushed at once to arms. The consul Dolabella swiftly crossed the Apennines, and attacked these barbarians in their own territory, which he ravaged, in return for the devastation they had so often committed in Latium. The great battle of the Vadimonian lake crushed the Gauls and Etruscans together. Peace was re-established about 472; and without a formal surrender of the Etruscan cities, the Romans could depend from henceforth on the sure effect of their weakness and despair in reducing them to complete submission. Meanwhile the republic had been no less successful in the south. Fabricius took Thurii, and carried off the first Grecian booty to Rome. The coalition was utterly broken; and Tarentum, still unassailed, but denuded of her Italian allies, was obliged to look beyond Italy for her future protectors.

VOL. XIX.

SECT. XI.—THE WAR WITH PYRRHUS.

Political
History.

The war
with Pyr-
rhus.

Rome was now destined to encounter, for the first time, the highest form of civilization and the most scientific military tactics of the ancient world. The luxurious and unwarlike cities of the Lucanian coast, though Greek by origin, had long lost the valour and discipline of their nation, and could only oppose to the rude warriors of Latium the arts of policy and statecraft. But now a genuine Greek soldiery was about to appear upon the stage, with the strength of the Macedonian phalanx and the resources of Grecian economy.

The Romans had constructed some vessels at Thurii. With these they were cruising in the Gulf of Tarentum, now nominally at peace with the republic, when the Tarentines, jealous of this attempt to form a navy, sallied forth from their harbour, declaring that the Romans were bound by treaty not to navigate their ships beyond the Lacinian promontory, and destroyed or chased home the Roman vessels. They even followed up this insult by an attack on the Roman garrison at Thurii. When Posthumius arrives as an ambassador to lay his complaint before them, they assail him with mockery and insult. He swears that the filth they fling upon his toga shall be washed away in their blood. A Roman army speedily appears before Tarentum; and the nobles, who had taken no part, perhaps, in the brutal violence of their populace, would have yielded at once; but the people, in their vanity, scorned submission to the foreigner, and invoked the aid of Pyrrhus, King of Epirus. This chief, the most noted warrior of his age, was the cousin, though several years junior, of Alexander the Great. He had succeeded his father in regular course in the throne of Epirus; but his career had been from the first that of an adventurer rather than of a sovereign. Ambitious, restless, and captivated with a vague aspiration for glory, in imitation of his illustrious relative, he was easily persuaded by the Tarentines, who promised him an extensive alliance and a force of 350,000 combatants, to undertake the deliverance of the Greeks in Italy from the threatened yoke of obscure barbarians. Landing with a veteran force of 25,000 men, and attended by 20 elephants, Pyrrhus gained a victory at Heraclea over the first consular army of the Romans, but with such loss on his own side as caused him to remark already, that such another victory would be his ruin. He recovered, indeed, some towns on the coast, as the fruits of this hard-won triumph; but the promised allies failed to make their appearance; he found the Tarentines nerveless and inefficient; he was glad to disguise his mortification by offering terms of peace to the Romans, on condition of their leaving the Greek cities in freedom, and restoring their lands to the Samnites and Apulians. Cineas, the envoy whom he sent with these terms to Rome, returned unsuccessful, but filled with admiration of the numbers, the bravery, and undaunted spirit of his master's enemies. This report inspired the King of Epirus with increased anxiety; but, brave and daring as he was, he determined to make a bold dash, and, turning the flank of a second army opposed to him, he got within a few leagues of Rome itself. A third force was recalled from the borders of Etruria to cover the capital, and he was compelled to retreat, lest he should find himself surrounded. The Romans now sent in their turn an embassy to treat for the ransom of their prisoners. The courage and presence of mind displayed by Fabricius, according to the well-known story, made a deep impression on the mind of Pyrrhus; and when the republic generously advertised him of a plot for his assassination, he was so touched by this trait of honourable feeling that he sent back the prisoners without terms. Meanwhile the condition of the Greeks in Sicily, assailed by the fleets of Carthage, became even more pressing than that of their compatriots in Italy, and Pyrrhus

Battle of
Heraclea.

Battle of
the Vadi-
monian
lake,
A.U. 471,
B.C. 283.

Political
History.

seized the excuse for postponing his contest with Rome, and transporting himself to Syracuse. Here, again, his first successes only led him into fresh difficulties, and once more he was glad to escape from his actual embarrassments, and try his fortune in Italy. The Romans, however, had had time to recover from their losses; and now, familiarized with the aspect of the formidable elephants,—bulls of Lucania, as they ignorantly termed them,—they were fully a match for the Greek army in the field. Curius Dentatus gained the victory of Beneventum, and Pyrrhus was compelled to fly ignominiously to his own dominions. Curius triumphed, in a chariot drawn by four of the Libyan monsters he had taught the Romans to despise. Pyrrhus fell soon afterwards in an obscure struggle at Argos. Hostilities continued in the south of Italy for some years longer. Papirius and Carvilius once more overcame the Samnites. Tarentum submitted; its walls were overthrown, its arms and ships forfeited to the conquerors. The Carthaginians, who had recently offered their alliance to Rome, were warned off the shores of Italy, which were now completely subjected to Rome, from the Æsar and Rubicon in the north to the Straits of Messina and the Iapygian promontory.

Battle of
Beneven-
tum.Pyrrhus
slain at
Argos.A.U. 482,
B.C. 272.

SECT. XII.—REVIEW OF THE ROMAN GOVERNMENT AT THE PERIOD OF THE CONQUEST OF ITALY.

Review of
the Roman
government
at the
period of
the con-
quest of
Italy.

The Romans had now conquered Italy, and made the first great step towards the conquest of the world. We must pause for a moment to review the way in which they organized these new dominions, and made them a ground of vantage for the further extension of their power.

The most striking difference in the development of ancient and modern politics results from the generally republican character of the one, and monarchic constitution of the other. The extension of the Athenian and of the Roman empire was formed either by conquest or colonization, while that of the great states of modern Europe has resulted far more commonly from dynastic marriages and successions. Had ancient Italy been parcelled out among a number of sovereign families, it would probably have fallen, state by state, under the sway of one fortunate dynasty; wars might have played a part in the transformation, but dynastic alliances would have been still more effectual; Mars might have brought many nations under the yoke, but the influence of Venus would have proved still more powerful. The populations of the peninsula were sufficiently homogeneous to have constituted an aggregate people, of equal laws and similar institutions, from the Rubicon to the Straits of Messina. It might still be a question whether the configuration of the country—its great length and slender breadth of surface, its mountain divisions and diversities of soil and climate—would have permitted in ancient times a national union on such a footing, the impracticability of which in our days is recognised as a political maxim; but however this may be, the republican character of the Italian institutions of itself precluded the operation of those peaceful influences which, as we have said, might have been more effective to such an end than war, and it only remained to be seen whether the rivalries and animosities of so many equal neighbours would terminate in their mutual exhaustion and ruin, or in the avowed predominance of one.

The latter alternative, as we have seen, found place. The predominance of Rome was acknowledged. We have now to see by what methods she maintained and perpetuated it. It was no part of her policy, for it did not come within the scope of Italian ideas, to mould her conquests into one nation. On the contrary, her object was to wrest from the vanquished their independence, to stifle their nationality, to make them docile subjects; for this end, to create dif-

ferences and foster jealousies among them, to separate the one from another in feeling and usage, and prevent their combining together for any common purpose, least of all for the purpose of extorting common terms from their conquerors.

In the early times the patricians had been the citizens, the plebeians the subjects of the state. This distinction had, in process of time, and through many struggles, become nearly obliterated. The Romans and Italians were now to go through a like career in relation to one another. But the Romans had now become more or less conscious of the principle under which their early revolutions had evolved themselves, and they seem to have contemplated steadily from the first the gradual progress of the Italians to the goal of civic equality. They decreed that the sovereign people should be always the people of the Forum, and that its civil rights should only be exercised within the sacred limits of the city; but they provided at the same time for the admission of their subjects, one by one, within these limits, as a long probation of service and dependence should seem gradually to qualify them for political assimilation. Such admission might wound the pride and touch the immediate interests of a race of conquerors and plunderers; but the spirit of ambition and cupidity required fresh recruits to maintain it, and as the empire was extended, greater numbers were necessary to preserve it. Between the years A.U. 370–490 (384 and 264 B.C.) twelve new tribes were created, and the *Ager Romanus*, or national domain, extended from the Ciminian wood in Etruria, on the one side, to the middle of Campania, on the other. Upon this territory the censors enumerated 292,334 men capable of bearing arms, or a total population of 1,200,000 souls, to form the great central garrison of Italy. Two centuries before, according to one account, the military force of Rome was computed at only 104,214 men. While we may decline to place any reliance at least on these latter numbers, the fact of their being thus recorded evinces the belief of the Romans themselves in the early practice of political incorporation.

If we may speak of an original Roman people as contrasted with the aggregate now created, we may believe that at this time its numbers did not exceed one-half of the whole body. But the original twenty-one tribes gave it so many suffrages in the assembly, while the new recruits were enrolled in twelve additional tribes only, and exercised no more than twelve votes. Such were the tribes of the Etruscans, the Latins, the Ausonians, the Æquians, and the Volscians. A little later than the era at which we have arrived, in the year of the city 513, two more tribes were appropriated to the Sabines. But besides their inferiority in number, these new and extraneous members of the national body had little opportunity, from their distance from the Forum, of influencing the course of affairs in the city. Nor, though thus stationed in the immediate neighbourhood of the capital, did these foreign tribes occupy the whole surrounding territory. The *Ager Romanus* was intersected, almost within sight from the gates, by parcels of land which still remained in the hands of strangers, and bore the designation of *Ager peregrinus*. Several cities of Latium, such as Tibur and Præneste, still bore the title of Latin instead of Roman, retained their own municipal institutions, and were attached to the republic not by the possession of the Roman franchise, but by the condition of a specific eligibility to it. Any of their citizens who had served certain magistracies in them, became qualified thereby for the enjoyment of citizenship at Rome, and the constant accession of individuals from this source helped to replenish the void made by perennial warfare, no less than the occasional introduction into the state of corporate communities.

The franchise, or rights of the city, thus obtained,—the object for the most part of the dearest vows of the subjects

Political
History.

Political
History.

of Rome,—comprehended, 1. Absolute authority over the wife and children, slaves and chattels; 2. A guarantee of personal liberty, exemption from stripes, security from capital punishment, except by the vote of the people or under military authority in the camp; 3. The suffrage; 4. Access to honours and employments; 5. The possession of Quiritary property, held under Roman law; 6. Immunity from all the taxes and tributes imposed at discretion on the subjects of the state. Such was the complete franchise of Rome; the *jus civitatis optimo jure*. To the Italians beyond the pale of the thirty-five tribes some portion of these privileges might be accorded in various measure and degree. To some the Senate gave the right of dealing (*commercium*), to others that of marriage (*conubium*). The cities of the conquered nations were arranged in different classes, according to the favour in which they were held by the conquerors,—1. The *municipia optimo jure*, or of the first class, the inhabitants of which, whenever they visited Rome, were allowed to exercise there the complete rights of Roman citizenship; 2. The *municipia* without franchise, which enjoyed indeed the title and burdens of citizenship, such as the service in the legions, but were debarred from the suffrage, and from the civil offices of the republic; 3. The cities which had renounced their ancient usages to embrace the laws and institutions of Rome, but yet were not entitled to the name of Roman. But below the *municipia* was yet another class of *prefecturae*, towns subjected to the government of a Roman officer or prefect, under the forms of Roman jurisprudence. These prefectures were generally so classed by way of precaution or punishment. Such was the state to which Capua was reduced after a revolt in which she imprudently engaged against the Romans. Such were the various grades of subjection granted according to the terms of capitulation in each case. There was still a lower rank in the descending scale, that of the *dedititii*, or people who had been reduced by the fortune of war to unconditional submission; these were required to deliver up their arms together with hostages, to raze their walls or to receive a garrison within them, to pay a tribute, and to furnish besides a contingent to the armies of the republic.

The allies, as they were designated, of the republic were a class of states differing in some particulars from all these. They were the dependents of Rome, but flattered themselves that they were not her subjects. The Senate indulged them in a delusion which soothed their pride, and made them more serviceable as auxiliaries than they would have been as indignant bond-servants. Tarentum was allowed to retain the name of a free state, though here the Romans went so far as to level the walls of the city and establish a garrison in its citadel. Neapolis was free, but required to furnish vessels for the Roman marine, and contribute to the pay of its mariners. The Camertines and Heracleotes were declared “equals” of Rome (*æquo fœdere*), on terms of mutual defence. Tibur, Præneste, and most of the Etruscan cities, ranked in the same class; but the Romans took care to foster in all these cities a party of their own friends and creatures, to mould the external conduct of this free state, and, if occasion required, to find them a pretence for interfering with its domestic affairs. Such was the policy of the republic in its relations towards its conquered enemies. It is characterized by a studied absence of general measures, and of uniformity of treatment. It is deliberately framed to maintain and intensify the actual diversities of nations and circumstances. With this view, every possible hindrance, often amounting to specific prohibition, is laid in the way of common action among them, of commerce, and even of intermarriage. Gradually, however, as the power of Rome extended, her

Political
History.

jealousy relaxed, and these distinctions, long maintained, became more and more effaced. They subsided at last into three classes and conditions of rights: the *jus civitatis*, which conferred a share in the sovereignty; the *jus Latii*, which gave access or eligibility to the franchise; the *jus Italicum*, of which the burdens were greater and the prerogatives inferior. This graduated scale of privilege continued to exist under the same name down to a late period in Roman history, and was extended to the later possessions of the republic, long after the obliteration of all political distinctions between the Romans, the Latins, and the inhabitants of the peninsula generally.¹

SECT. XIII.—COLONIES AND MILITARY ROADS.

Neither the interest the more favoured of the Italians Colonies might be expected to take in the Roman franchise, to and military roads. which they were admitted, nor the gratitude of the rest for the remnant they were allowed to retain of their own nationality, could be regarded as sufficient security for their permanent submission. Throughout the length and breadth of the peninsula Rome established her armed garrisons under the form of colonies. In the spot selected for such a military station, a large portion of the national territory was confiscated by the conquerors, and some thousands of the citizens selected by lot, or on their own demand, to receive it in full possession, engaging in return to defend the interests of the republic, which were thus identified with their own. The administration of the colony thus formed, and thus strictly attached to the parent state, was organized on the model of the city. The colonists, as Roman citizens, met in their public assemblies, and chose their decemvirs and their decurions to represent the consuls and senators. Their residence was in every case, perhaps, not a new stronghold constructed for the purpose, but the fortified city of some conquered people, dispossessed even of their habitations to make way for them. Such cities were chosen, of course, for their natural strength or their commanding situation. Thus 6000 colonists were established at Beneventum to cover Campania; 14,000 at Venusia to check the Greeks of the south-eastern coast, to defend Apulia, and control the Lucanians and the Samnites. In Etruria, Sutrium and Nepete watched the valley of the Tiber; Ardea, Satricum, and Antium held the long-disturbed districts of the great plain of Latium; Velitrae, Norba, and Setia kept the keys of the Sabine mountains; Anxur closed the gates of Campania; Fregellæ, Sora, Interannæ, and Minturnæ occupied the line of the Liris, the route of the Samnites when they threatened an assault on Rome. Such were the entrenched camps surrounding the city. Beyond these lay a second line of fortresses, such as Atina, Aquinum, and Casinum, in the heart of the Sabellian mountains; Vescia, Suessa-Aurunca, Sinuessa, Teanum, Cales, among the defiles through which the waters issue from them. To these may be added Alba Fuentia, northward in the country of the Marsians; Cæsula and Carseoli, among the Æquians; and Narnia, which covered the route from Umbria. More than once an enemy, such as Pyrrhus and afterwards Hannibal, succeeded by a bold effort in penetrating this double line; but it was with the loss of his communications, and such imminent danger to his rear, that his advance was paralysed, and a rapid retreat rendered inevitable. Throughout the rest of Italy the colonies were less closely planted. Samnium was occupied by two only, Beneventum and Æsernia; Picenum by three, Adria, Firmum, and Castrum; Umbria by four, Narnia, Spoletum, Ariminum, and Sena. In Campania we may enumerate Satricula, Cales, and Casilinum; Apulia was guarded by Luceria and

¹ Duruy, *Hist. des Romains*, i., ch. xi., § 1.

Political
History.

Venusia; Calabria by Brundisium and Valentia; Lucania by Paestum; while Tarentum, Locri, Rhegium, and some other places, were only held by Roman garrisons.

To bind all these places together, and afford the means of rapid transport for the legions from point to point, the whole peninsula was traversed by numerous roads, generally branching out from Rome to every extremity. In the midst of the great Samnite wars the censor Appius commenced the construction of the Appian Way, which led from Rome across the Pomptine Marshes to Capua. From year to year this example was followed by other munificent officers of the republic; and before the conclusion of another century, the Valerian Way connected the city with Corfinium, the Aurelian coasted the shores of Etruria, the Flaminian reached Ariminum on the frontier of the Cisalpine, and the Æmilian prolonged this line as far as Placentia, on the Po. These roads were "built," according to the phrase of their constructors, with several layers of concrete and masonry, and paved with solid blocks of stone cemented together, which in many places have survived the revolution of centuries, and retain their position at the present day.¹

Panegyric
on the cha-
racter of
the Ro-
mans in the
fifth cen-
tury.

"And what a race of men these new masters of Italy were! Their private virtues legitimized their power; and it was in their manners, not less than in the ability of their Senate, that the secret of Rome's greatness resided. These conquerors of Etruria and Tarentum held poverty, discipline, and devotion ever in honour, and their patriotism partook of a religious sentiment. Three Decii surrendered their lives for the Roman army, and Manlius immolated his son to the genius of discipline. The censor Rutilius, re-elected at the expiration of his term in 265 B.C., convokes the people, and solemnly rebukes its assembly for having conferred such important functions on the same citizens twice in succession. If, on the one hand, a Rufinus must be degraded from the Senate (275 B.C.) notwithstanding his two consulships, a dictatorship, and a triumph, for possessing ten pounds of silver plate, when he was allowed no more than eight ounces; if the consul Posthumus compelled 2000 legionaries to reap his corn or to clear his woods;—Atilius Serranus, on the other, received the consular purple behind his plough; Regulus, though twice consul, possessed no more than one little field in the barren district of Pupinia; and Curius, like Fabricius and Ænilius Papus, prepared his simple meal with his own hands in wooden vessels. The same Curius refused the gold of the Samnites; Fabricius that of Pyrrhus; and Cineas, introduced into the Senate, imagined that he saw before him an assembly of kings.

"By their rigid virtues and austere manners the Romans of that age deserved their empire; by their discipline and their courage they had acquired, by their union they retained it. The perils of the war with Samnium had in fact restored peace between the two orders of citizens. Petty rivalries had been extinguished in the face of the public interest; the emancipation of the plebeians had been effectually accomplished; and the new generation of patricians, bred in the camps, had lost its bitter recollection of the popular victories. The 'new men' were now not less numerous in the Senate than the descendants of old curial families; nor did the services and glory of Papirius Cursor, of Fabius Maximus, of Appius Cæcus, and Valerius Corvus, efface the services and the glory of the three Decii, of Publius, four times consul; of Mænius, twice dictator; of Cæcilius Metellus, who commenced the illustration of the family of which Nævius was afterwards to declare, 'the Metelli are born consuls at Rome;' finally, of Curius Dentatus and Fabricius, plebeians, and not even of Roman origin at all.

"There was union because there was equality; because an aristocracy of blood was no longer recognised, nor was more honour paid to that of fortune. At this epoch the Roman constitution presented that safe combination of royalty, aristocracy, and democracy which Polybius, Machiavel, and Montesquieu have so much admired. The consulship gave it unity in command, the Senate experience in counsel, the people strength in action. By these three powers, mutually restricting themselves within just limits, all the forces of the state, formerly turned one against another, had found at last, after a struggle of more than two centuries, that happy equilibrium which made them all concur, with irresistible power, in working towards one common end, the greatness of the republic."²

Political
History.

SECT. XIV.—SOURCES OF THE HISTORY OF ROME IN THE FIFTH CENTURY.

This glowing panegyric on the character of the Roman people in the best age of the free state may be fairly deduced from the histories of the time which have come down to us. Doubtless in those histories much allowance must be made for a spirit of exaggeration and patriotic colouring in painting the actions and principles of the heroes of the republic. Nevertheless there seems sufficient reason for admitting the general truthfulness of the accounts we have received of this period, and accepting as commonly authentic what professes to be the history of Rome, at least from the time of the wars with Samnium and with Pyrrhus. It will be well to pause, then, at this point, and indicate briefly what may have been the sources of Roman history at this period.

The first writers of early Roman history in a connected form were Greeks,—such as Diocles of Peparethus, Timæus, and Hieronymus. Aristotle had already obtained a glimpse of the rising republic, and had signalized the taking of Rome by the Gauls; but it was not till the Romans entered into relations with Alexander of Molossus, and with Pyrrhus, that their existence became a matter of interest to the people beyond the Adriatic. The first Greek writers on the subject of this Italian city would naturally resort to the colonists of Magna Græcia for such information of their neighbour as they could furnish, and this would be derived, in the first instance, from the floating traditions which, during the preceding century, had reached Neapolis or Tarentum, conveyed by word of mouth, rather than ascertained from the scanty writings and historical monuments which might exist in Rome itself. Hence, no doubt, these original historians gave a prominent place to the stories which connected Rome with Greece,—to the legends of Evander and Æneas, of recourse to the Delphic oracle, or to the records of Athenian legislation, which thus obtained a credit not their due with succeeding inquirers. It is probable that the writings of these foreigners first excited the emulation of the Roman annalists, such as Fabius Pictor and Cincius Alimentus, who began in the sixth century to construct a vernacular History of Rome. We have no reason to suppose that historical composition was an art of native growth at Rome, any more than among other western nations, all of which, including the civilized Etruscans themselves, seem to have been wholly strangers to it. But the Romans, when they applied themselves to the art, had access to other sources than the Greeks who preceded them, and could combine the traditions and fabrications of the Greeks with the meagre chronicles and other fragmentary records existing among them. Thus we know that from a very early antiquity the priests had kept a register of the events in which they were themselves chiefly interested, such as omens and natural phenomena, to which they attached a

Sources of
the history
of Rome in
the fifth
century.

¹ Duruy, *Hist. des Romains*, i., ch. xi., § 2.

² *Ibid.*, p. 333.

Political
History.

religious significance; that there were also certain Fasti, or lists of magistrates, dating from a primitive epoch; and we may surmise that here and there a political incident was noted in one or other of these journals. It is certain, moreover, that the Romans, with their intense family feelings, left some private memorials of their own ancestors, and refreshed their recollection of them from time to time by domestic ceremonies and funeral laudations. The highly romantic character of so much of the early history may lead us also to conjecture that some popular traditions were preserved in the form of poetry, though of this we have no positive testimony whatever; and the inference is by no means strong enough to bear, in default thereof, the elaborate superstructure built upon it by Niebuhr and his followers. The notion, indeed, so suddenly enunciated and so hastily adopted by the students of Roman history, that our early accounts are mainly founded on a defunct series of ballads and epics, may be regarded as already exploded.¹ Thus much, however, is certain, that as far as the memory of long past events was entrusted to a mere oral tradition, its preservation was in the utmost degree precarious; while the monuments, however scanty, of written history were subjected to the sweeping devastation of the Gallic conflagration. The Romans indeed pretended that the Capitol at least had escaped the capture of the city; but no reliance can be placed on their account of the retreat and discomfiture of the Gauls; and there is good reason to suppose that their city, fortress and all, fell into the hands of the destroyers. Very few, therefore, of their records can be supposed to have escaped; it may be doubted whether the two or three documents of a previous period, which Polybius or Pliny believed they had actually seen in their own time, were genuine monuments of the age to which they were presumed to belong. That from that period a systematic fabrication commenced of records pretending to an anterior date may easily be believed; and it is from such fabrications, grounded more or less upon current traditions, that the first annalists of Rome, both Greek and Roman, drew, it may be presumed, a great part of their materials. We see, then, that, down to the period of the Gallic war, there is no firm ground for the historian of Rome. The events recorded he must suspect of being pure inventions; in the pretended progress of the constitution he will trace only a confused attempt to account for political arrangements existing at a later period. But in the sources of history posterior to the great conflagration a great change becomes apparent. Whatever the value of contemporary records may have been, however much they may have embellished and falsified by family or national pride, we may be sure at least that they once actually existed, and continued no doubt to exist for centuries. The first annalists had materials for history, were they but endowed with discretion to sift and read them rightly. It is not to be expected, indeed, that in a rude uncritical age these materials were carefully handled; and still, at least to the time of Pyrrhus, and perhaps for one generation later, many evident falsifications of history are apparent. But from the commencement of the sixth century we may be sure that the memory of events was sufficiently recent to secure the first writers of Roman history from material error regarding them. We may proceed, therefore, from this point, without misgiving, to follow the lines they have traced for us.

SECT. XV.—THE FIRST PUNIC WAR.

Political
History.

The first
Punic war.

While Rome was completing the reduction of Italy, the republic of Carthage, on the opposite coast of Africa, was rivalling her conquests in the islands of the western Mediterranean. The Greek colonies in Sicily had fallen under her dominion, as well as the barbarous tribes of Sardinia. On the extinction of the Grecian power in this quarter, the two rivals were about to come into serious collision. The Carthaginians were preparing to seize the Æolian Islands, barren rocks indeed, but almost within sight of Naples and the Campanian coast. Still, however, a single stronghold withstood them in Sicily, from whence the Romans might hope to make good a footing in that important island, and check their advance beyond it. Messana was occupied by a band of buccaneering adventurers, who had recently overthrown the government, and expelled or subjugated the inhabitants, but now, pressed hard by the Carthaginian power, presumed to solicit assistance from the legitimate government of Rome. To render such assistance was contrary to the principles of international law, even as then understood; the Romans, moreover, had just before visited a similar act of lawlessness with the severest punishment. Now, however, self-interest prevailed, and it was determined to use the opportunity for establishing a Roman force in Sicily.

A.U. 490,
B.C. 264.

Such was the origin of the first Punic war, which commenced in the year 490 (B.C. 264), and lasted without intermission for twenty-two years. The great object of the Romans was to gain possession of Sicily, a rich and fertile country, and of special importance to them, from the abundance of corn which it was fitted to produce; for Rome had already become dependent in some degree on foreign importation for the supply of a population withdrawn from the pursuits of agriculture, and engaged perpetually in the barren exercise of arms. The Strait of Messana is only 3 miles in width, and though watched by the naval forces of the great maritime republic, the Romans had little difficulty in throwing re-inforcements across it: nevertheless, they soon found it essential to their views to contend with the Carthaginians for the dominion of the seas. At first they were obliged to build their ships of war from the model of an enemy's vessel, cast accidentally on their coasts; but this ignorance of naval architecture was the least of their disadvantages in commencing the struggle; for they had no experience of naval tactics, nor even of navigation. Nevertheless they exerted themselves with their usual energy, constructed a numerous fleet, manned it by a conscription of the lowest class of citizens, such as was not admitted to serve in the legions, and fought their ships with crews of mere landmen, aiming rather at grappling and boarding the enemy, than at manœuvring against him, and sinking him with the stroke of the beak. They succeeded almost from the first, though not without many reverses, sometimes from storms, sometimes from the greater skill of the Carthaginians, in keeping the sea at least on terms of equality. In the year 498 (B.C. 256) they had so far gained the ascendancy as to be able to land a large army, under the consul Regulus, on the coast of Africa, with which they ravaged the country, and approached to the walls of the capital. But the Carthaginians, putting forth all their power, here inflicted on them a decisive defeat, making

Regulus in
Africa,
A.U. 498,
B.C. 256.

¹ "The theory of Niebuhr respecting the derivation of the early Roman history from ballads or epic lays, is also examined and refuted by Schwegler, vol. i., pp. 58-63. His principal arguments are:—1. That the conditions of an early national epic poetry were wanting among the Romans; 2. That the early history bears no mark of proceeding from plebeian poets, whose songs were animated by an anti-patrician spirit; 3. That these poems, if they had ever existed, would not have entirely disappeared; 4. That the early Roman history has not the character of free political invention, but is composed in great part of ætiological legends, of stories laboriously invented in order to explain existing names, institutions, customs, rites, and monuments. Schwegler lays it down that, as far as the early Roman history does not consist of ætiological legends, it is the deliberate fabrication of historians, or formed of legal and constitutional traditions." (Sir G. C. Lewis *On the Credibility of Early Roman History*, i. 229.) Such is the conclusion established also by the powerful reasoning of this English writer, and it is now, we believe, generally accepted by the learned in Germany.

Political
History.

Regulus prisoner, and suffering a small remnant only to make good its return to Italy. Regulus, we are told, was afterwards sent to Rome on parole, to negotiate peace. He dissuaded his countrymen from yielding to dishonourable terms, and returned to his captors, to be put to death, according to the popular story, with tortures, but, as the later Romans themselves allowed, to live some years in custody, and eventually to die a natural death. War was again renewed, and continued with alternate successes; the reduction of Panormus by the Romans (A.U. 500, B.C. 254), the defeat of their fleet at Drepanum (505, 249), the loss of another armament by tempest at Camarina, and the final victory at sea off the islands Ægates (513, 241). It was terminated at last by the exhaustion of the Carthaginians, who were reduced to the necessity of purchasing peace by the cession of all their claims on Sicily and the Æolian islands.

Embassy
from Rome
to Greece,
A.U. 526,
B.C. 228.

The Carthaginians now turned their attention to Spain, where they raised in a few years a new empire, which more than balanced the loss of Sicily, as well as that of Sardinia, which revolted from them, and fell, as did also Corsica, not long afterwards, under the power of the Romans. These great rivals remained at peace with one another for more than thirty years; but while the Carthaginians were acquiring the gold mines of Spain, and recruiting their armies with its hardy infantry, the Romans were making great advances in internal resources, and pushing their conquests at the same time in other quarters. In 525 they crossed the Adriatic, and made successful incursions into Illyria. The following year was distinguished by an embassy from Rome to Greece, where the Corinthians allowed the envoys of the formidable "strangers" to take part in the Isthmian games. About this period, however, we read of a threatened invasion of Gauls. The city was struck with panic. The priests required that two men of that nation should be buried alive, as a sacrifice, in the Forum. A state of "tumult" was declared, and the whole body of the citizens raised and armed for the defence of their country. The consul Æmilius went forth at the head of the legions, and confronted the assailants in the valley of the Po, where he gained a great victory over them, and received the honours of a triumph. In another battle the Roman leader Marcellus slew, in a personal combat, the king of the Gauls, Viridumarus, and bore his arms, the "spolia opima," to the Capitol. This eminent reward of prowess had been won but twice before by Romulus and Tullus Hostilius; nor was it ever gained by a Roman captain again. The conquest of the Cisalpine and of the Istrian peninsula followed upon this repulse of the Transalpine barbarians. Meanwhile the Carthaginians were advancing to the entire dominion of Spain. Their politic chief, Hamilcar Barcas, was succeeded in his command there by his son Hannibal, whom he had sworn in childhood to eternal enmity against Rome; and this enmity the young captain was now about to gratify, having persuaded his government to let him lead all the forces of the province against Italy, cross the Pyrenees, traverse the friendly regions of southern Gaul, and descend from the Alps among the newly-conquered subjects of Rome, whom he expected to unite in a mighty league against their enemies and his own.

Marcellus
gains the
"spolia
opima."

Conquest of
the Cisal-
pine.

SECT. XVI.—THE SECOND PUNIC WAR.

The second
Punic war.

The second Punic war commenced in 536 (B.C. 218) with the destruction of Saguntum by the Carthaginians, in defiance of the Roman remonstrances. Spain was now sufficiently reduced to form the basis of Hannibal's proposed operations. Assembling an army of 82,000 foot and 12,000 horse, he commenced his march. This large force, however, was very considerably reduced by the fatigues of the march, and by the garrisons it was necessary to leave

behind to secure communications through so long a route. Hannibal crossed the Rhone with little more than 50,000 men. His easiest and directest route into Italy lay by coast line, turning the lowest spur of the Maritime Alps; but this road was watched by the Roman general Scipio, and the Ligurians, into whose territory it would have led him, were less likely to receive him as a deliverer than the Gaulish tribes, such as the Boii and Insubres, who lay among the valleys of the Graian Alps, further to the north. Hannibal determined to hazard two steps, both equally bold. He allowed Scipio's army to land on his flank, at the mouth of the Rhone, and occupy the tracts which he was about to leave behind him; then taking the line of the Isere, he ventured to climb the almost inaccessible pass of the Little St Bernard, in the middle of October, with his large force of men, horses, and elephants. He had not even assured himself of the co-operation of the rude mountaineers, who harassed and attacked him on his march, and caused him both losses and delay. Indeed that perilous enterprise, which we must suppose he undertook after due calculation, as the only means of accomplishing his purpose, and launching a Carthaginian army into the bosom of a discontented population, cost him more than half the force with which he had crossed the Rhone; and when, after pausing at the summit of the pass, and encouraging his followers by showing to them the land of promise, he descended into the valley of the Po, he could muster no more than 20,000 foot and 6000 cavalry. Nor did the Gauls in these parts manifest at first any ardour in his behalf. It was not till he had gained some notable successes at the passage of Ticinus and the Trebia that they began to throw themselves vehemently into his cause. But now his numbers rapidly swelled, and while the Romans, disconcerted by their first disasters, were recruiting their broken legions, he crossed the Apennines with a force of 50,000 men. Again the passage of the marshes of the Upper Arnus cost him a large portion of his troops, and he suffered himself the loss of an eye by fever. These troubles, however, were repaid by the great victory of the Lake Thrasymenus, where the consul Flaminius, rashly meeting him, was overthrown with immense loss, and slain. From Thrasymenus to Rome was no more than 100 miles; nor was there any army to cover the city, for the other consul had posted himself with his legions at Ariminum, to guard the approach from the east. Hannibal had holdly out-flanked two armies, and beaten a third; but with all his boldness, he hesitated to strike at the enemy's centre, while leaving such forces in his rear. His intrigues with the Umbrians, the Etrurians, and other people of central Italy, had been unsuccessful. The country was generally animated with a national spirit of jealousy towards the foreigner. He turned aside to the left, and re-crossed the Apennines into Picenum; thence he directed his course towards the Grecian colonies in the south-east of the peninsula. Meanwhile the gravity of their danger had excited the patriotism of the Romans to the highest pitch. Vast exertions were made; another army was raised; and Fabius Maximus, the chief of the nobles, led it, as dictator, in quest of the enemy, who had descended along the coast of the Adriatic into Apulia. Here, too, where Hannibal had had better hopes, the population showed itself indifferent, if not hostile, to its deliverers. The Carthaginian was anxious to stake his fortunes on a battle; but Fabius knew the value of delay, and refused to allow his raw recruits to engage with the despair of sturdy veterans and an able general. Thus matters stood for some time. The condition of the invader becoming daily more precarious, when Terentius Varro, now consul, and enjoying command every alternate day, yielded to his own and his men's impatience, and engaged the enemy in the pitched battle of Cannæ. This was noted as the most disastrous defeat the Romans ever sustained. Æmilius, the other consul, and 45,000 of their

Political
History.

Hannibal
crosses the
Alps.

Battles of
Ticinus
and Tre-
bia.

Battle of
Thrasyme-
nus.

Battle of
Cannæ.

Political
History.

soldiers were slain, and Hannibal sent to Carthage a bushel of golden rings taken from the persons of the knights who had fallen. It was only the extreme debility of the victor, even after this victory, that gave Rome a breathing-time, and the devotion of the citizens would not suffer them to despair of the commonwealth in the hour of her greatest humiliation. Hannibal was admitted into Capua; but this was almost the only fruit of his triumph; and the allurements of this luxurious retreat were more fatal to the discipline of his army, and to his own reputation, than even a defeat.

Hannibal now urged his government to send him re-inforcements; but a rival faction predominated in the Carthaginian Senate, and caused the resources of the country to be diverted to Spain: indeed, he possessed no port on the coast of Italy at which an army could have made good its landing. The Roman forces grew, in the language of the poet, from defeat, as the branches of the ilex under the pruning-knife. Numerous fleets and armies were speedily arrayed, and Hannibal found himself surrounded in Capua by 220,000 men in arms. During the following years he was occupied painfully, and with little success, in the siege of the strong places around him, while Fabius gained the title of *Cunctator* ("The Delayer"), from the cautious tactics with which he shunned encountering him in the field. At last Hannibal was obliged to make his escape from the toils which were closing around him by a rapid retreat into Apulia, leaving Capua to the vengeance of the Romans, who treated it as a revolted dependency. When it surrendered, after a long blockade, seventy of its senators were scourged to death, three hundred nobles thrown into chains, and the whole population sold as slaves. Such was a sample of the policy of the republic towards a people whom, on the principles of national law then recognised, it might justly regard as rebels.

Disastrous, however, as Hannibal's affairs in Italy now were, he was able to get some respite by the diversions his intrigues effected in other quarters. The Romans were obliged to send Marcellus with a powerful fleet to chastise the defection of Syracuse, which was only taken after a long siege, rendered memorable by the ingenuity employed in its defence by the mathematician Archimedes. Marcellus himself fell soon afterwards into an ambuscade in Apulia. Scipio, who had conducted several campaigns in Spain, allowed Hasdrubal, the brother of Hannibal, to escape him, and cross the Alps with a large re-inforcement. Hannibal collected all his resources to effect a junction with this powerful auxiliary. Rome put forth her full strength to encounter the double danger. Livius confronted Hasdrubal in Umbria, while Claudius Nero encamped before Hannibal. But Nero, with happy temerity, broke up from his quarters with a picked division of his troops, and joining Livius, surprised Hasdrubal on the River Metaurus. The united forces of the Romans obtained a complete victory; and Hannibal was first made aware of this terrible disaster by receiving the head of his brother thrown exultingly into his camp.

The Romans, notwithstanding the occupation of so large a part of their own territories by a hostile force, had continued to maintain an army in Spain, and persisted in the task of wresting that important province from Carthage. In the course of this war two Scipios perished; but a third, the most distinguished of this illustrious house, known afterwards as the elder Africanus, completed the conquest, and, flushed with victory, urged the Senate to transfer the contest to Africa itself. This bold manœuvre was opposed by the cautious Fabius, but the enthusiasm of Scipio prevailed; and when a Roman army was landed in the neighbourhood of Carthage, the enemy were compelled to recall Hannibal for the defence of their own homes. Hannibal effected his retreat, quitting Italy after an occupation of

fifteen years; but it was only to encounter a general of equal skill, and an army not less trained to conquer than his own, and to suffer the decisive overthrow at Zama, which laid his country prostrate at the feet of the Romans. Carthage sued for peace, but was required to surrender all her remaining possessions except the district immediately adjacent, together with her ships, her elephants, and her treasure. She still retained her brave commander Hannibal, and allowed him to take the lead in her councils, in which he was still animated by the same hatred of the Romans and zeal for the advancement of his country's interests. The Romans watched his proceedings with jealousy, and he was soon obliged to flee to the distant court of Syria, lest they should insist on his being delivered up to them. The second Punic war, thus brought to a triumphant close, was the most important struggle in which Rome was ever engaged,—one of the most important perhaps in the history of the human race; the event of which, instead of crushing the rising fortunes of the republic, established her in the secure enjoyment of the greatest power in the civilized world, and was the harbinger of the rapid succession of triumphs which made her, in the course of another century and a half, mistress of the fairest regions of Europe, Africa, and Asia.

SECT. XVII.—POLITICAL CONDITION OF THE WORLD AT THIS PERIOD.

The fall of Carthage secured to Rome a complete preponderance throughout the western regions of Europe and Africa. Placing her ally Masinissa on the throne of Numidia, she kept her prostrate rival in a constant state of terror and annoyance at home, while she prosecuted at leisure the plans of further aggrandisement she had long contemplated. In Spain the legions which had formerly assisted the rude natives against the Carthaginians were now prepared to turn upon them, with every advantage of skill and resources; and though the complete reduction of the Iberian peninsula was the work of more than two centuries, and cost the efforts of many armies and a long succession of generals, the issue was never doubtful, and the progress of the invaders, which triumphed very early over the best and richest parts of the country, was only retarded in the mountains, or on distant and inhospitable shores. Nearer home, in the Cisalpine, the Romans exercised a forbearance or evinced a caution not easy to explain. They suffered the Gaulish tribes to retain their independence almost unassailed. But the Gauls themselves seem from this time to have lost the aggressive spirit which had so long distinguished them. They devoted themselves to the habits of settled life, turned to good account the teeming fertility of their soil, and prepared for Rome, when at leisure to make the acquisition, the fairest and wealthiest of all her provinces. Gaul beyond the Alps, and Germany beyond the Rhine, remained at this time almost equally unknown to the conquerors of Carthage, and were equally disregarded by her greedy ambition. In the south, the north, and the west, there was little to engage the interest of her predatory chiefs; but when they looked eastward, they saw before them vast countries filled with the accumulated wealth of ages of civilization,—presenting indeed an imposing front of arms and organization, but, as perhaps they had already learned, devoid of the vital spirit of nationality, and ready to crumble into dust at the first rude shock of a lusty and resolute assailant.

At the death of Alexander the Great the Macedonian empire had been split into several parts; a century after his death it had fallen to pieces. Babylon had become the seat of a Parthian monarchy, which held the valleys of the Tigris and Euphrates; while the realms to the eastward had renounced all connection with the west, from which they were now permanently separated. Antiochus main-

Political
History.

Battle of
Zama,
A.U. 553,
B.C. 201.

Political
condition
of the
world at
this period.

Capture of
Syracuse,
A.U. 542,
B.C. 212.

Battle of
Metaurus,
A.U. 547,
B.C. 207.

Political
History.

tained a powerful empire in Asia Minor and Syria, extending from Pelusium to Smyrna; but the northern districts of the peninsula had been seized by various lesser potentates. The Gauls, under the name of Galatæ, occupied one province. There was a kingdom of Bithynia, another of Pontus, another of Pergamus. The states of Lycia maintained an independent confederation. In the interior of the country, the Isaurians and Lycaonians, to whom may be added some tribes of the Cilicians, to whatever sovereign they were nominally subject, were merely lawless freebooters. The most flourishing of all existing polities at this time was the kingdom of Egypt, under the dynasty of the Ptolemies, who, secure in their distant and scarcely accessible territory, had leisure to accumulate wealth and to foster the arts and sciences. The second century B.C. in Egypt may be regarded as the crowning period of intellect and cultivation in the ancient world. Besides their possessions on the continent of Africa, the Ptolemies possessed the island of Cyprus, and the acquisition of this marine dependency, as well as the interests of their commerce, on which the prosperity of their kingdom mainly depended, made them jealous of the Carthaginians, and disposed them to an alliance with Rome. The republic had first entered into relations with Egypt under Ptolemy Philadelphus, in the year 481 (B.C. 273); and such was now the intimacy between the two powers, that the Roman Senate was chosen as the fittest guardian for Ptolemy Epiphanes, at this time the youthful heir to the throne of his ancestors.

The European provinces of the empire of Alexander were at this time divided among three principal powers. The throne of Macedonia itself was occupied by a Philip descended from the old royal stock; but southern Greece had succeeded in re-asserting its independence, and the greater number of its communities, drained as they were by conquest and colonization, and enervated by luxury and corruption, still maintained a shadow of their former greatness by combination, under the title of the Achæan League. To the west lay the semi-Hellenic district of Ætolia, with its fierce predatory tribes, combined under the sway of a military chieftain, ever threatening the feeble civilization of Greece proper. Indeed, both within and without the Achæan frontiers the greatest anarchy prevailed; the control of a powerful protector had been ill exchanged for the name of liberty, which was only the license of the craftiest and strongest; day by day the monuments of ancient art, all that remained for Greece to boast of, were scattered or demolished; and it is only to Roman aggression and cupidity, soon to be let loose upon them, that we owe the preservation of such remnants of them as have survived to our times. Among these western states Macedonia might still claim the pre-eminence. Surrounded by the sea or by almost impassable mountains, inhabited still by a brave and patriotic people, this kingdom would have been truly powerful, but for the weakness entailed upon it by the number of its distant and disjointed possessions. It held sway beyond its natural frontiers over Thessaly and Eubœa, Opus, Elatea, and part of Phocis; and occupied the citadel of Corinth and the town of Orchomenus in Arcadia. It maintained garrisons in three of the Cyclades,—Andros, Paros, and Cythnus,—as well as in Thasus and some cities on the coast of Thrace and Asia. A considerable part of Caria also belonged to it. Each of these possessions entailed upon it jealousies and enmities of its own; and its power was exhausted in the attempt to make head at the same moment against all the states of the Achæan League, against the kings of Pergamus and the chiefs of Thrace, against the maritime republic of Rhodes, and against the wild mountaineers of Ætolia. For a time the balance of forces was fairly main-

tained; but when the Ætolians invited the arm of Rome to their assistance, this equality was speedily displaced. Philip was the last to perceive the inevitable issue. When the Senate sent to declare hostilities against him, he would only reply to Paulus Æmilius, the Roman envoy, in terms of raillery and scorn.

Political
History.

SECT. XVIII.—WARS WITH PHILIP AND ANTIOCHUS.

Already, during the occupation of southern Italy by Hannibal, the Romans had been taught to regard the King of Macedon as an enemy, who watched every opportunity to crush them, and whose blow they must not hesitate to anticipate. The overthrow of Carthage had hardly been accomplished when the Senate insisted on declaring war against this distant intriguer, and urged the reluctant commons of the city to pour forth their blood and treasure again without a moment's respite. At this period, indeed, and for many years afterwards, Rome acted like the spendthrift who squanders his capital in the enjoyment of the hour. The blood of Rome and Italy was lavished without stint, and the Senate, in its selfishness and short-sightedness was content to receive in its stead a constant influx of foreigners and barbarians, captured in war or purchased in the slave-market, and condemned to cultivate its fields in chains. The fatal result of this policy will be soon exhibited; at this era it was not foreseen, or was recklessly disregarded. The cries of the Achæans for protection against Philip were eagerly listened to, and an army was sent to rescue the feeble remains of Grecian liberty, as it styled itself, from the menace of a second Macedonian conquest. The teeming population of the Hellenic peninsula, which had formerly been maintained by the commerce of the world, had found vent, during the last century of decay and impoverishment, in a constant stream of emigration to Asia and Africa. As colonists, as traders, as mercenary soldiers, the Greeks were scattered through both continents; but Greece herself had begun to experience a rapidly-increasing depopulation, and her military force and military spirit had sunk to a very low ebb. Sparta, indeed, made an attempt to revive the warlike institutions of Lycurgus, and Philopœmen, the general of the League, displayed many of the highest qualities of his noble race; but the nation was quite unable to defend itself against the enemy, who had planted himself in so many important positions within its territory. The aid, however, of two Roman legions, backed by the alliance of Ætolia, sufficed to drive Philip within his proper frontiers; and though one Roman army was ignominiously defeated, Flamininus with a second routed the Macedonian phalanx at Cynoscephalæ, and established the superiority of the Roman tactics. The Cynoscephalæ, A. U. 557, B. C. 197. consul proclaimed the restoration of Grecian independence, presided in person at the Isthmian games, and declared that the Romans themselves were descended from Æneas. The Greeks in return dedicated their offerings to "Titus and Hercules," to "Titus and Apollo."¹

Though the Romans were thus moderate in their conduct towards Greece, they took care to establish such a balance of power between the Ætolians, the Achæans, and Nabis the tyrant of Sparta, as would secure a perpetual recurrence of strife among them, and require their own intervention in due season. But their policy was furthered by a movement from without. Hannibal, whom they had demanded from Carthage, had taken refuge with Antiochus, King of Syria, and was urging his patron to send him with an army into Italy. Antiochus, shrinking from such a hazard, ventured to confront the Romans in Greece, incited thereto by the Ætolians; but both he and his new allies were easily routed. In 562 (B.C. 192) the Romans

¹ Michelet, *Hist. de Rome*, ii. 183. Titus was the prænomen of Quinctius Flaminus.

Political History.

gained a complete victory over him at Thermopylæ; he was driven back from Europe, and compelled to take what measures he could for closing the continent of Asia against the triumphant advance of the legions. The Romans, however, secured the alliance of Macedon, Rhodes, and Pergamus, and obtained the necessary means of transport. In 564 they set foot for the first time in Asia, and after a short campaign engaged the enemy at Magnesia, defeating him, according to their own account, with unparalleled disproportion of loss, and reducing him at one blow to terms the most humiliating. Antiochus consented to relinquish almost all his possessions in Asia Minor, together with his elephants and 15,000 talents in money. Here, as in Greece, the republic, unprepared to occupy the vast regions it had so suddenly conquered, abstained from all territorial annexation, and contented itself with dividing the country between its faithful allies. In the heart of Asia Minor Rome encountered again her ancient enemies the Gauls. Upon these people she made war separately, and reduced them to dependence upon Eumenes, King of Pergamus and Phrygia.

Political History.

less prompt in embellishing them. Hence we may ascribe to this period the rage for discovering a Grecian extraction, or a Trojan, which was considered equally honourable, for the Roman gentes. Æneas and Hercules, with their sons and comrades, were made to serve as founders for many patrician houses. As soon as the Romans set foot in Phrygia, they recognised their pretended connection with the restored city of Ilium. The Scipios and other magnates paid court to Grecian poets and historians, and received the incense of flattery in return. Ennius, the first of the Roman poets, a native of Calabria, who pretended himself to a Grecian origin, and was equally versed in the Greek and the Latin tongues, introduced the works of Homer to the Italians by imitation and translation, and was long held by his grateful countrymen as a worthy rival of the father of epic verse. Instruction in the Greek language and literature became, under the name of Grammar, the most essential part of a liberal education, and every Roman mansion had its Grecian pedagogue to train the children of the family in this necessary lore. The Greek women, fascinating and accomplished, completed the subjugation of the Roman conquerors. The rough and homely matrons of Sabellia could no longer retain the hearts of their spouses, ensnared by the wiles of these foreign slaves and mistresses. The injured women were not slow in avenging themselves. The first divorce at Rome had taken place in the year 520. About half a century later, in 586, occurred the scandal of the Bacchanalian mysteries, at which many hundreds of Roman matrons were found to have devoted themselves to orgies of the most fearful licentiousness.

SECT. XIX.—STATE OF IDEAS AND MANNERS IN THE SIXTH CENTURY OF THE CITY.

The desultory and occasional relations which Rome had hitherto entertained with Greece became now constant, and rapidly increased in closeness and mutual influence. This influence is conspicuously apparent in the shape which the old mythology of Italy began now to assume, in the disappearance of many ancient national divinities, and the introduction of Greek deities in their place. The Sabine names of Consus, Lunus, Juturna, Feronia, and others, are lost altogether, or merged in those of foreign divinities, whose attributes are supposed to resemble their Apollo, first honoured with a temple at Rome, A.U. 324, advances in estimation among the citizens, and obtains the distinction of public games in 542. Æsculapius is evoked from Epidaurus by a decree of the Senate in 463. Cybele, or as the Romans call her, Bona Dea, is invited to Rome in 547. The introduction of the Bacchanalia, or mysteries of the Grecian Bacchus, caused so much disturbance or jealousy that the Senate in 568 issued a decree for their suppression in Rome and Italy. But the sceptical philosophy of Greece followed quickly in the train of her religious ceremonies. The poet Ennius introduced the rational explanations of ancient belief recommended to his countrymen by the Greek Euemerus; and from rationalism the step was easy to doubt, and finally to disbelief. The magistrates of Rome maintained the ceremonial of processions, sacrifices, and auguries, as an engine of state policy, but the higher classes almost wholly renounced their fathers' faith in them, and had little scruple in openly deriding them. From the time, indeed, that the plebeians had been admitted to the priesthoods and augurships, the nobility of Rome had slackened in their zeal for the maintenance of the old traditions. The Potitii abandoned to their slaves the cult of their patron Hercules. Marcellus threw into the sea the sacred fowls which refused to present a favourable omen. The common sceptical disposition of the day is represented by the expression of Ennius: "If there are gods, at least they do not trouble themselves with the care of human affairs."

At this period the Roman nobles began to make use of the Greek language, and got themselves instructed in it by slaves or clients of Greek extraction. They employed Greek writers to compose their history for them. Diocles of Peparethus, as has been said, was the first who composed a narrative of the foundation of the city. The freedmen, to whom the task was now naturally assigned of celebrating the exploits of their patrons' families, were doubt-

If we take a further glance at the manners and customs of the Romans at this period, we may observe how the life of the city becomes distinguished from that of the country, and that of the Campanian baths or watering-places, from both or other. The first was the life of the Forum and the temples; the stated performance of civil and religious acts; the holding of levees of freedmen in the mornings; giving of legal opinions to friends and clients; public business in the Forum or Senate-house towards noon; preparation for public speaking with hired rhetoricians; retirement for sleep at mid-day; the exercises of the Campus Martius, swimming, wrestling, and fencing, in the afternoon; the supper, diversified with singing and buffoonery; and so to bed at sundown. In the country there was the superintendence of the farm and household; hunting, fishing, and other field-sports; the employment of leisure hours in reading, writing, or dictating, generally on a couch or even in bed; sleeping much in the day, but watching with the dawn of morning. At the baths there was a complete holiday from all duties, public or domestic; throwing off the toga, going barefoot, and lightly clad in a Greek dressing-gown; lounging through the day, gossiping with idle acquaintances, indulging in long and frequent ablutions, invoking the aid of foreign artists in song and music to while away the hours of vacant indolence. While, indeed, the Roman was equally proud of the austere discipline of the city and the fields, he was ashamed of his recreations at the sea-side, and regarded it as an indulgence almost akin to vice to relax even for a moment from the stern routine of self-imposed duty. But the siren sloth was gradually gaining his ear, and every further step he took into the realms of Grecian luxury and voluptuousness estranged him more and more from the love of business which he had embraced as a passion, and become inured to as a second nature. The domestic morality of the Romans was thus already undermined in many of its dearest relations, when a guilty ambition began first to prompt them to seek, in the conduct of public affairs, a personal and selfish aggrandisement.

At this period, indeed, the high civil position, maintained by a narrow oligarchy of noble families closely connected

State of ideas and manners in the sixth century of the city.

Influence of the Greek language in Rome.

A.U. 565,
B.C. 189.

Political
History.

Tendency
towards
monarchy.
Scipio
Africanus.

Cato the
Censor.

with one another by marriage, which shared among themselves all the great offices of the commonwealth, might naturally foster such irregular aspirations, and point to the establishment of a monarchy, limited by the jealousies of its aristocratic assessors, in the place of a republic which was democratic in name only. To Scipio Africanus, in the exuberance of their joy at his triumphs, the people had offered, of their own accord, a consulship for life. This would have made him at once a constitutional sovereign, a doge, or a king. We are told that he declined the proffered honour: moderation both in pleasure and in ambition was his characteristic quality. But at a later period, when any such prudent and temperate resolution had become impossible, Cicero takes a melancholy pleasure in representing another Scipio, the immediate descendant of the elder Africanus, as praising in a limited monarchy the best ideal of government. Had the nobles been left to work out their own career, this is the consummation to which it might soon have been brought; but their career was rudely intercepted by the torrent of national corruption which now broke down every moral barrier; the pride and luxury engendered by their Greek and Asiatic triumphs produced a sudden re-action in the popular mind against them. When Cato the elder, a rude but vigorous scion of the Latian homesteads, took on himself to rebuke their abandonment of national usage and tradition, he found the people well disposed to support and urge him onwards. The poet Nævius, the first of the Roman satirists, had met with popular sympathy in his gibes against the haughty Scipios and Metelli; he had been banished through their influence to Africa; but the spirit of criticism and railery survived. Cato served the state in war and peace, and was carried through the career of honours to the consulship, and eventually to the censorship, from which last office he derived the title by which he is distinguished in history. In every place, and on all occasions, he rebuked the pride of the nobles and abated their insolence. He caused their chiefs to be cited before the popular assembly, but they had yet authority enough to repel the charges against them by such language as that of Æmilius Scaurus: "Varus accuses Æmilius of corruption; Æmilius denies it: Romans, which do you believe?" Scipio Africanus disdained, on a similar occasion, to reply at all; and only exclaimed, as he surmounted the Capitol,—“This is the anniversary of my victory over Hannibal: Romans, thank the gods, and pray that you may always have such a champion!” Nevertheless Scipio was compelled at last to withdraw from affairs, and ended his life at a private residence in Campania, directing these words to be inscribed upon his sepulchre:—“Thankless country, thou shall not possess even my bones!” Further prosecutions were directed against his family, some of whom seem to have been guilty of accepting bribes from Antiochus; and Cato had the satisfaction of thoroughly humiliating the chiefs of the Roman oligarchy.

SECT. XX.—PROGRESS OF CONQUEST IN THE EAST AND WEST.

Death of
Hannibal,
A.U. 572,
B.C. 182.

Hannibal, driven from the court of Antiochus to that of Prusias, King of Bithynia, and again demanded by the Romans, had poisoned himself about the year 572 (B.C. 182), and thus relieved from equal anxiety both his friends and enemies. The authority of the republic was becoming consolidated throughout Greece and Asia Minor, when Perseus, the son and successor of Philip, undertook to form a general confederacy of the eastern powers against them. Before, however, this alliance had been effected, he precipitated himself rashly into arms, hoping to cement it by victory; and though he obtained at the outset a brilliant success, he was mortified to find himself still imperfectly supported. Alone, or with no other aid than the neutrality

of the states invited by Rome to attack him, he still maintained the contest, defeating the enemy in several engagements, till they sent against him their veteran general Paulus Æmilius, with an overwhelming force of 100,000 men. Once more the Macedonian phalanx seemed on the point of recovering the charm of invincibility; but after a fierce struggle, the fortune of the legion prevailed: Perseus was vanquished on the field of Pydna, in one of the most decisive battles of Roman history, and soon afterwards taken. The kingdom which he had hazarded and lost was annexed to the dominions of the republic, and Perseus himself led at the car of his conqueror to the Capitol, thrown into a dungeon, and suffered to languish miserably till his death, two years later. The last of the kings of Macedonia was long remembered as one of the most formidable enemies Rome had ever encountered, along with Hannibal and Pyrrhus.

The overthrow of Perseus was followed by an attack on the precarious independence still allowed to Antiochus. The King of Syria, after the check he had received in the west, had turned his arms southward. He had almost effected the conquest of Egypt, the ally of Rome, when Popilius Lænas, the envoy of the Senate, required him to desist from his enterprise. He demanded some time to deliberate, but Popilius drew a circle around him in the sand with his stick, and peremptorily forbade him to pass it till he had given his response. Antiochus, baffled by this firmness, acquiesced in the demand, and retired home crestfallen. The Senate divided between two rival brothers of the house of Ptolemy the throne which it had saved to their family.

The kings of the earth bowed in succession before the assembly of kings. Masinissa acknowledged that to them he owed the crown of Numidia. Prusias saluted them as his gods and saviours, and confessed that he was no better than a client or freedman of his mighty masters. Phrygia, Greece, and Rhodes were each subjected in different measures to the anger of the republic, which they had failed to defend against the late attack of the Macedonians. The Greeks, irritated and alarmed, at last took up arms in their own defence; but the march of Rome was irresistible; and in 608 (B.C. 146) her barbarity was signalized by the sack and conflagration of Corinth under Mammius. Of all her heinous acts, this was one of the most memorable. By the Greeks it was never forgotten; the Romans themselves, at least in later times, were ashamed of it. The same year saw another melancholy catastrophe, the final destruction of Carthage, which had ventured to rise a third time against her triumphant rival, and was taken and razed to the ground by Scipio Æmilianus. At the sight of this fearful ruin the accomplished Roman could not but think, it was said, with a sorrowful foreboding, of the time when his own city might be destined to a like fate, and repeated the lines of Homer predicting the overthrow of Troy divine.

It was from a reminiscence of the terror they had so long felt in the rivalry of Carthage that the Romans persisted for ages in characterizing her, in history and in poetry, as the type of faithlessness and impiety. But they deigned to give the title of a *second Carthage* to a city of much less fame and importance, though rendered memorable in their annals by the obstinacy of its defence and the grandeur of its fall. The perseverance of many Roman generals, among them of Cato, and finally of Sempronius Gracchus, had effected the pacification, as it was called, of the Iberian peninsula. But such pacifications were never complete or lasting. The Celtiberians in the north had continued to harass the Roman outposts, and the prætors commanding in the province had made their hostile attitude an excuse for repeated massacre and pillage. Sulpicius Galba had disgraced the Roman name by treating with the Lusitanians, and treacherously slaughtering them to the number of 30,000. The consul Lucullus acted with equal baseness

Political
History.

Battle of
Pydna,
A.U. 586,
B.C. 168.

A.U. 586,
B.C. 168.

Sack of
Corinth,
A.U. 608,
B.C. 146.

Final de-
struction of
Carthage.

Political History.

Political History.

Conquest of Spain, and fall of Numantia, A.U. 611, B.C. 133.

Acquisition of the province of Asia.

Spirit of the Roman government at home and abroad.

towards the Celtiberians. Driven to fury by such provocations, the mountaineers became more implacable than ever. Viriathus, the gallant chief of the Lusitanians, maintained the war for five years with unexpected success; and uniting in confederacy with the Celtiberians, forced the Romans at last, after many defeats, to conclude peace with him on equal terms. When hostilities again broke out, Cæpio found means to assassinate this formidable enemy, and the Lusitanians were at length reduced to submission. The last place that now held out was Numantia, a city of the Celtiberians in the upper valley of the Douro. Several consuls and prætors had failed in their attempts to reduce this fortress, and Fabius Servilianus had suffered a disgraceful defeat before it. Mancinus brought the defenders to terms; but the Senate was dissatisfied with his concessions, disavowed the treaty, and at the same time, from a feeling of superstition, not of honour, delivered its author to the enemy. It was reserved for Scipio Æmilianus, the conqueror of Carthage, to reduce Numantia at last by blockade. In the extremity of famine, the survivors of many victories fell at last on one another's swords.

While interfering pertinaciously in the affairs of all the kings of Asia, the Romans had hitherto abstained systematically from annexing any portion of their territories. They conducted their astute policy by means of commissioners rather than of legionaries. They left the ancient thrones erect, but they occupied them with creatures of their own. The princes of Egypt, as well as those of Cyprus and the Cyrenaica, which had been constituted separate states, held their crowns under the patronage or direct appointment of the Senate. The republic had retained a son of Antiochus Epiphanes as a hostage, and interfered with powerful authority in the nomination of his successors. He designated the heir of Eumenes, King of Phrygia; and at last, in the year 621 (B.C. 133), allowed Attalus III., the last of his race, to bequeath his kingdom to Rome. Aquilius was sent with an army to enforce the ratification of this testament; and thus the republic became possessed of the magnificent territory which she entitled the province of Asia, and which she continued always to regard as the most choice and valuable of her acquisitions.

SECT. XXI.—SPIRIT OF THE ROMAN GOVERNMENT AT HOME AND ABROAD.

The power of Rome was now paramount in the four great peninsulas which project into the Mediterranean, together with its principal islands, while her influence and authority were recognised at almost every point along its far-reaching coast-line. Italy, the centre and nucleus of this power, was either "Roman soil," or placed under the ultimate control of the prætors and magistrates of Rome. Spain, Greece, and Asia Minor, were reduced substantially to the form of provinces; so were also the islands of the Tyrrhene, the Ionian, and the Ægean seas. Another province was constituted on the opposite coast of Africa, comprising the dominion of Carthage; while the kingdoms of Numidia on the west, and of Cyrene and Egypt on the east, were, as we have seen, in a state of pupillage and dependence. At the eastern end of the Mediterranean the Jews had entered into alliance with the republic; the independence of Syria was imperfect and precarious; Rhodes was indulged with freedom, which she was fain to purchase with impious flattery, in erecting a statue to the divinity of Rome; while a few petty states of Asia Minor existed only on sufferance. The rugged districts of Illyria offered little temptation to Roman cupidity; but the subjection of Macedonia was fully assured. Massilia and Narbo cultivated the alliance of the Senate, and were about to invite its assistance against the surrounding barbarians, and lay the first foundations of a province beyond the Alps.

The Romans regarded themselves as a race of conquerors, and at every point beyond the limits of their colonies they encamped rather than settled. A standing force of one or more legions, with numerous auxiliary battalions, was maintained in each of the provinces, and every year, or at a later period triennially, an officer with the style of proconsul or proprætor, having served the highest magistracies at home, was sent forth to command it. This functionary wielded the whole authority of the state, civil as well as military, within his own province, and was required to govern with a single eye to the security and enrichment of the republic. During his term of office his acts were unquestioned; if he had not strictly the right to declare war against a potentate on the frontier, his instructions were generally such as to cover any excess of zeal which tended to the advancement of his country's interests. On his return home, his quæstor was required to submit to the Senate an account of his proceedings, and these might be disavowed by the hostile vote of an opposite faction. While every act of the magistrates in the city was regulated more or less strictly by rule and precedent, if not by written enactment, the proconsul was at liberty to administer justice to the provincials according to the edict or programme published by himself on assuming the government. The organization of the conquered territories in Etruria and Samnium, already described, was extended to Iberia, Greece, and Asia. Some communities were allowed to enjoy a qualified independence, some were invested with Latin or Italian privileges; the lands of others were confiscated, wholly or in part, to the domain of the republic; tolls and customs were exacted, partly for imperial, partly for local expenditure; but a contribution, varying in amount, levied upon the produce of the land, formed a constant source of revenue to the state. Such was the wealth which accrued to the conquerors on the reduction of Macedonia, that from thenceforth the land-tax was wholly remitted to the favoured soil of Italy.

With the rights of conquest understood as they were at Rome, we may imagine the tyranny to which the conquered people were subjected. The spoliation of the provinces by the chiefs and their subordinates was not only winked at; to a great extent it was positively encouraged and defended, on the plea that to impoverish the fallen enemy was to cut the sinews of future rebellion. Neither the property nor the honour, nor even the lives of the provincials, were safe from the cupidity and cruelty of the proconsul, and of the *cohort* of officials whom he carried in his train. It was fortunate, indeed, that the rapacity of these oppressors was so often directed to seizing the choicest works of ancient art, and transporting them to Rome, which proved the safest receptacle for those precious relics of a perishing civilization. The rude conquerors of Greece and Asia imbibed a taste for these monuments of a genius with which they had so little in common, and succeeded in persuading the still ruder populace at home that no trophies of victory were so glorious as the works of Grecian statuary and painters. The provincials, who had been born amongst these cherished treasures, groaned at the loss of them, for which many a bitter sarcasm at their ignorant spoilers afforded slender consolation; nevertheless they learned to profit by their security from the worse miseries of foreign warfare, and extracted wealth from their fertile soil more rapidly than their masters could consume it. Achaia, indeed, or central Greece, was stricken with a palsy from which no domestic tranquillity could restore her, and continued to dwindle in population and resources; the ancient arts of Carthage perished with the decay of the Punic element in her population, which seems to have been quickly exhausted; but the progress of improvement was felt sensibly in Asia; and the youthful vigour of Spain, now first turned to the pursuits of industry and letters, struck deep

Political
History.

into the soil, and produced in the course of ages an abundant harvest of economical and intellectual improvement. On the whole, the effete and imbecile among the nations were extinguished by the blow which struck down their liberties; but the young and lusty rallied from the shock; and the empire of Rome became, throughout large portions of the globe, the creator of a new life of progress and development.

SECT. XXII.—ASSEMBLIES, ORDERS, AND MAGISTRACIES OF THE ROMAN PEOPLE.

Assemblies,
orders, and
magistracies of the
Roman
people.

The warlike instincts of the Roman people, dispersed over a great part of Italy, or planted in colonies beyond it, were now in full play. The wealth of the East and West, which served to inflame its cupidity, had not yet enervated its vital forces. Its armies maintained the old traditions of discipline and obedience, as well as their ancient valour; its officers, ambitious and greedy for themselves, were still devoted to the glory of their country, and inspired with zeal for the extension of her dominion. Though the march of Roman conquest advanced for another century with almost unabated vigour, which was not exhausted in a second or a third, all these conditions of a flourishing and lasting empire began from this period to decline, and the social decay which commenced at the heart spread slowly through the limbs of the whole body. We have noticed some of the moral causes of this decline; we will now pause once more, to exhibit the seeds of destruction already germinating in the political constitution of the republic.

Notwithstanding the high reputation for disinterested virtue which the ancient Romans have obtained with posterity, we know that no people was ever more intensely devoted to making of money. They amassed riches not only by plunder in war, but at home by usury and thrift, abroad by commerce and speculation. To the possessors of this much-coveted wealth they were ever prone to pay the most slavish deference. Hence, whatever may have been the real character of their political organization, as long as a ruling caste held predominance in the republic, the equalization of the rival orders was followed by the establishment of an aristocracy almost purely of money. The old constitution, such as it is represented to us, of the patrician curies, or the heads of the *gentes* or houses, of those who alone were proprietors, alone were judges, alone priests and augurs, of those, in short, who formed among themselves the ancient commonwealth of the Quirites, had passed away. The comitia of the curies still nominally existed, and was indeed convened for the performance of some religious ceremonies, but it had no political weight. The real elements of power resided in the comitia of the centuries and tribes; and in both of these, though differently constituted, the influence of property prevailed over numbers. To secure this predominance in assemblies which embraced the whole body of the Roman people, some ingenious contrivance was required. The citizens were divided, as we have seen, into 35 tribes, each tribe was subdivided into senior and junior, and each of these subdivisions discriminated again into five classes, according to property solely. To the 350 centuries thus obtained were added 18, appropriated to the knights, next to the senators the wealthiest order in the state. In the assembly the vote of each century was equiponderant; and thus the votes of the four first classes, which, as well as the equestrian, were all filled by men of property, immensely overbalanced those of the fifth, in which alone the mass of the poor citizens was enrolled. The rise of the comitia of the tribes in political importance did little to redress this inequality; for though the distinction into classes did not prevail here, the censors had the power of eliminating the poorest citizens from every other tribe, and confining them

to the four appropriated to the city, which had each only an equal vote with the others, and were appointed to give their votes last. Hence every question was virtually settled, in either comitia, by the suffrages of the first and wealthiest voters. The poorer and more numerous were seldom called upon to exercise their rights at all; and Cicero, indeed, assures us, that in the assembly of the centuries the first, or "*prerogative*," was always found to carry the decision.

The functions of these two assemblies, thus essentially aristocratic, were twofold, elective and legislative. The centuries elected the consuls and prætors, and other principal or *curule* magistrates; the appointment to inferior offices was exercised by the tribes. The power of making laws was claimed equally by both; and in this co-ordinate prerogative, exercised by two assemblies, each comprising the whole body of the citizens, but under a different form and arrangement, consisted one of the most remarkable anomalies of the Roman polity. If a consul, prætor, or dictator had an enactment to propose, he convened the centuries to deliberate upon it; if the measure were patronized by a tribune, it was submitted to the popular assembly of the tribes. In either case the law thus passed was binding upon the whole people; but no such law could be initiated by either the centuries or the tribes; every legislative measure must be first promulgated in the Senate, and receive the sanction of that paramount council of state. If a few instances occur of the tribune's proposing to the people a bill for conferring special honour, which the Senate had refused, they must be regarded as acts of irregular encroachment. It would seem, then, that the legislative power of the popular assemblies was that of sanction or rejection rather than of enactment.

The eighteen equestrian centuries comprised the wealthiest classes of the state. Such individuals among them as had attained to magistracies and offices, the exercise of which was generally unrewarded by salaries, and required on the contrary an outlay for the amusement of the populace, which none but the rich could undertake, acquired the title of *nobiles*, together with an inchoate right of admission to the Senate. This illustrious order was opened to the public men who had served certain offices and charges, and was limited to the number of 600. A high standard of property was required of all its members; and this was determined at the quinquennial valuation of the censors, who had the power of revising the roll, striking off the poor and unworthy, and selecting the most distinguished personages to fill their vacancies. The nobles, having once attained the distinction of admission, or merely of eligibility, to the Senate, strained every nerve to maintain this position for themselves and their families, and to keep out from it their inferiors of the equestrian order, who were striving with equal energy to attain it. Hence arose the political conflict of the Senate and the knights, which colours throughout the subsequent history of the free state. The Senate, as the party of the richest and noblest, assumes sometimes the name, as it succeeds to the political character, of the patricians; while the knights, with the names of liberty and equality in their mouths, connect themselves naturally for the most part with the inferior and poorer classes, and occupy the place of the plebeians. But if these old names still occur sometimes in the history of constitutional struggles, it must be remembered how far they have diverged from their original signification.

The struggle for admission to the Senate affected most directly the interests of the competitors. The Senate was the fountain of Roman legislation. The Senate regulated the administration of the provinces, organized the finances of the commonwealth, determined questions of peace and war, and received the ambassadors of foreign potentates. The Senate was the executive of the Roman republic; and to the

Political
History.

Political
History.

Senate, rather than to the people, every magistrate at home and abroad was answerable. If its power was confined by the right of intercession or veto upon its acts appropriated to the tribunes, it had the means of counteracting this opposition by sowing dissensions among them, or, in the last resort, by creating a dictator, with unlimited powers, for the protection of the state. The commons frequently complained, and probably with justice, that the pretence of danger from abroad was often advanced when a dictator was really required to override opposition from within. But when the Senate found that the tribunes were manageable without having recourse to this unpalatable expedient, it ceased to invoke the arbitrary powers of a dictator. On more than one occasion it attained the same end less obtrusively by investing the consuls with irresponsible authority to protect the commonwealth. Such a decree, known by the formula, "*Viderent consules ne aliquid detrimenti res publica caperet*," was entitled a *senatus consultum ultimum*. Against this, however, the people had one weapon in store. No citizen could be *capitally* sentenced, that is, to the loss either of life or civil status, without an appeal to the people, or permission to withdraw himself from it by voluntary exile. If the consuls, under whatever authority, violated this constitutional provision, they were themselves liable to sentence at the hands of the comitia of the tribes. The conflicting pretensions of the Senate and the people on this head were never definitively settled, and came more than once into violent collision.

Besides their authority, their influence, and their honourable distinctions, the senators enjoyed a monopoly of the most lucrative government appointments. The missions of pro-consuls and pro-prætors, with their inferior officers, were gilded, not by fixed salaries, but by gifts of states and potentates, and by opportunities, hardly to be resisted, of touching bribes and of peculation. When the rich field of Greece and Asia was opened to their cupidity, the nobles abandoned usury at home and commerce abroad to more vulgar capitalists, and devoted themselves to the provincial administration. They allowed the knights a large share in the occupation of the most fertile domain land, and confined the poorer classes to the common pastures. When the murmurs of these proletaries threatened danger to their privileges, they invented the fatal scheme of satisfying them by a cheap or gratuitous distribution of corn. The corn-growing provinces of Sicily and Africa were mulcted in an annual tribute of grain; and while the hunger of the populace was thus appeased, its passion for amusement was at the same time gratified by shows in the theatre and the circus, provided by the chief magistrates. The exhibition of these shows was found to be a sure source of popularity, and candidates for office vied with one another in thus invoking the favour of the tribes by an ever-increasing profusion. The cost of proceeding through the regular course of honours, of buying the suffrages of the people by shows and largesses, and eventually by direct bribes, for the quæstorship, ædileship, prætorship, and consulship, advanced almost year by year, and by the time that the aspirant had reached the highest object of his ambition, he had impoverished himself, and so obliged himself to his friends and his party, that it was only by the unscrupulous exercise of his advantages in a province that he could hope for indemnification. Hence the province paid eventually for the voluptuous enjoyments of the Roman people.

But the jealous knights, debarred from these guilty gratifications, kept watch over the conduct of the provincial governors, and invoked against them the safeguard of the laws. Murder, bribery, peculation, and corrupt administration of justice were public crimes, the cognisance of which was reserved to the assembly of the tribes, and this assembly was not indisposed to judge severely the crimes

Political
History.

of the nobles and monopolists. The Senate contrived, with admirable dexterity, to escape from this hostile judicature by the appointment, in the year 605 (B.C. 149), of the *quæstiones perpetuæ*, or permanent tribunals, composed solely of members of their own order, for the trial of this class of offences. They turned the flank of the knights, and laughed in the face of the people. The knights gradually recovered from their confusion, faced about, and now directed all their efforts to obtain at least a share in the administration of justice, and so use it as to bring the Senate to terms on the ulterior question of the provincial governments.

SECT. XXIII.—AGRARIAN AGITATION OF THE GRACCHI.

While Rome was subduing her provinces, the provinces were re-acting upon Rome. We have already caught a glimpse of this foreign invasion which was filling Italy with a base mixture of the blood of every conquered nation, and sending myriads of slaves from every quarter of the world to till the fields from which the free native population was carried off by the unceasing drain of war. The legionary, if he survived the long series of distant campaigns from which, while his manly strength endured, he was not permitted to extricate himself, settled for the most part in the countries which had become more familiar to him than his own; while the slave, if attached to the service of a Roman citizen, might hope, after some years of bondage, for personal enfranchisement, and the acquisition of a qualified franchise, and a family settlement in Italy. In the second or third generation the *libertini* of Rome became generally citizens, with the full right of suffrage, property, and marriage. Thus the Roman people, still so entitled, still preserving its political continuity in its rites and traditions, and even in its names (for the freedman entered into the *gens* of his former master, and assumed its name), became from year to year more alien in blood from the genuine stock of Romulus and Quirinus, from the Latins, the Sabines, and the Etruscans of primitive antiquity. Priests and magistrates, to whose vigilant guardianship the purity of the national religion and polity was entrusted, shut their eyes to the revolution thus accomplishing itself; but every now and then an expression or a gesture showed that they were not really blind to its progress, and that in their hearts they despised that scum of nations which had settled on the surface of Roman society. One day, when Scipio Æmilianus was interrupted in the Forum by the clamours of this mongrel populace, he exclaimed, "Silence, false sons of Italy: think ye to scare me with your brandished hands, ye whom I led myself in bonds to Rome!" In this memorable sentence we read the character of the times, and trace the interpretation of much of the history which is to follow.

But though these foreign freedmen succeeded to the votes of the genuine citizens they did not take their place on the soil from which their predecessors had been transplanted. The legionaries had been recruited from the fields, from the small farms of Latium and Sabellia, from the well-tilled allotments of seven jugers (about four acres) to which the plebeian citizen was restricted. But as these modest proprietors were decimated by war, their vacant homesteads were bought up by the capitalists of the city, the knights and senators, and annexed to those wide tracts of public domain which they were permitted to hold rent-free from the state. These possessions, thus greedily appropriated, these *latifundia*, as they were called, were cultivated for the most part by troops of slaves, imported by purchase or as the spoil of war from beyond the sea, chained to their work in the factories, or guarded by armed retainers in the fields by day, and huddled in prison dormitories during the night. Throughout large districts of

Agrarian
agitation
of the
Gracchi.

Political
History.

Italy, particularly in the south, the free cultivators, or *coloni*, of an earlier period, had almost disappeared, though in other parts they continued still to linger, and wage an unequal struggle for existence with the great landlords and their armies of servile labourers. Thousands of these small proprietors, thus hardly pressed, migrated into the cities, and particularly into Rome, and there mingling with the herd of foreign-born freedmen, maintained themselves by petty merchandize and handicrafts, by the *sportula*, or dole of victuals at the patron's gate, or by the distributions, wholly or in part gratuitous, of bread, oil, and wine, made regularly by the state, and enhanced occasionally by magistrates or candidates for the magistracy.

Tiberius
Gracchus,
A.U. 621,
B.C. 133.

Such was the state of things in Rome and Italy, full of anxiety for the present and fatal warning for the future to the few statesmen who marked the signs of the times, when the young Tiberius Gracchus, a plebeian of the Sempronian gens, well born, and connected through his mother Cornelia with the blood of the Scipios, remarked with dismay, as he traversed the plains of Etruria, the decline of cultivation and the depopulation of the fields and farms. He observed that the slave labour, ruder and more reluctant than the free labour it had supplanted, was less available for the operations of husbandry, which require care and skill, and that large tracts of land once arable had been converted into pasture, and gave employment to a few herdsmen only. Tiberius resolved to restore a Roman population to the territories of Rome. The cause of the evil he deplored seemed to be the extensive occupation of public land by the nobles by an evasion of the limitations of the Licinian law. He persuaded the people to elect him tribune in 621, and exerted himself in that capacity to carry a new agrarian law, more strict and general than those of ancient times, by which the domain of the state should be divided in full ownership among the whole body of citizens, instead of being held in fee by a small and favoured aristocracy. He demanded that the state should assert its ownership of the estates now let at a nominal rent to the nobles, in order to this new distribution. Of this measure, so much debated at the time and since, it may be enough to remark that, in strict law, it was quite constitutional, in equity it was harsh and unjustifiable, while in policy it was totally nugatory. Whatever were the true merits of the question in debate, they were soon lost sight of in the passions of two classes it set in array against each other. The names of patrician and plebeian were now obliterated; the real combatants were the rich and the poor. Many, however, of the rich and noble were found to place themselves, from patriotism or faction, at the head of the commonalty; while the aristocracy of landlords found means to enlist on their side more than one of the tribunes, their natural opponents. It was by this manœuvre that Tiberius was ultimately baffled. Though he succeeded in getting his measure passed, under the pressure of the popular enthusiasm, he was not allowed to put it himself in operation: on attempting to exercise the powers he had reserved himself for allotting the lands he had acquired for the people, he was confronted by one of his colleagues named Octavius, accused to his own party of aspiring to the tyranny, and in the course of the tumults which ensued overpowered and slain. Three hundred of his followers fell with him in the affray. This, it was said, was the first blood shed at Rome in a popular tumult.

Caius
Gracchus,
A.U. 33,
B.C. 121.

The leaders, however, of the popular movement, though stunned for the moment, were not discomfited. They formed an alliance with the Italians, who were excluded from the franchise of Rome, and engaged to aid them in suing for the boon of citizenship. Caius, the younger brother of Tiberius Gracchus, took the lead of this combined party. Scipio Æmilianus, twice consul, and a chief of the oligarchy, stepped boldly forward and undertook to

advocate the claims of the Italians; but this redoubted champion was found soon afterwards dead in his bed, and it was natural to believe that the nobles had procured his assassination. Caius was got rid of for a time by an appointment beyond the sea. Fregellæ, an Italian town, thinking its cause abandoned, rushed desperately to arms, but was worsted and sacked by the consul Opimius. Caius now, feeling that he had been cajoled, hastened back to Rome and secured his election to the tribuneship, from which ground of vantage he aimed some hard blows against the most eminent of his opponents, protected his own partisans, founded colonies, and executed great public works. He was the delight and pride of the citizens. His eloquence was not less popular than his manners and his policy. He caused the position of the rostrum, from which the orators harangued the people in the Forum, to be changed, so that the speaker should no longer turn towards the comitium, the place of the patrician curies, but towards the masses of the commons stationed in the opposite quarter. He raised the knights to a share in the *judicia* or tribunals; he strove to extort the franchise for the Italians. The object of this bold demagogue's reforms was the exaltation of the commons into a distinct community, rather than the fusion of the nobles and the commons in a single body,—such at least was the judgment passed upon them by public writers, who affirmed that Caius made the commonwealth “double-headed.” At any rate, his efforts, though but partially successful, led to a severance in public feeling which precipitated a general commotion; and he fell himself prematurely, as soon as he had finished his year of office, in a tumult which he had himself unwarily excited. The Romans long continued to honour the memory of the Gracchi as the ablest of the early chiefs of the democracy, and erected statues to them, and altars on the spots where they had fallen. Yet the prejudices of the nobles prevailed in the long run, and in the great body of Roman literature the Gracchi are represented to us as the eponyms of factious ambition, rather than of patriotic policy. Cornelia, the mother of the ill-fated tribunes, obtained a purer fame, and continued to be remembered among the most honoured matrons of the republic. Opimius, having obtained a second triumph over the disturbers of his faction's supremacy, erected a temple to concord in arrogant imitation of Camillus, the second founder of Rome. In the course of the next fifteen years the nobles, now unchecked, effected the formal repeal of the measures of the Gracchi. The knights were expelled from the tribunals; the lands remained in the occupation of the rich lords; the Italians were left beyond the pale of the Roman franchise; finally, the aid of the censors was invoked to expunge from the list of knights and senators all those members of either class who were suspected of leaning towards a reform of the constitution.

Political
History.

SECT. XXIV.—WARS WITH JUGURTHA AND THE CIMBRI, AND POPULAR ASCENDANCY OF MARIUS.

Meanwhile the kingdom of Masinissa, which he had held as a dependent upon Rome, had been divided on king of Jugurtha his demise between his three sons, and again, on the death Numidia. of two of these, had coalesced into a single sovereignty. Micipsa, the survivor, proposed to divide his dominions between his two legitimate children; but a natural son named Jugurtha, more able than either, and trained under Roman generals in Spain, intrigued for the succession, assassinated one of the princes, defeated the other, and hastened in person to Rome to engage its sanction to his usurpation. The Senate repulsed him; but on his return home he boldly took up arms and defended himself by force, with the full support of his countrymen, against the best captains of the republic. Metellus, a chief of the Optimates, reduced him to great straits, but he extricated himself again with won-

Political History.

derful ability. This war, long protracted with various success, brought forward the remarkable talents of C. Marius, a soldier who rose from the ranks to the consulship, and was sent with the acclamations of the popular party, whose child and champion he proclaimed himself, to bring the struggle to a termination. The Numidian chieftain was thus at last driven to bay, and captured by the dashing exploit of an enterprising young officer, Cornelius Sulla, and carried to Rome. There he followed the triumph of Marius in the year 650, and was cruelly put to death. Numidia was divided into three portions: the western part was annexed to Mauretania, the realm of Bocchus, who had proved himself a faithful ally; the eastern was united to the Roman province of Africa; the remnant of the ancient kingdom was allotted to two princes of Masinissa's family, through whose feuds the republic might hope to secure its own supremacy over both.

Marius triumphs over Jugurtha, A.U. 650, B.C. 104.

The perils of the great Jugurthine war were long celebrated by the Romans, and furnished a theme for one of their masterpieces in historical composition. We may regret that we have no Sallust to recount for us the still more terrible struggle of Rome with the Cimbri and Teutones, in which the services of Marius were even more transcendent. The republic had first interfered in the affairs of Massilia, a Greek commercial city on the Gallic coast of the Mediterranean, in the year 600, when she wrested some territories from the barbarians at the request of that inwarlike community, and bestowed them upon it. In 629 she undertook a campaign against the tribes of the lower Alps, and founded the Roman colony of Aquæ Sextiæ (Aix), at the same time making a further addition to the realm of her Grecian clients. Further complications with the Gaulish states speedily ensued. The Romans won a great battle over the Arverni and Allobroges in 623; and in a short time the south-western corner of Gaul, beyond the Alps, was become a Roman acquisition, and received the special designation of "the Province." Roads were now constructed across the Alps, and the dominions of the republic advanced to Narbo, beyond the Alps, and Tolosa, on the Garonne. While, however, the Transalpine province was thus growing and flourishing, it was well nigh overwhelmed by a terrible disaster. Tribes sprung from the remotest

Invasion of the Cimbri.

parts of Germany, known to Roman writers by the name of Cimbri and Teutones, poured with an armed immigration towards the northern portions of the Roman empire. On the eastern side of the Alps they were repulsed, by treachery rather than by arms, by Papirius Carbo; but they swept round the skirts of the mountain barrier, and appeared again on the Rhone and the Isère, spreading fire and devastation in the Roman province, and threatening now to scale the western Alps, and thence descend into Italy. Five consular armies were sent against them, and suffered five defeats, each more terrible than the last. Rome was in consternation, but breathing-time was afforded by a diversion of the main body of the barbarians into Spain. Marius was hastily recalled from Africa, before the final completion of the Jugurthine war, and the peril of the crisis compelled the nobles to allow of his election again and again to the consulship, till he had succeeded in arresting and finally crushing this formidable onslaught. Marius gained the great victory of Aquæ Sextiæ in 650, in which he destroyed the Teutonic division of the enemy; he then hastened into Italy, whither another swarm had already penetrated, and overwhelmed the Cimbrian invaders with a second and not less complete success at Vercellæ, in the following year. By the time he found leisure to return to Rome, he had enjoyed in succession the unprecedented number of five consulships.

Battle of Aquæ Sextiæ, A.U. 652, B.C. 102.

The disasters of foreign war had been aggravated by a servile insurrection in Italy itself, and the necessities of the state had compelled the nobles to relax their hold on the privileges they so jealously maintained. A tribune named

Domitius had wrested the appointment of chief pontiff from the priests' college, a body highly aristocratic, and had given it to the people. This afforded them important protection against an unfair exercise of the political instrument which called itself the national religion. Another tribune, Servilius Glaucia, restored once more the *judicia* to the knights. Marius, though himself no party politician, and with motives merely personal, was put forward by the popular faction as their champion, and raised to a sixth consulship in 694. His election had been carried by intimidation and the threats of his licentious soldiery, whom he had enlisted for the first time, under the pressure of public calamity, from the Proletarii, the rabble of the Roman people. His measures were as violent as his manners were unpolished. He ventured so far to stretch the prerogative of his office as to confer the franchise on a thousand of his soldiers levied in an Italian municipium; and when remonstrated with on the illegality of the act, coolly replied, "amid the din of arms I could not hear the voice of the laws." Backed by the tribune Saturninus, he continued to reward his rude warriors with the boon of citizenship, and quartered many thousands of them on the lands belonging to the colonists in the province, which he had rescued, as he boasted, from the hands of the barbarians. The nobles resented these irregular proceedings, and tried to interrupt the assemblies convened to sanction them, by alleging the frivolous omens, such as rain or thunder, which were allowed to dissolve the comitia. "Be still," cried Saturninus, "or it shall presently hail." Tumult ensued in the city; the tribunes gained the upper hand, and drove Metellus, the chief of the nobles, into banishment. Saturninus continued to maintain his influence over the people, and the Italians, it is said, offered him kingly authority. But the nobles were still the stronger party when they acted together with vigour, and under the leadership of Memmius, Marius at this time shrinking from the furious violence of his late adherent, drove the tribune out of the Forum into the Capitol. There Saturninus defended himself with arms; but the notion that he aimed at the tyranny was circulated among the people, and, whether it were true or false, it sufficed to turn their feelings against him. The water-pipes that supplied his fortress were cut, and he was forced to descend from it. Marius indeed guaranteed him his life; but the people were not to be controlled: they forced themselves into the hall in which he had taken refuge, and slew him, with the remnant of his followers.

Political History.

Overthrow of Saturninus, A.U. 654, B.C. 100.

This was perhaps the last moment at which the establishment of a limited and constitutional monarchy, the dream of Scipio and the regret of Cicero, might have been possible at Rome. Had the popular faction possessed among them a man of enlightened integrity as well as of ability, in whose favour they could have agreed to exercise the power which had exalted Marius to six successive consulships, and had given authority in periods of public emergency to the tribunes of the last few years,—had the nobles been directed by men of sense and patriotism, to yield to the just claims of their own commons and of the Italians,—the usurpation, fifty years later, of Cæsar and Octavius might have been anticipated under happier auspices. The mass of the citizens was still sound at heart, and not incapable of the self-control required for the due exercise of high political rights. While it placed all private ambition under the check of a sovereign authority, it might still have kept a check on the sovereign himself by its own firmness and moderation. Public virtue, indeed, could not have been maintained without recognising on a wider scale the proper claims of humanity, without renouncing the hateful privileges then generally accorded by the conqueror over his subjects, and the master over his slaves. But neither the philosophy nor the religion of the day set forth any principles of action adequate to commend such an apparent

Political
History.

sacrifice; and it must be confessed that the elements of a secure and tranquil government by a limited kingly power were hardly to be found at this time throughout the heathen world. We shall presently see that neither the aristocracy nor the democracy of Rome was capable of maintaining the equilibrium of the commonwealth, and that the unmitigated despotism under which she ultimately fell was the only possible solution of the antagonism so long prevailing in the elements of her polity.

SECT. XXV.—THE SOCIAL WAR.

The Ital-
ians agi-
tate for ad-
mission to
the Roman
franchise.

For some time past the Italians, as we have observed, had been putting forth claims to the Roman franchise. If we would analyse, in a small compass, the motives from which this pretension was generally urged, we must reject, in the first instance, the notion, so natural to our modern ideas, of equity and inherent rights. "Rome for the Roman"—the enjoyment, that is, by the conquerors of all the fruits of conquest—was the fundamental principle of Roman policy, the moral basis of which was unquestioned by any subjects or dependants of the republic. If, under any circumstances, she relaxed from this primary idea of her government, even the states she favoured would only regard it as a concession extorted by some necessity of the moment, which it would have been preposterous to claim as a right. The road to Roman honours and magistracies might have charms for a few distinguished personages in an Italian burgh, but to the population generally the Roman franchise offered, for a long period, few attractions. The severe discipline to which the Roman commons were subjected, the constant military service demanded of them, the harsh prohibition which long prevailed of the exercise of trade and arts, the jealousy with which the avenues to office were guarded, must have rendered the exchange of country (for the Italian who acquired the Roman franchise lost his own) a very slender gratification to the multitude. There was, indeed, some immunity in matter of taxation to be set against these drawbacks; but the advantages to be derived from a share in the provincial administration were confined to a small class, and could hardly be accessible to a "new man" from Italy. The pressing motive which inspired the cry now raised for this questionable privilege was suggested by the agrarian struggles of the Gracchi. The public domain within the peninsula being now occupied chiefly, as we have seen, by noble landholders, was sublet by them to the natives. The Italians, deprived of the legal possession of their own soil by the conquest, became virtually re-possessioned of it by the mere abuse of proprietary right, which allowed a few great families to enjoy the usufruct of the national territory. But from the strict division of this territory among the citizens, as demanded by the leaders of the movement, it would result that the Italian sub-tenant would be ejected from his farm to make way for a plebeian proprietor. The measures threatened by the Gracchi were really more formidable to the Italian than to the Roman aristocrat himself. They touched the pride and the privilege of the latter; but they menaced the means of existence of the former. It was open to the Italian either to join with the nobles in resisting the claim of the people, or to urge his own admission to the franchise, and so come in for share with the people in a new distribution of property. This latter course was that which he adopted; and probably it was the most sagacious. The leaders of the plebeian agitation found themselves at the same time leaders of an Italian agitation also; the two movements proceeded together, and during the external troubles of the republic were suspended together. When security was restored from without, the cry of the Italians rose louder than ever; and it was plain that the next great struggle of the governing classes at Rome would be against

the intrusion of their own subjects within the pale of Roman property and privilege. But the knights availed themselves of this foreign aid in their contest with the Senate; and thus the noble party, the Optimates as they were called, found themselves arrayed against the widest and most formidable coalition they had yet encountered, in defence of their prerogative.

The strength of the Optimates, sapped and battered as it was, still lay in the remnant they had preserved of their old control of the state religion, by which they could at times make an effective appeal to popular interests and prejudices; but more in their own military organization, and the well-trained bands of clients and retainers, trained to the use of their suffrage as well as of their arms. They effected the disgrace of Marius and the recall of Metellus; and in 659 (B.C. 95) required the consuls to expel from the city all the Italians who had sought a domicile within its walls. The Italian faction was now headed by a tribune named Livius Drusus, one of the most popular of the demagogues, of whom it was long remembered that, when his architect proposed to build him a house in which he might screen himself from the observation of his neighbours, "Build it so," he had answered, "that every citizen may witness every action I perform." The labours of this man in the cause of Italian emancipation seemed approaching to success when, in the midst of the struggle, he was suddenly struck down by the poniard of an unknown assassin. The nobles, and especially the consul Philippus, incurred the odium of the deed.

Political
History.

Livius
Drusus,
tribune,
A.U. 663,
B.C. 91.

Measures of proscription against individuals were now threatened and carried alternately on both sides; but all semblance of legal procedure was soon cast away, and the Italians rushed to arms. Their forces were derived chiefly from the Marsians, the Picentines, the Vestines, the Samnites, the Lucanians, and Apulians; and thus the allies of the Roman state, as they were specially denominated, became its open and avowed enemies. In the course of the campaigns which followed, the Etruscans also joined the coalition; and the object of the war, which was at first the acquisition of the Roman franchise, became no other than the extermination of the Roman republic. It was proposed to organize and maintain a great Italian confederacy, of which Corfinium, under the name of Italica, should be recognised as the capital. On the Roman side the names of Cæsar, Crassus, and Pompeius, destined to re-appear in the next age in fatal combination, obtained their earliest illustration; on the Italian, Judacilius, Pompædus, and Motulus were the most distinguished leaders. The chief successes of the Romans were gained by Marius and his former lieutenant Sulla, who crushed and, as it was said, destroyed the Etruscans; nevertheless, the power of the republic would not have sufficed for the complete reduction of the insurgents, and the discretion which, at the first turn of fortune in her favour, dictated a substantial concession, saved her from an exhaustion of blood and treasure which no barren victory could have compensated.

The *lex Julia* conferred the franchise on the Umbrians and Etruscans in 664; the *lex Plautia Papiria* in 666 extended it to all their Italian allies. Every Italian who chose to come to Rome and claim the boon within sixty days, was received into the bosom of the commonwealth. Ten tribes were added to the thirty-five already existing. The boon after all was not very generally accepted. The Roman religion required that every legal measure should be sanctioned by certain ceremonial observances, and these could only be transacted within the sacred precincts of the city. It was admitted on all sides that the suffrage could only be exercised at Rome. Accordingly the franchise offered little attraction to distant citizens, who were required to forego their local citizenship for a privilege which they had little opportunity of exercising. After all

The *lex
Julia* and
lex Plautia.
Admission
of the
Italians to
Roman
citizenship.

Political History.

the blood which had been spilt in the struggle, the Italians found themselves content for the most part to retain their old position. The roll of the Roman citizens, which in the census of 640 numbered 394,336, in that of 668, the next of which we have the account, had not increased beyond 463,000, and sixteen years later was only 450,000. But the precedent now set for the first time on so large a scale bore ample fruit in the course of Roman history. The full franchise was conceded in special instances to various states in Spain, Gaul, and Africa; while the Latin, which conferred, as we have seen, a certain eligibility to the Roman, was even more widely diffused. Pompeius Strabo extended it to the entire nation of the Transpadane Gauls. On the whole, the liberal concessions of this period evince in a marked manner the prudence of the Roman government at one of the most perilous moments of its career. The strong national prejudice against which they were carried was now finally overthrown, and the Roman writers uniformly agree in applauding the policy which dictated them, and ascribing to it the preservation of the state at the time, and the unabated vigour of its subsequent progress.

their avenger with exultation, not unmixed perhaps with fear, and stood horror-stricken by his side while he did bloody and remorseless execution on the abettors of the late revolution. Sulla massacred several thousands of his disarmed prisoners in the Campus Martius, and organized a system of terror and proscription for the extirpation of the popular leaders.

Political History.

Victory of Sulla, A.U. 672, B.C. 82.

It still remained to re-establish the supremacy of the nobles on a legal basis, and to this purpose the conqueror now applied the powers of the dictatorship which was now conferred upon him without limitation of time. He was even allowed to retain it, together with the consulship, in the year 674.

Rome had hitherto been peculiarly fortunate in her political revolutions. With whatever violence they might have been conducted, they had perhaps uniformly worked for her ultimate advantage. But this was because they were all the offspring of a natural progress in the life of the people. The re-actionary system of Sulla was, on the contrary, the greatest disaster in her annals. The aim of this despot was to undo all the popular measures of the last half-century; to check the progress of agrarian distributions; to suspend the plantation of colonies; to thwart, if he could not abrogate, the late enactments for the enfranchisement of the Italians; to destroy the popular authority of the tribunes; to repel the knights from the *judicia*; to reserve the government of the provinces, with all the advantages thence accruing, for the first estate, the senatorial families only. The utter prostration of the opposite party enabled him to carry out all these plans for the moment, and the high character borne by some of his coadjutors, such as Catulus, contributed to render them palatable. The opening career of the young Cnæius Pompeius, the bravest of his lieutenants, whom he had seduced from the politics of his family and placed in the first rank of the senatorial partizans, augured brilliantly for the military triumphs of the faction to which he devoted him. Having effected the reforms he judged necessary for his views, filled the city and magistracy with his friends and the provincial governments with his creatures; having attained, for his uniform successes, the surname of *Felix*, "the Prosperous" from an admiring generation, Sulla ventured to resign his dictatorship, and retired abruptly into private life. His good fortune still befriended him: none of his enemies, no friend of his slaughtered victims, molested him in his defenceless retreat; and he died in his bed, though harassed indeed by a loathsome infirmity, in the year 676, at the age of sixty.

his death, A.U. 676, B.C. 78.

SECT. XXVI.—MARIUS AND SULLA—THE FIRST CIVIL WAR.

At a critical period of the late war Marius, in a sullen mood, had quitted the camp and buried himself in a distant retreat, leaving Sulla as consul, in 666, to bring the contest to a close. The younger champion was now in the ascendant. Mithridates, King of Pontus, had defied the republic, had overrun the province of Asia, and caused the massacre of the Roman colonists and traders, amounting, as was loudly proclaimed, to not less than 80,000 souls. Sulla was appointed to carry on the war against this formidable enemy; but before he could set forth on his mission, Marius, alarmed for his own pre-eminence in public affairs, attempted to create a revolution in the city. Sulla recalled his troops, which had not yet quitted Italy, drove before him the Marian forces, and entered Rome in military array. Marius, flying for his life, concealed himself in the marshes of Minturnæ. He was discovered and seized; but the Cimbrian captive who was sent to despatch him in prison, fled in terror from before him, and he was allowed to escape once more, and make his way into Africa. Reclining among the ruins of Carthage, he meditated the recovery of his power. On Sulla's departure for the East, the Marian faction again made head under Cinna, but was put down again by the Senate and the consul Octavius. Cinna fled into lower Italy, and raised some levies of turbulent banditti. At the same time Marius re-appeared suddenly in Etruria, and both chiefs approached Rome simultaneously from opposite quarters. They entered the city, overcoming all resistance, and executed a sanguinary proscription of their enemies. Marius became consul for the seventh time in 668, and though now seventy years of age, prepared to lead an army into Asia to supplant his rival Sulla. At this crisis, however, the old man died suddenly. Cinna succeeded to his power, and sent Valerius Flaccus to assume the command of the Roman forces in the East. Scarcely had Flaccus crossed the Hellespont when he was assassinated in the camp by one of his own officers. Sulla was enabled, by the ascendancy of his character, to join the legions of Flaccus to his own, and, thus re-inforced, put Mithridates to the rout, and led his combined forces against the enemies of the Senate at Rome. Cinna had now been murdered in his turn. Carbo and a son of Marius were the chiefs of the popular faction, but they could make no head against the military talents and the veteran legions of Sulla. In the battle of Sacriportus, and again before the Colline gate of Rome, the Italian militia who supported them went down before the conquerors of Mithridates. The senatorial party received

Contest of Marius and Sulla.

Death of Marius, A.U. 668, B.C. 86.

SECT. XXVII.—RE-ACTION AGAINST SULLA'S OLIGARCHICAL CONSTITUTION.

The establishment of the Sullan oligarchy was a severe blow to the ambition of large classes at home, to the knights and other *new men* who were striving by their wealth, or their credit in the courts and the Forum, to thrust themselves into public office, for which they had no claim from birth or family illustration. It was an attempt to restrict to a group of two or three hundred ancient houses the honours and emoluments of the government of the world. The time, indeed, was past when such a retrograde step could be permanent; but in the meanwhile the provincials were even greater sufferers than the citizens themselves. Great as had been the cruelty and oppression of the governors, their subjects had hitherto had a remedy in the appeal to the tribunals at Rome, to the judges of peculation and extortion. This appeal, however, would have been of little service but for the jealousy of parties in the city. As long as the knights contended with the senators for the *judicia*, and the Marians with the nobles for the magistracies, advocates might be found, and the machinery, how-

Sufferings and complaints of the provincials.

Political
History.

ever imperfect, of Roman justice might be employed for redress. Proconsuls charged with extortion towards their subjects might sometimes meet with punishment, as well as those whose crimes had been committed against the state itself. But when the *judicia* were restored wholly to the Senate, when the popular leaders were utterly silenced, the magistrates enjoyed, at least for a moment, complete impunity, and the provincials found, whatever their sufferings, that redress from a senatorial tribunal had become entirely hopeless.

It was fortunate for the subjects of Rome that the rampant supremacy of the Sullan oligarchy could not long be maintained against the numbers, the activity, and the skill of the party over which it had triumphed. The complaints of the oppressed were encouraged by the chiefs of the opposition, and all the force of forensic eloquence was employed to bring the oppressors to justice. The judges were more accessible to bribery than to eloquence; but by means of the one or the other many of the Optimates were thus smitten with judicial sentences, while the feelings of the public were roused against them, and a strong prejudice excited against the monopoly of power which they so fearfully abused. The case of Verres, the plunderer of Sicily, and of other provinces before, who was dragged at last before the bar of justice by the youthful orator Cicero, and forced to abandon his defence in despair, shook the authority of the nobles, while it vindicated in one conspicuous instance the rights of the subject provincials.

Impeach-
ment of
Verres.

Sedition of
Lepidus,
A.U. 676,
B.C. 78.

Sertorius.

C. Pompeius, sur-
named
"Magnus."

Revolt of
Spartacus.

But the Marians were not satisfied with these legitimate modes of warfare. Immediately on the decease of Sulla, Lepidus, then actually one of the consuls, took up arms ostensibly in their interest, but was put down by his colleague Catulus. A remnant of the party, turbulent and self-willed, and impatient of their loss of power, attached themselves to an Italian officer named Sertorius, who raised a revolt in Spain, and maintained a war there for several years against the best generals of the Senate. After defeating Metellus, he kept the brave Pompeius at bay till he was murdered, in 682, by Perperna, one of his own lieutenants, after which event the movement was quickly suppressed. This was another great service done to the state by one who was now acknowledged by the nobles as the foremost man in the republic. The title of *Magnus* ("the Great"), with which Sulla in his lofty generosity had already saluted him, was ratified by the consent of the dictator's faction, and recommended by them to the general approval of the citizens. The popular party were indeed not without hopes of gaining him to their own side. Flattered on all hands, he trimmed from side to side, and his estimation still rose higher as fortune gave him opportunities of distinction. He was still absent in Spain when Rome was terrified by the revolt of Spartacus and a handful of fugitive gladiators, soon swelled to an army by opening the *ergastula*, or slave-prisons. More than one legionary force was defeated by them: they were checked at last and crippled by Crassus; but by this time Pompeius had been recalled in haste to combat them, and his opportune arrival completed their discomfiture, while it earned him the whole glory of the victory (A.U. 683, B.C. 71). Such was the favour in which this lucky general was now held that he could lend a helping-hand to Crassus, and raise him together with himself to the consulship; an act of condescension of which his colleague ever retained an uneasy recollection. Courted by both parties, the two consuls combined in their policy, and exerted their authority on the side of the Marians. They restored the tribuneship, and transferred the *judicia* to the knights; and thus the chief measures of Sulla were abrogated by the leaders he had left behind him, after only eleven years' continuance. The consuls were supported in their reforms by the talents of

the rising orator Cicero, who formed in his own mind an ideal, too bright for realization, of the harmonious co-operation of all classes in the state, and strove to secure for the second order its fair share in the administration, notwithstanding the selfish resistance of an unconvincible oligarchy.

During the last few years a fresh war had been in progress with the indomitable King of Pontus. The Roman armies were led by Licinius Lucullus, an able commander, but not vigorous enough to cope with the vast resources and energy of Mithridates. While the republic was drained of men and treasure in this unprofitable warfare, it was still more painfully harassed by the pirates of Cilicia, who, since the decline of the Greek maritime powers, had covered the eastern Mediterranean with their vessels, and carried their predatory enterprises to the coasts of Italy, and even to the Pillars of Hercules. It was necessary to make an effort to suppress them, and powers such as had never before been conferred on a single commander at Rome were given to Pompeius by the Gabinian bill for the purpose. He was constituted captain-general of all the forces of the republic throughout all her coasts, and fifty miles inland. Such a command was practically unlimited; such a commander was virtually the autocrat of the empire. Nevertheless the result, complete and speedy as it was, seemed fully to justify it. The naval campaign, in which Pompeius collected all the

Political
History.

maritime resources of the republic and her dependencies, overcomes the Cilician pirates.

was unique. Its effect also was permanent: from henceforth the police of the seas was kept so well by Rome that piracy never made head again in the Mediterranean during the existence of her dominion. But while Pompeius was thus gaining the most honourable of his distinctions, the "piratic laurel," one of his creatures in the city, named Manilius, took advantage of his increasing popularity to obtain for him the command against Mithridates (A.U. 688, B.C. 66), and over the eastern half of the empire. This enormous grant, far exceeding the powers ever before confided to a proconsul, was advocated by all the eloquence of Cicero; and Lucullus was directed to resign his command to the favourite of the people, and return as a private citizen to Rome. Lucullus was one of the chiefs of the oligarchy; and this insult to the individual was felt more acutely by his party than by himself, for by temper he was unusually indifferent to public distinctions, and betrayed at least no annoyance when on his return he withdrew himself from affairs, and gave his leisure to the enjoyment of luxury, and to private works of munificence. But the jealousy with which the Senate had begun to regard their pretended champion Pompeius was much exasperated: he repaid their suspicions with haughty scorn, while the chiefs of the opposite party fanned the flame of discord between them. Cicero rose into distinction with the general favour bestowed upon his patron. In the year 688 he was chosen prætor, having already served the lower magistracies; and now in the full career of honours, he might well hope, new man though he was, without fortune or connections of his own, for the crowning glory of the consulship.

The nobles loudly asserted that their champion Lucullus had already broken the power of Mithridates, when Pompeius was thrust forward to reap the honour of his successes. Certain it is that the King of Pontus sued for peace on the first arrival of his new antagonist; but it was not the object of Pompeius to gain a bloodless triumph, and he refused to treat with the enemy till he had reduced him to unconditional submission. Mithridates withdrew from Asia Minor, but he retired through the difficult country of Iberia and Albania to his dominions in the Tauric Chersonese, and thither Pompeius tried in vain to follow him. Some poli-

Political History.

tical complications occurring seasonably in Syria, the baffled Roman made them an excuse for desisting from the pursuit; and turning southward, he arranged the affairs of the province, and decided between the claims of rival pretenders in Palestine. Pompeius was the first Roman that entered Jerusalem, where he penetrated into the Temple, and even into the Holy of Holies. Meanwhile Mithridates fell by private treachery in 691, being slain by one of his own sons, Pharnaces, who obtained in recompense a confirmation by Pompeius of his claims to the throne of the Bosphorus. On the eastern frontier of Asia Minor, Cappadocia, Paphlagonia, Galatia, and Comana were formed into dependent sovereignties; their territories were declared free states in the centre of the Roman provinces; but the greater portion of the peninsula, including also Syria, was definitively annexed to the empire. Palestine became a vassal monarchy under the Herods. Beyond the Euphrates, Armenia still retained a nominal independence; but the efforts of Rome were constantly directed to preventing her from falling under the sway or influence of the Parthians. Pompeius the Great, the conqueror and organizer of the East, might regard himself in either capacity as the rival of the great Alexander.

Death of Mithridates, A.U. 691, B.C. 63.

Triumphs of Pompeius in the East.

Political History.

turn he found his friends once more drawing breath and recovering their spirits, he had thrown himself manfully into their cause, and insisted on restoring the trophies of Marius, displaced by his successful enemy. During the absence of Pompeius he pushed himself with undaunted energy into the first rank of the popular faction; he dismayed the nobles by calling to account the instruments of Sulla's vengeance, and by inciting the people to inflict a public slight upon Catulus. The Optimates were already tottering under the repeated blows he thus dealt them, when an event occurred which gave them an opportunity of strengthening their position. Suddenly the commonwealth was threatened with a ruinous disaster. Fortune gave the nobles the means of averting it by an act of extraordinary vigour, and recovering thereby the prestige which a series of weaknesses and defects had well nigh lost them. The conspiracy of Catilina and the courage of Cicero gave the Senate another lease of power for fourteen years.

Amid the contests of ostensible parties in the state there lurked a greater and nearer danger in the numbers of discontented bankrupt youths thrown loose upon society by the accidents of civil commotion. These pests of the commonwealth fell at this moment under the lead of a profligate monster, L. Sergius Catilina, who, having failed of his election to the consulship, intrigued against all constituted authority, and formed a conspiracy to seize the government by force. The existence of such a plot had been vaguely apprehended from the moment of Catilina's defeat, and it was with the presentiment that a man of vigour would be required at the helm that the nobles, notwithstanding his ignoble birth, allowed the election of Cicero, whose abilities they knew, and on whose vanity they could play, to the consulship for 691. Cicero soon made himself master of the plot, surprised certain envoys from the Allobroges with whom the traitors had been tampering; but not daring to seize the chief conspirator himself till he could make his guilt patent to the citizens, denounced him in the Senate-house, and drove him in guilty agitation from the city. Catilina threw himself prematurely on the feeble levies he had prepared in Etruria; while the consul arrested his chief adherents, some of them men of rank and distinction, strangely mixed up in so desperate an enterprise, brought them before the Senate, disclosed their guilt by incontrovertible proofs, and demanded their punishment. The temper of the people, it seems, could not be trusted; and notwithstanding the enormity of the guilt thus fastened upon them, it was dangerous to allow them the appeal which the law permitted. The nobles were well pleased at the opportunity of showing their confidence in their own power, and proving that they were not afraid to act with the vigour of the ancient oligarchy, even in the absence of Pompeius and his legions. They had armed the consul with the "ultimate decree," requiring him to provide, by whatever arbitrary measures, for the safety of the state; and this stretch of their prerogative they did not scruple to enforce with the instant execution of the criminals. Cicero was hurried along by his enthusiasm, as the saviour, for such he was loudly proclaimed, of his country. He lent himself to the rash policy of his supporters and patrons; dazzled by the splendour of his extraordinary position, intoxicated by the incense of aristocratic flattery, and the assurance that he had secured a permanent rank among the haughty oligarchy of Rome, he consented to an act of dubious justice and expediency, of which he had cause bitterly to repent not many years after. The presumed associates of Catilina, whose actual guilt is affirmed only on *ex parte* evidence, were strangled in prison; Catilina himself, brought to bay in the Apennines, was defeated in open battle by the forces of the government, and slain, fighting bravely in the field.

The conspiracy of Catilina, A.U. 691, B.C. 63.

SECT. XXVIII.—REVIVED AUTHORITY OF THE SENATE DURING THE ABSENCE OF POMPEIUS.

Revived authority of the Senate during the absence of Pompeius.

During the absence of Pompeius in Asia the extreme section of the senatorial party, well pleased at the removal of a champion they suspected and feared to so distant an exile, placed themselves under the guidance of their natural chiefs, men of ancient lineage and ancestral honours, such as Catulus, Lucullus, Servilius, Lentulus, and Marcellus. But none of these were men of commanding ability, nor even of commanding energy. A large number of the principal nobility were engrossed by luxury and indolence; and the eloquence of Hortensius, their best speaker, was speedily eclipsed by that of the upstart Cicero. In this dearth of talent among them, they suffered a prominent place to be taken by Cato, the great-grandson of the censor, a man who resembled his illustrious ancestor in the antique rigour of his manners, a pedantic assertor of the old senatorial privileges, and inflexible in the maintenance of his hereditary politics. This dogged resolution and dense obstructiveness were as valuable qualities perhaps as a chief of the Optimates could at that time possess; for Cato knew how to keep his position by sheer obstinacy long after a reasonable statesman would have confessed that it was untenable, and he protracted the contest with the ever-increasing power of the popular faction through many a vicissitude of triumph and defeat, as accident favoured or depressed him. But fortune was on the whole against him; and the chance which arrayed the unequalled genius of C. Julius Cæsar in the first rank of his opponents, was alone sufficient to overwhelm the resistance of abler men than Cato.

M. Porcius Cato.

C. Julius Cæsar.

Cæsar was descended from a noble family, sprung, as is pretended, even from a Trojan origin. His ancestors had enjoyed the highest honours of the state, and were naturally attached to the party of the Senate which some of them had defended in arms during the Social and Civil wars. But he was at the same time nephew to Marius, and he had married a daughter of Cinna. These connections outweighed in his mind the prejudices of his birth, and inspired him with the ambition of ruling Rome at the head of the democracy. In early youth he had been marked out by Sulla as the heir of his rival's principles, and a possible successor to his own ascendancy. Cæsar had escaped the proscription of his party, had served abroad while it was dangerous to appear in Rome; and when on his re-

A.U. 692, B.C. 62.

Political
History.SECT. XXIX.—COALITION OF POMPEIUS, CRASSUS, AND
CÆSAR TO CONTROL THE GOVERNMENT—THE FIRST TRI-
UMVIRATE.Rise and
progress of
Cæsar.

Cæsar, as the chief of the popular party, the representative of its constitutional traditions, had protested against the infliction of capital punishment on the conspirators. It required great courage to take this part; for the nobles had tried to incriminate Cæsar himself in the plot, and he had with difficulty extricated himself from their meshes. Such, moreover, was the influence they had now acquired over the passions of the knights and men of property in the city, that he was threatened by their poniards on the steps of the Senate-house. But the reckless populace whom he swayed with a handful of trusty adherents, by unbounded profusion of money, reigned in the comitia. He was chosen prætor and chief pontiff; and in the year 693 went forth, with money borrowed from Crassus, to gain his first laurels as a governor in the further Spain. Pompeius, returning this year, found himself the object of jealousy, not unmingled with scorn, to his own party, elated as they were by their recent triumph, and believing themselves strong enough to cast off his odious patronage. On reaching the shores of Italy, such was his confidence in himself, and in the position he supposed himself to hold, that he magnanimously disbanded his army, and took his seat as a private citizen in the Senate. But this moderation served only to confirm the short-sighted vanity of the Optimates. They amused themselves by treating him with the most marked coldness, kept him waiting a year for the triumph he had so well earned, and put off from day to day the ordinary compliment of ratifying his acts or political arrangements in the East. Upon this point, indeed, he could get no satisfaction till he had formed a coalition with Cæsar and Crassus, by which they entered into a mutual pledge to support each other's pretensions to the highest offices and commands, and to share, in fact, between themselves the actual government of the state. Cæsar was suing for the consulship; Crassus was desirous of some lucrative command; Pompeius, who had attained the summit of his ambition, wanted only the confirmation of his acts, the reward of his legions, and the solemn recognition of his pre-eminent deserts. He felt as yet no jealousy of his associates; the one he regarded as a fashionable debauchee and spendthrift, the other as a selfish and indolent miser. He hoped to use them both as the props of his own supremacy, and to cast them away whenever he had recovered that authority with the nobles which he considered due to his merits, whatever attitude he might assume towards them. Such was the origin of the compact of three private citizens for the control of the republic, known by the name of the First Triumvirate, the fruits of which were soon seen in the success of Cæsar's application for the consulship, and in the bold popular measures he was enabled to carry. On the expiration of his term, he quitted Rome for the province of Gaul, where he found himself suddenly engaged in wars with the Helvetians and the Suevi. The Optimates recovered in his absence the curule chairs, but their consuls fell under the patronage of Pompeius, who now reigned paramount in the city. Jealous of the renown Cicero had acquired in the affair of Catilina, Pompeius allowed the infamous demagogue Clodius to accuse him, as tribune, before the people, and obtain a sentence of banishment against him for the execution of the conspirators without due form of law. Cicero retired into Macedonia, and thence into Greece, and lowered his character, spotless as it was, by his unmanly lamentations. Pompeius managed also to degrade the rigid Cato by sending him on a harsh and unjust mission to dethrone the King of Cyprus, and annex his dominions to the empire.

He coal-
esces with
Pompeius
and Cras-
sus.A.U. 694,
B.C. 60.A.U. 695,
B.C. 59.Banish-
ment of
Cicero,
A.U. 696,
B.C. 58.Political
History.SECT. XXX.—PROCEEDINGS OF THE TRIUMVIRATE TILL ITS
DISSOLUTION BY THE DEATH OF CRASSUS.

Cæsar had entered his province in 696, and during the following years was intently occupied in subjugating the tribes of Gaul from the Rhone to the Rhine and the Atlantic. According to the usual policy of Rome and of other conquering races, he effected his purpose by directing the passions of the native tribes against one another, rather than by the strength of Roman arms and the effusion of Roman blood. The Ædui and Arverni in the centre of Gaul, the Remi in the north-east, were disposed, with selfish views of their own, to assist in the ruin of their common country, and the incursions of the Germans from beyond the Rhine furnished the invader with an excuse for proclaiming himself the protector of the Gauls. In 697 Cæsar broke the confederation of the Belgic tribes in the North. The next year he worsted at sea the naval power of the Veneti in Brittany, while his lieutenants subdued Aquitania. In 699 he threw a bridge across the Rhine, and penetrated for an instant into the German forests. In the autumn of the same year he crossed with a powerful armament into Britain, and made a second attack upon the islanders in the succeeding summer. Landing on each occasion on the coast of Kent, probably on the beach at Walmer, he made in his second campaign a rapid march into the interior, forced the passage of the Thames some miles above London, and defeated the King of the Trinobantes, the most powerful of the southern chieftains, before his stockade in Hertfordshire. But his success was not such as to encourage him to leave a garrison in the country, or effect a permanent lodgment there. He was satisfied with the promise of a slender tribute; and this, in all probability, was never paid after the return of the legions. The expedition, indeed, had been undertaken rather for the amusement of the citizens, who listened with interest to their hero's despatches, and for the gratification of the soldiers' cupidity, than with any view of annexing a new province to the empire.

During the progress of his campaigns, whatever their immediate purpose, the vigilance of Cæsar was never entirely diverted from the march of events in the city. Year after year, when the season for military operations was closed, he repaired to the baths of Lucca on the frontier of his province,—for the laws did not suffer an *imperator* to enter Italy while retaining his command,—and there conferred with his friends, who flocked to him in numbers from Rome, the measures most conducive to the interests of his party and of himself. He had carried his warfare against the nobles to the furthest limits of the law, and had provoked and alarmed them beyond the possibility of forgiveness. In his distant command he was beyond the reach of their enmity: they were well pleased at his absence, and did not grudge him the term of five years which he had in the first instance required. But he knew that whenever he returned as a private citizen to Rome he should fall easily into their power, and he had no trust in the support of either of his confederates. From the moment that the compact had been made between them he had felt the necessity of binding Pompeius to himself by a stronger tie than political interest; for Pompeius could not persuade himself that a party chief as yet so little distinguished could do him more than a momentary service. With a keen discernment of character, Cæsar perceived how this reserved and selfish magnate could be worked on through his sentimental affections. Though advanced in years, and older indeed than Cæsar himself, Pompeius had consented to give his hand to his rival's youthful daughter, and had devoted himself to her as the most uxorious of husbands. He had thus been easily blinded to the schemes of the Gaulish proconsul which kept the Senate in alarm. His attention,

Cæsar's
campaigns
in Gaul
and Brit-
tain.His in-
terest in
the city.

Political History.

Political History.

Turbulence of Clodius and Milo.

Battle of Charrhæ, A.U. 701, B.C. 53, Death of Crassus.

Recall of Cicero.

M. Licinius Crassus.

indeed, was diverted from them by the turbulence of Clodius and some popular tribunes, whose intrigues for harassing and dividing the nobles were so propitious to Cæsar's views that we must suspect him of covertly instigating them. Pompeius, on his part, was well pleased to see the Senate humbled. When, however, he was himself insulted, and his life threatened, he thought that their degradation had gone far enough, and joined with Crassus to secure the election of vigorous consuls, and tribunes devoted to himself. He countenanced the turbulent agitation with which Milo, a creature of the Senate, rebutted the violence of Clodius, and finally obtained the recall of Cicero from banishment. The people, with their usual fickleness, turned their backs upon Clodius, and received the patriot orator with acclamations. Cæsar congratulated him with a warmth congenial to his generous character, and heaped favours on his brother Quintus, then serving in his army. Pompeius, indeed, looked coldly upon him. The nobles, who had got, as they thought, all the use that was to be made of him, were indifferent to his further career, and he remained for some years in a subordinate position, seeking to keep himself before the public by puerile appeals to his former services, and by hollow flattery of the men really in power. But Pompeius required his own services to be amply requited. On the occurrence of a scarcity in the city, the Senate hastened to confer upon him extraordinary powers for its relief, and Cicero was required to recommend this commission to the people.

Crassus was now impatient of the inferiority of his position. He was not a great military chief like Pompeius; he had conferred no commands, and bestowed no crowns; he was not a popular leader like Cæsar, with a crowd of hungry dependants urging him on for their own advancement; he was not even to be compared as an orator to Cicero, though he had made some useful connections as a pleader and patron; but he was the richest of the Romans, and he represented one marked feature in the character of his countrymen in his sordid pursuit of wealth and love of accumulation. His career had been that of a banker and money-lender in the city; his acquisitions, however great, had been slow and gradual; now, advanced as he was in years, his ambition began to reach further: he coveted the fame of a commander and a conqueror, and lusted for the plunder of a province or a foreign kingdom. After fulfilling his term of office as consul, he demanded of the Senate the government of Syria, and avowed as he set forth from Rome his purpose of making war upon Parthia. The nobles, who were unable to refuse him the proconsulate, professed a pious horror at these unprovoked hostilities, and engaged the tribune Ateius to denounce it as a sacrilege—to meet him as he issued through the gates of the city, and devote him, with awful solemnities, to the vengeance of the offended gods. The minds of the soldiers were painfully affected by this formidable ceremony, and it was with difficulty that Crassus could overcome their terrors, and engage them by redoubled promises to follow him on his ill-omened expedition.

Then did the Senate watch and strain every nerve to baffle the movements of the triumvirs. But the coalition was too powerful for it. While Crassus was gratified with his eastern command, Pompeius claimed and obtained the provinces of Spain and Africa, which he governed by lieutenants, remaining himself in the immediate neighbourhood of Rome; and Cæsar's command in Gaul was prolonged for a second period of five years. The power of the triumvirate was thus apparently confirmed; but the Senate turned with a gleam of satisfaction to the enterprise of Crassus, the disastrous issue of which was already augured from surer tokens than those of the diviners. Crassus was quite incompetent for the task he had undertaken. Having defied the Parthians upon frivolous pretences, he led his army across

the Euphrates, and directed his march across the desert which divides that river from the Tigris. The Parthians retreated before him till they had enticed him to a considerable distance, and finally attacked him with overwhelming force when his men were exhausted with fatigue and heat. A Roman army of three legions was routed and almost destroyed in the terrible battle of Charrhæ, and the disastrous flight which followed. The proconsul was induced to sue for terms of capitulation, and then treacherously slain. A remnant of his army was saved and conducted back to Antioch by Cassius Longinus, the ablest of his lieutenants.

SECT. XXXI.—THE CIVIL WAR TO THE DEATH OF POMPEIUS.

The triple league thus suddenly dissolved had already been shaken by the death of Julia, the daughter of Cæsar, espoused to Pompeius. The nobles saw their opportunity, and exerted themselves diligently to improve it. They renewed their overtures to Pompeius, who was becoming jealous of the advance of Cæsar in power and general estimation, and allowed him the unprecedented distinction of holding the consulship for six months without a colleague,—a kind of dictatorship without the name, for which the disturbances in the city seemed to afford an excuse. The Gauls, once apparently conquered, had risen again in a wide-spread revolt, and the position of the conqueror had become imminently precarious. Pompeius, who had suffered from a dangerous sickness, was elated by the extravagant acclamations of the citizens on his recovery, and the Senate easily persuaded him that he could stand alone at the head of the government, and, even if Cæsar escaped the perils in which he was involved, securely spurn his alliance and defy his enmity. But all these calculations were doomed to disappointment. The abilities and fortune of Cæsar triumphed over the Gauls, and he was enabled to complete his conquests, and recruit his exhausted legions from the flower of the Gaulish youth. Before the expiration of his second term of office, he had finished the task he had undertaken to accomplish, and found himself in a position to demand the consulship a second time. The Senate, alarmed at the prospect of his return, required him to relinquish his command before venturing to sue for a civil office; but he was well aware that, once divested of military support, he would lie at the mercy of unscrupulous enemies; and he retorted with the demand, which he knew would not be complied with, that Pompeius, who at the moment held the command of the armies in Spain, while continuing to reside within sight of the city, should at the same time surrender his extraordinary appointments. Both parties could appeal to the letter of the law; but on both sides the appeal to law was a mere pretence. Party animosities and private ambitions had come to such a head that Cæsar could not be safe without the guarantee of a high official position; the Senate could not be safe without degrading and trampling him under its feet. A contest had become inevitable, and it was little matter from which side the first blow actually came.

Still, with a people devoted like the Romans to the observance of constitutional fictions, it was an object of some importance to preserve a mere show of legality; and this advantage, such as it was, was secured to Cæsar when two of the tribunes, who had protested against the fierce demands of the Senate, fled from Rome by night, affecting alarm for their own safety, and sought refuge in the camp of the proconsul, which he had advanced to the frontier of his province. The news of their flight outstripped their own arrival; and Cæsar, with his usual lightning-speed, crossed the Rubicon with a few battalions, and met them at Arimorum, proclaiming that he entered Italy in arms to vindicate the majesty of the law. Thus outraged in their persons, Pompeius and the Senate were dismayed at the

Dissensions between Cæsar and Pompeius.

Cæsar crosses the Rubicon, A.U. 705, B.C. 49.

Political
History.

boldness of this movement. Slender as were the forces of the invader, they were unprepared to meet them in arms. Their legions were scattered in Spain and in the East, and the raw levies of the city were not fit to oppose to the determined veterans of the Gallic wars. Pompeius required the knights and senators to quit the city and retire with him to the south of Italy. The negotiations with which he sought to amuse the assailant had no effect in retarding him. One fortress after another fell with their garrisons into Cæsar's hands; the population of Italy rose to welcome him; and he well-nigh succeeded in surprising Pompeius in Brundisium, and intercepting his escape into Illyricum. But the Senate had possession of the sea, and for the present their enemy was unable to follow them. Cæsar then retraced his steps to Rome, where the people received him with acclamations. He summoned a Senate of the remnant of the order, seized the treasures of the state, which Pompeius in his haste had neglected to secure, gave an assurance of his favour to all the nobles who would abandon the falling fortunes of the fugitives, and defied the abdicated government as traitors and rebels.

Flight of
the Senate.

In sixty days Cæsar had driven his enemies out of Italy. He had cut their position in two. The best half of the Pompeian armies were quartered in Spain; but Pompeius had more reliance on the resources of Greece and Asia, which he had so long wielded, and left his lieutenants in the west to defend themselves as best they might, while he raised the forces of his own division of the empire, Roman and barbarian, and trained them together for the future invasion of Italy. Cæsar, as we have seen, had no ships for transporting himself across the Adriatic. He was aware also that it would take a long time to equip the Pompeian armaments in the East. But meanwhile the base of his own resources in Gaul was threatened by the forces of the enemy in Spain, and his first operations were directed to crushing this stronghold of the senatorial party and securing his own rear. He led his legions along the coast of Italy and Gaul; besieged and reduced Massilia, which ventured to rise against him in the interest of the oligarchy; crossed the Pyrenees, and attacked the Pompeian lieutenants in the north of Spain. Having mastered his opponents in a brilliant campaign, he returned swiftly to Rome, quelling a mutiny among his own soldiers at Placentia on the way, assumed the dictatorship with a faint show of legal forms, and proclaimed himself once more the champion of the state against every foreign and domestic enemy. Collecting his forces, to the amount of about 30,000 men, at Brundisium, he effected the passage of the straits by skill and good fortune, in the face of a superior fleet, and conducted operations against Pompeius, who had assembled a large but ill-disciplined armament on the coast of Epirus. It was the policy of Pompeius to avoid an engagement. He suffered himself to be blocked up in his camp on the land side, having still the command of the sea, and Cæsar found himself baffled and reduced to straits for the support of his army. When at last he made a desperate attack on the Pompeian lines he was repulsed with some loss, and was obliged to break up from his position. Military critics have affirmed that the younger captain had been out-generalled by the elder. But this is hardly a fair account of the matter. Cæsar's policy required him to fight against odds both of numbers and position. It was no disparagement to his military talents that he failed under such conditions. But his peril was now extreme. Retreat across the sea, could he have hazarded a retrograde movement, was intercepted. He boldly dashed into Thessaly, in the heart of the enemy's country, in the hope of drawing Pompeius from his impregnable stronghold in pursuit of him. The Pompeians, elated with their success, followed him with exultation, and insisted on their leader accepting the battle so urgently demanded. Pompeius hesitated, and only yielded to the

Campaign
in Spain.Cæsar
appointed
dictator.

impunity of the civilians against his own judgment. His forces doubled those of his antagonist, but they were not equally serviceable. The armies met at last on the plain beneath the hill-fortress of Pharsalia; and on the 9th of August 706 the great battle was fought which utterly broke the power of the Senate, scattered their leaders, and drove Pompeius across the seas as a suppliant to the coast of Egypt. Cæsar was intent on following the steps of his great adversary, more formidable to him than all the rest of his party; but from the want of shipping he was obliged to lead his troops by a long circuitous march through Asia Minor and Syria. Meanwhile the young Ptolemæus, who owed his throne to the man who now sought his protection, was persuaded by his ministers to sacrifice him. Pompeius was inveigled out of ship, stabbed in the boat which conveyed him to the shore, his head cut off and sent to Cæsar. Pompeius.

Political
History.Battle of
Pharsalia,
A.U. 706,
B.C. 48.Death of
Pompeius.

SECT. XXXII.—CÆSAR FOUNDS THE EMPIRE.

After Pharsalia the nobles for the most part made their submission, and the clemency with which Cæsar treated them, so different from the measure dealt to their conquered enemies by a Marius or a Sulla, gained him the fervent applause both of his contemporaries and of posterity. A remnant indeed of the defeated faction, under the indomitable Cato, effected their escape to Africa, and raised the standard of the oligarchy at Utica; but the greater number of the senators and nobles returned to Rome, and acquiesced without a murmur in the acclamations with which the people conferred the dictatorship on their favourite for the second time. Cæsar meanwhile was received with hollow demonstrations of respect by Ptolemæus in Egypt, and he remained there for some months, fascinated, it was said, by the charms of the king's sister Cleopatra. He supported her claims against her brother, seeking perhaps an opportunity for demanding money, of which he was much in need; but the Alexandrians, on discovering how slender his forces were, rose in arms against him, and he was reduced to the direst peril, till relieved by the advance of re-inforcements from Syria. Had Cato's Senate acted with energy at this crisis, it would seem that it might easily have crushed him. Possibly it was hampered by want of means for moving an army by sea. It is difficult to understand the next movement of Cæsar, who it seems did not hesitate to leave such an enemy to gather force in his rear, while he led his own troops through Syria into Pontus, and occupied himself with waging war against its king, Pharnaces, the son of Mithridates. He could describe, indeed, his success, which was rapid and complete, by the three words *veni, vidi, vici*; and here, too, we must suppose that the motive of his delay was the need he felt for money to satisfy his rapacious mercenaries. From Asia he repaired to Rome, and assumed the dictatorship for the third time; but before the end of the year (A.U. 707) he sallied forth again to confront the remnant of the senatorial party, and landed with a large force near Adrumetum. The battle of Thapsus in 708, in which Cato's troops, with their ally the Numidian Juba, were routed, completed the overthrow of the senatorial faction. The chiefs of the party were slain in the battle or the pursuit. Cæsar's soldiers wreaked their fury upon a large number of the captives. Cato, finding it impossible to hold out in Utica, recommended his followers to make their peace with the conqueror, and consummated his career of futile self-devotion by throwing himself on his own sword.

Cæsar's
campaigns
in Egypt,
Pontus, and
Africa.Battle of
Thapsus,
A.U. 708,
B.C. 46.

Cæsar returned once more to Rome to celebrate a series of triumphs, to reform the laws, and lay the foundations of an empire. The battle of Thapsus is the termination of the republic. Though the old offices of the free state were to be preserved, though the consuls, prætors, and tribunes were to be selected as of yore by the assemblies

Termination
of the
Roman re-
public.

Political History.

Cæsar "Imperator."

Political History.

of the people, and to issue from Rome for the government of the provinces, the forms of the commonwealth were really to be subordinated to the will of a single autocrat, and the title of *Imperator*, "a commander," which Cæsar now assumed, not to denote an occasional and temporary office, but a permanent distinction, symbolized the rule of the sword which was henceforth to become actually predominant. Nevertheless, Cæsar is not to be regarded as a vulgar despot, who seizes his opportunity to suppress the liberties of his countrymen, and convert a free state into a tyranny. Cæsar considered himself the sovereign, not of the ancient Roman people, but of the world, their subjects. His aim, from an early period, had been to carry out to the fullest practicable extent the principle, long admitted but imperfectly exercised, of provincial emancipation. The popular party which he led had incorporated itself with the Italians; his policy was to incorporate it with the nations beyond Italy. He had enlisted the subject Gauls in the legions, and placed them side by side with the Roman soldier. He had conferred the citizenship on the Cisalpine population. He now threw open the doors of the Senate to the chiefs of Gaul, Spain, and Africa, and filled the mansions of Rome with men of strange garb and uncouth idioms, that all the nations which owned the sway of the republic might learn to know each other, and mingle at last in one homogeneous community. He did not scruple to proclaim his passion for the Græco-Egyptian princess Cleopatra, to invite her to Rome, lodge her in a Roman palace, and allow one of his creatures to propose a dispensation to enable him to marry her. He suffered himself to be adored with the title of a divinity, and his statue to be consecrated in the temple of Mars. Such acts as these, in daring violation of the national prejudices, announced a new era in public ideas. If Cæsar should succeed in effecting them, he would lay the basis of a new national edifice; he would be the last and the greatest founder of Rome. But though he was thus unscrupulous in overthrowing the ancient fabric of the constitution, he was considerate and clement in the treatment of parties; for the moment that they laid down their arms, he regarded his adversaries in the same light as the rest of the citizens. He suffered no punishments, no confiscations. He took their chiefs into his favour, and admitted them to his counsels. When he celebrated his fourfold triumphs over the Gauls, the Egyptians, over Juba and Pharnaces, he allowed the greatest of his victories to be passed over in silence. He pretended to be still the father of his country, and accepted with a pride which he himself believed to be legitimate, this title, the proudest which any Roman had ever won from his countrymen. Rome had indeed yet a series of revolutions to undergo before this idea of a universal empire could be carried out, and when finally established the empire was a doubtful blessing at best; but it must be remembered that the continuance of the free state, with the incitement it gave to lawless and turbulent ambition, had become manifestly impossible; and further, that the only possible solution of the political problem, the establishment of a monarchy, had been long the half-conscious object of the great bulk of the Roman people. The consummation, it must never be forgotten, had not been averted, but only delayed, for forty years, by the bloody occupation of the Sullan oligarchy. The fall of the terrible dynasty of the Epigoni, so to term the political heirs of the dictator, was regretted neither by the citizens nor the subjects of Rome.

Cæsar's views.

His clemency.

His fourfold triumph.

Cæsar's enactments and projects.

the republic, which no doubt he would have applied to every subject nation; and he executed a correction of the calendar, not the least practically useful of these reforms, which has lasted, with trifling rectifications, even to our own days, and become the common heritage of Europe.

SECT. XXXIII.—DEATH OF CÆSAR.

The power of the senatorial faction had been completely broken at Pharsalia and Thapsus, but Cnæus and Sextus, the sons of Pompeius, with a few desperate adherents of his family rather than of any public cause, raised their standard again in Spain, where they found recruits among the Roman residents and the still turbulent natives. Cæsar hastened from Italy to crush this revolt, which he could easily have effected had his own soldiers been disposed to fight as constantly as hitherto in his behalf; but even the tenth, his favourite legion, had been debauched by victory and plunder, and could hardly be brought to engage till he threw himself into the midst of the enemy's ranks, and called upon it to deliver him. The battle of Munda ended in the final overthrow of the opponents of the empire. Cnæus was slain in the pursuit; Sextus escaped to lurk for some years longer among pirates and outlaws. Returning to Rome, Cæsar assumed the consulship with his friend M. Antonius for the year ensuing; but now that all resistance had been quelled, and no further heights of glory and ambition remained to be scaled, a change seems to have come over the calm serenity of his temper, and that perfect self-command and clear perception of his aims which had so long distinguished him. The possession of unlimited power still left a void to be filled up. He became proud towards his nobles, harsh and tyrannical towards his weaker subjects, impatient in his temper, restless in his schemes. While the whole Roman world lay before him to be moulded into an empire of uniform laws and usages, he was bent on prosecuting a vast scheme of foreign warfare, chastising the Parthians, recovering the standards won from Crassus, exploring the recesses of the Mithridatic realms on the further coast of the Euxine, and uniting to the empire the yet untrodden regions between the Don and the Danube. These dreams of the imagination were destined to be rudely broken. While in the first months of the year 710 he was intent on his military preparations, and was sending forward the legions designed for his expedition, Rome was filled with rumours that the dictator, not satisfied with the glorious titles he had acquired, desired to be saluted with the odious style of king. This was the device so often repeated whenever the nobles of Rome wanted to raise the people against their champions, which had never perhaps failed of success; and it seems more probable that the charge was invented by Cæsar's enemies, than that he should have actually imperilled his life and fortunes for an empty sound. Yet, none perhaps can tell what influence a sound may exercise on the imagination of a man like Cæsar, who had attained the substance of all that he desired, and still craved for something more to attain. All Roman antiquity agreed in imputing this insane caprice to the wisest of the Roman heroes, and refused to believe the denial of it which it allowed him to have openly expressed. Antonius, we are told, thrice offered him the diadem, and, on hearing the murmurs of the citizens, he thrice rejected it. But the jealousy of M. Brutus was aroused. This man, son-in-law of Cato, had submitted after Pharsalia to the conqueror, who treated him with peculiar indulgence, and gave him the Cisalpine province to govern. He had acquiesced, however reluctantly, in the usurpation, and had even consented to serve it; but his character for patriotism stood high with the people; he was reputed a descendant, on the father's side, from Brutus the liberator, on the mother's from Servilius Ahala the tyrannicide; his own imagination

Final rebellion of the Pompeians

Battle of Munda, A.U. 709, B.C. 45.

Political
History.

had fed on the lessons of a self-devoting philosophy; and when the conspirators against Cæsar's life looked for a name under which to range themselves, they found none so suitable as his for their purpose. Brutus was won over to join them, with Cassius and others, who for the most part were galled by personal slights, or inflamed by petty jealousies. Brutus indeed, such was the judgment of the Romans themselves, was the only one amongst them whose aims were really pure and patriotic. Though Cæsar had renounced many of his highest qualities, his courage had not deserted him. No tyrant was ever so fearless, so confident in his fortune, and in the greatness of his own destiny. His legions had quitted Italy; he had refused the bodyguard offered him by the Senate. He traversed the streets of Rome in the midst of all the factions he had outraged with no other attendants than his troop of private friends and clients. His person was assailable at any moment; and the conspirators selected the Senate-house itself as the spot in which to attack him. On the Ides of March, the 15th of the month, they fell upon him with poniards borne beneath their robes; and he fell, pierced with thirty wounds, at the foot of the statue of Pompeius.

Death of
Cæsar,
A.U. 710,
B.C. 44.

Cicero, who had accepted the supremacy of the popular leader even before the battle of Pharsalia, and had submitted, with the sorrow of a philosopher and a patriot, to a revolution which he had himself long felt to be inevitable, was no party to this act of personal animosity. But when the deed was done, and the assassins proclaimed themselves the deliverers of their country, he too indulged in the dream of reviving liberty, and cited many an ancient precedent to justify the crime. Cicero now united himself to the band of self-styled patriots in the Capitol, whither they had repaired for fear of the populace, and assisted them with his advice. It had been well, indeed, for the cause of the oligarchy, if the men who now assumed to be its champions had listened to his counsels. But they suffered themselves to be cajoled by Antonius; and that skilful partizan, having obtained permission to celebrate Cæsar's obsequies in public, contrived to play on the feelings of the multitude, and raise a storm of grief and indignation which completely paralysed them. The people insisted on burning the body in the Forum, and erected a chapel on the spot, which was afterwards converted into a temple. The murdered Cæsar was advanced to the honours of divinity, which had not been offered to Marius, or Scipio, or Camillus, before him. His soul, it was declared, was borne to heaven in the comet which appeared conspicuously about the period of his decease. Not the citizens only, but foreigners of every nation residing in Rome, and particularly the Jews, united in these demonstrations of sorrow, and showed that the death of Cæsar was regarded as a general calamity to mankind.

He is hon-
oured by
the people
as a di-
vinity.

SECT. XXXIV.—THE SECOND TRIUMVIRATE, AND FINAL OVERTHROW OF THE REPUBLIC.

Intrigues
of M. An-
tonius and
the young
Octavius.

Antonius and the liberators had combined together in proclaiming a general amnesty; but such was now the state of irritation in the city, that the actors in the recent tragedy for the most part withdrew from public sight. During the dictator's lifetime the friends of freedom had comforted themselves, in the eclipse under which it had fallen, with the remembrance of his advanced years, of the perils into which he was continually thrusting himself, and of his having no direct descendant. He had left, however, a nephew, the son of an Octavius, whom he had adopted as his son, and who now bore the name of C. Julius Cæsar Octavianus. This youth was at this time only nineteen, and at the moment of his uncle's death he was absent with a military tutor in Illyricum. Few supposed he would have the courage to proclaim himself the heir of the murdered usurper, to claim his private property, which Antonius had got into his own

hands, still less to assert his legitimate title to the championship of the popular party, and to the first place in the commonwealth. But the ambition of the young Octavius (such is the name by which he is most commonly designated) was equalled by his confidence, and these again by his cunning and ability. Throwing himself boldly into the midst of the citizens, he cajoled Cicero with the warmest professions of patriotism, while he demanded the restitution of his private inheritance from Antonius. The field gradually cleared around him. Brutus and Cassius, finding themselves unpopular and even insecure in the city, retired first into Campania, and then to their provinces Macedonia and Syria. Antonius put himself at the head of some legions, prepared to fight for pay and plunder under any commander, and took up a threatening position in the Cisalpine. The Senate, inspired with energy by the eloquence of Cicero, who thundered forth the series of orations against the traitor to which he gave the name of *Philippics*, armed the consuls Hirtius and Pansa, and sent them to confront him; while Octavius led an army of his own, the most devoted of his uncle's battalions, ostensibly to support the government, but really to watch the event, and attach himself to the party which should prove the stronger. A third division of the Cæsarean force had also assumed an attitude of observation under Lepidus in Gaul. In the spring of 711 Antonius came to an engagement with the consuls near Mutina, in which, though he was himself defeated, both Hirtius and Pansa were slain. This event proved a death-blow to the Senate. Octavius, instead of pursuing the routed Antonius, as he was expected to do, chose rather to unite himself to him, and concert a coalition with Lepidus and Antonius for the joint usurpation of the empire. This combination, known by the name of the Second Triumvirate, was effected in an island of the River Rhenus, near Bologna. The contracting parties agreed between themselves to exercise consular power in common for five years, to dispose of all the offices of state, and to enforce their decrees as the law of the republic. They assigned the two Gauls to Antonius, Spain and the Narbonensis to Lepidus, Africa and the islands to Octavius. Italy was to remain neutral ground; the provinces of the East were to be left for future division, when Brutus and Cassius should have been overthrown by their united forces. This compact was followed by the proscription of their enemies in Rome, each triumvir claiming to insert the names of those most odious to himself, and each sacrificing in return friends and kinsmen of his own. Antonius demanded the head of Cicero, which Octavius ungratefully surrendered to him. Their edicts were immediately put in execution. Some hundreds of the senators and 2000 knights were destroyed by hired assassins: Cicero, though long warned of his danger, neglected to make his escape till too late, and was overtaken and slain at his country villa.

Political
History.

Battle of
Mutina,
A.U. 711,
B.C. 43.

The Second
Triumvir-
ate.

Death of
Cicero.

An interval of eighteen months had elapsed since the retreat of Brutus and Cassius into the East before the triumphs were at leisure to engage in a campaign against them. During this period the republican chiefs had foreseen the struggle that was impending, and they had not been remiss in assembling troops, and collecting money and munitions. But their armies were for the most part composed of raw levies; and in the indifference manifested by the populations of Greece and Asia to the watchwords of party in the West, they had been obliged to extort treasure by force, sometimes to inflict cruel chastisement on the reluctant provincials. Brutus himself had sullied his great name by these terrible exactions. As the crisis of the struggle drew near, and Octavius, with Antonius at his side, led their formidable forces into Macedonia, his fortitude seems to have forsaken him; the peaceful philosopher was haunted with a vision of Cæsar's ghost, and he was impatient for the day which should end, either by death or triumph, the pertur-

Political History.

Battle of Philippi, A.U. 712, B.C. 42.

Death of Brutus and Cassius.

bation of his afflicted mind. When the opposing armies met at last on the plains of Philippi, Cassius, a more experienced officer, would have postponed the combat, but Brutus insisted on precipitating the crowning struggle. Brutus was confronted with Octavius, Cassius with Antonius. Brutus had gained the advantage on his side of the field; but Cassius, dismayed at his own partial failure, threw himself on his sword. The survivor now found himself obliged to withdraw. Nevertheless, circumstances were still in his favour; the enemy was straitened for supplies, and delay might even yet have secured him a bloodless triumph. But again his impatience was not to be controlled; and in a second combat, twenty days later, on the same ground, he suffered a defeat, which, by killing himself, he rendered irretrievable. His party, deprived of both its leaders, was now utterly broken. Several of the officers, chiefs of the nobility, put an end to their own lives; but the conquerors showed more clemency in the hour of victory than at the outset of their enterprise, and allowed their enemies for the most part to save themselves by submission. Some of them escaped by sea, and attached themselves to the fortunes of Sextus Pompeius; but the republican party never rallied again in the cause of liberty, and the battle of Philippi closes the annals of the Roman free state.

SECT. XXXV.—CONTEST BETWEEN OCTAVIUS AND ANTONIUS.

Antonius fascinated by Cleopatra.

The battle of Philippi had been won by the efforts of two only of the triumvirs, and the third found himself from this time wholly set at nought by his more vigorous colleagues, the masters of the united forces of the empire. But the union of these mighty potentates was of short duration. Antonius assumed the command of all the regions of the East; and while he amassed plunder for himself, or squandered it upon his followers and parasites, he fell into the toils of Cleopatra, the fascinating queen of Egypt, who sailed from Alexandria to Tarsus to captivate him. Returning with her to the banks of the Nile, he abandoned himself without remorse to voluptuous pleasures, which degraded him in the eyes of the Romans, while his late colleague, now his rival, Octavius, was governing Rome and Italy with a prudence and self-control which won the applause of the citizens. Here the wife and brother of Antonius intrigued against him, and raised the standard of faction. The brother was overcome at Perusia; and, though spared himself by the policy of the conqueror, three hundred of his most distinguished adherents were sacrificed, according to the popular story, to the shade of the murdered dictator. The wife retired to join her husband in the East, but was ill received by him, and died, perhaps of mortification, soon after. A new alliance was now formed between the rival leaders, who could not divide the empire between them, or contend for its sole possession, till they had united to put down Sextus Pompeius. The treaty of Brundisium, effected by the agency of Cocceius, Pollio, and Mæcenas, provided for a combined effort against this annoying adversary, and was cemented by the marriage of Antonius with Octavia, the sister of his ally.

War of Perusia.

Sextus, at the head of a piratical flotilla, occupied the seas between Italy and Africa, and held some maritime stations in Sicily. In this situation he was able to cut off the corn ships which supplied Rome, and the city was reduced from time to time to the direst necessity. The rule of Octavius at Rome was shaken at every access of scarcity and impending famine; and the suppression of this cause of annoyance was of more vital importance to him than to Antonius. Octavius therefore undertook the conduct of the war; but he prudently invited the enemy to come to terms, and they arranged a treaty at Misenum, by which he was admitted to a definite share in the empire. To him were assigned the three great islands of the Tyrrhene Sea;

VOL. XIX.

Compact with Sextus Pompeius.

and the families of Pompeius and Octavius were further united by a marriage (A.U. 715, B.C. 39). Octavius was now at liberty to turn his arms against some revolted tribes in Gaul, while Antonius undertook to lead an expedition into Parthia, and avenge the disaster of Crassus. The first soon executed his purpose with his usual promptitude; the other lingered indolently in Greece. Sextus meanwhile failed to surrender some places he had previously occupied on the coast of Italy, and again intercepted the supplies of the city. Octavius had no alternative but to make war upon him. He summoned his colleagues to his aid. Lepidus promised, but delayed; Antonius sent him ships, but demanded soldiers for his Parthian expedition in return. Octavius, however, was better served by the skill and spirit of his friend Agrippa, who gained him victories at sea, and repaired the disasters which he experienced in his own person. The struggle ended in the complete overthrow of Sextus the armaments of Sextus, from which the chief himself escaped only to perish miserably a few months afterwards. At the last moment Lepidus rashly committed himself to an act of hostility against the victorious triumvir. He was instantly worsted; and though his life was contemptuously spared, his armies and his provinces passed finally into the hands of Octavius.

Political History.

overcome by Octavius.

Fall of Lepidus, A.U. 718, B.C. 36.

The contest for empire was now reduced to a struggle between two competitors, and it was not long before it came to the arbitrament of the sword. While Octavius was winning golden opinions in Rome and Italy by the plausible moderation of his manners, and by the ability of his government, in which he was seconded by Agrippa and Mæcenas, his rival was falling more and more into contempt. Antonius undertook indeed an expedition against the Parthians; but the issue was disastrous; and the mortification of the citizens was redoubled when their worsted champion quitted his flying troops to fling himself into the pleasures of his Egyptian capital, and celebrated, with Cleopatra at his side, the mockery of a Roman triumph in a foreign dependency. He had already renounced the aid of Octavius by repudiating the sister, whom he had taken to wife. He now devoted himself wholly to Cleopatra, and passed his days and nights in sensual revelry. These eccentricities, reported, perhaps with some exaggeration, at Rome, caused the deepest feelings of disgust; and disgust was succeeded by alarm when he was said to be preparing an attack on the Empire of the West, and Cleopatra was declared to have boasted of the laws she would issue from the Capitol. By this time Octavius had recruited his legions, and amassed treasure. When he found the minds of the citizens fully enlisted in his support, he came forward as the protector of the state,—the champion of the Senate, the people, and the gods of Rome,—and led all his forces in person across the Adriatic. Antonius, on his part, had not been slack in preparations. He too advanced, with Cleopatra in his train, and brought all the resources of the wealthy realm of Egypt to support the presidary cohorts of Greece and Asia. Armies, numbering more than 100,000 men on either side, confronted each other on the coast of Acarnania, near the entrance of the Ambracian Gulf; but the fortune of war was first tried by the rival fleets off the promontory of Actium. The vessels of Antonius were bulkier and more numerous; but the light barks of Octavius, under the command of the experienced Agrippa, were more skilfully handled, and fought more gallantly. The issue of the combat, however, was still doubtful, when Cleopatra, through fear or treachery, gave her own squadron the signal of retreat, and carried off with her sixty galleys of Egypt. Antonius madly rushed away to follow her, leaving his ships and armies to their fate. His ships, indeed, still continued the combat under every disadvantage, and were finally overpowered, and for the most part destroyed. His legions, however, finding themselves thus miserably de-

Battle of Actium, A.U. 720, B.C. 31

Political
History.

serted, refused to fight for their betrayer, and surrendered without a blow. The battle of Actium, fought on the 2d Sept. A.U. 723 (B.C. 21), threw the whole military force of the empire into the hands of Octavius, and assured him of a complete and speedy triumph over the remnant of his rival's resources.

Antoni^{us} and Cleopatra reached Alexandria; but the Roman was indignant at the conduct of his mistress, to whose base desertion he ascribed his overthrow, and at first refused to see her. Blinded, however, by his passion, he yielded again to her blandishments, and she amused him with schemes, sometimes for defence against the expected enemy, at other times for flying beyond the southern sea, and reigning in remote security over some Arabian province. She hoped probably to make her own peace with Octavius by the sacrifice of her infatuated admirer. The conqueror at last appeared on the frontier. Antonius went forth gallantly to meet him, and gained some partial success. But Cleopatra meanwhile had betrayed her fleet to the invader, and the gates of Alexandria were opened to him without resistance. Antonius, in his frenzy, threatened to destroy his ensnarer, and she took refuge in a tower, and sent him word that she had killed herself. The passion of the insensate Roman revived; he stabbed himself, and while slowly dying, caused himself to be removed beneath the windows of her place of retreat, and entreated her attendants to place him beside her body. Cleopatra caused him to be lifted into her chamber, and he expired immediately in her arms. She now exerted all her artifice to obtain terms from the conqueror. She had vanquished both Cæsar and Antonius by her charms, and she still hoped to prevail over the youthful Octavius. Admitted to an interview, he resolutely kept his eyes averted, and she despaired of moving his sensibility. She could consent to surrender her kingdom, but she spurned with indignation his cruel demand to exhibit her to the Roman citizens in his triumph. When he still insisted, though with the fairest words and promises, she had no choice but death, and as he set a guard over her to prevent her using the sword, she contrived to get an asp conveyed to her in a basket of figs, applied it to her arm, and perished.

Death of
Antonius.

Death of
Cleopatra.

The expected triumph of Octavius was deprived of its most coveted ornament; but Egypt was straightway annexed as a province to the empire, Cæsarion, a son of the dictator by Cleopatra, put to death, the sons of Antonius by the deserted Octavia carried to Rome to be bred as scions of the conqueror's own family. Octavius made a progress through the eastern provinces on his return, receiving the homage of dependent potentates, putting down the partisans of his adversary, and setting up his own in their place, securing the fidelity of the Roman garrisons under officers of his own choice. When he arrived at his capital in the year 725 he had consolidated the whole empire under the government of his single arm, and the republic of Rome was finally exchanged for a monarchy.

A.U. 725,
B.C. 29.

SECT. XXXVI.—CONSTITUTION OF THE EMPIRE BY AUGUSTUS.

Augustus
pretends to
govern by
constitu-
tional pre-
cedents.

About this great political fact there could be no doubt then or since; but the genius and the merit of Octavius consisted in the specious disguise which he succeeded in throwing over it. At the moment of his return to Rome the ancient constitution was still existing in all its forms; the Senate still possessed the ample prerogatives assigned to it of old, and the people were still the legitimate depositaries of power in the last resort. Octavius affected still to recognise the paramount authority of the public will. He professed to have wielded hitherto only delegated functions, and in these he pretended to have followed the spirit of established precedents. In all extraordinary emergencies the Romans had had resort to extraordinary commissions.

Such were the dictatorships of the early republic, the repeated consulships of Marius, the permanent dictatorship of Sulla, the vast military charges and the sole consulship of Pompeius. The "triumvirate for the arrangement of public affairs" was itself the application of an ordinary title to one of these extraordinary commissions. But this commission, constitutional or not, Octavius had scrupulously resigned at the expiration of the term to which he had restricted it; it was as consul and the elected of the popular assembly that he had conquered at Actium and subjugated Egypt. The regulation he had made of the affairs of the empire in the East, after the manner of Pompeius and Sulla, still awaited the formal sanction of the Senate; and the Senate was supposed to retain authority for granting or withholding from him the triumph he had so gloriously earned.

The "acts" were duly ratified, and the triumph was accorded. When the ceremony, together with the shows and festivals and glowing acclamations which accompanied it, had reached its termination, the emperor still stood at the head of the legions which had followed his triumphal car. According to the laws of the free state, Octavius must now disband his army or resign it to the disposal of the Senate; for with the triumph his *imperium* was become extinct. But he evaded this necessity. He allowed the Senate, prone as it was to flatter and caress him, to give him the title of Imperator in the same sense in which it had been conferred upon Julius Cæsar, thereby proclaiming him commander-in-chief of the national forces, placing every legion under his auspices, and every officer under his orders. As emperor, he retained the right of bearing, even in the city, the sword and cloak, the ensigns of military power; but this prerogative he cautiously refrained from using. The fate of Cæsar had warned him to accept less than was offered him. Content with the substance of power, he declined all invidious shows and titles. Though the people, in their enthusiasm for him, would have acceded to any usurpation on his part, he knew that neither king nor dictator would have been safe from the daggers of the senators. It was to exalt the estimation and give a fair shadow of authority to the Senate that his next efforts were directed. Having obtained the powers of the censorship, he proceeded to revise the list of senators, to eject the unworthy, to endow the impoverished, and create a body distinguished for its family and personal influence. Cæsar had degraded the order in its own eyes by intruding into it foreigners and base-born citizens. The triumvirs had been tempted to carry this practice still further. Octavius now retraced his steps. He reduced the number from 1000, to which Antonius had swelled it, to its proper limits of 600, and required a considerable property qualification. To the Senate, thus re-modelled, he left its ancient distinctions, and the greater part of its ancient prerogatives, directing its decisions in political and legislative affairs by management rather than by strict control; but he settled the course of his administration with the help of a private council of fifteen assessors, and decided the vexed question of the *judicia* by appointing a court of salaried judges, one hundred in number. To the people he left the old forms of popular assembly and the election of magistrates; but here again he interfered so far as to nominate the candidates to be submitted to their choice. The names and generally the functions of these magistrates remained as of yore. But in order to secure an easy means of guiding the Senate, Octavius revived in his own behalf the title of "Princeps," which gave him the first place and the first voice in the curia. This purely civil dignity, ennobled by some illustrious occupants under the commonwealth, had been always held for life, and accordingly Octavius could venture to accept it in perpetuity, while he demanded the powers of the censorship for five years only, and offered, with much appearance of earnest-

Political
History.

Functions
of the Im-
perator and
Priniceps.

Political History.

ness, to resign the imperium after ten. He allowed, however, both these powers to be renewed to him for successive terms to the end of his career.

The Potestas consularis and Tribunitia.

The consulship Octavius continued to exercise for several years successively; but he ultimately renounced the title, though he retained its powers by an extraordinary prerogative. Invested with the *potestas consularis*, he occupied the highest place in the city, and was recognised as the chief of the state, the head of the legislative and executive, the organ of its foreign policy. When the consul quitted his post in the city, he carried to the frontiers of the empire the same supreme authority which he had before wielded at Rome. When he vacated the office, and assumed the government of a province, he commanded the soldiers and citizens as imperator, and reigned as proconsul over the subjects of the state. But Octavius allowed himself to claim proconsular power together with the consular. As imperator, he had divided with the Senate the direct administration of the provinces, choosing for his own all those in which large armies were maintained for aggression or defence, and leaving to chiefs appointed by the Senate a civil supremacy in the unarmed and tranquil; but his proconsular authority was extended alike over all, and he asserted paramount powers, when occasion required it, in every quarter of the empire. The circle of the imperial prerogatives was completed by the powers of the tribuneship. This *potestas* was also declared perpetual, though renewed nominally from year to year. The authority this power gave the emperor in the Senate was a safeguard against any possible insubordination in that assembly; but its chief value lay perhaps in the continued popularity of its name. The populace of the city still regarded the tribuneship as the legitimate guardian of its rights and interests, and hailed Octavius as its proper champion, its protector against the sinister intrigues of the Senate. It gave a sanctity to his character, and rendered his person inviolable. When to this was added, at a later period of his career, the dignity of sovereign Pontiff, he acquired the control of the instrument of the state religion; and the defence of the citizens against the machinations of the nobles was supposed to be complete.

The chief priesthood.

The assumption of all these offices and functions was not effected at once: Octavius ascended to the summit of his ambition cautiously, and step by step. Meanwhile he discreetly waived every designation which should imply in itself the sovereignty he affected to disguise. Antonius had abolished the dictatorship to gratify the people, and Octavius took care not to revive it. No voice was suffered to hail him with the title of king. Nevertheless he was ambitious of a distinctive appellation; but it must be personal, not official. He would not be called "*Quirinus*,"—such a title would be extravagant; nor "*Romulus*,"—the name was of evil omen. To the epithet of "*Augustus*," which was next suggested, no objection could attach. It implied the nobleness of his character and functions; it had an air of sanctity, and even divinity; it bore an auspicious reference to the anticipated increase of his honours through time and eternity. The worship of Octavius as a god was rapidly spreading in the provinces; in the city, it was only permitted to pour libations to his genius—a distinction hardly palpable in the purest ages of religious usage and belief, and which court poets and flatterers could now easily obliterate.

The title of Augustus.

Political History.

of the people. From first to last no audible murmur was raised against his ascendancy. This must be accepted as a proof how welcome were the safety and tranquillity he offered to the Romans, after a century of intestine divisions and sanguinary struggles; but it proves beyond this, that, in the deliberate judgment of the nation, a limited or veiled autocracy was the form of government which, in the advance or decline of civilization, whichever we may deem it, had become most advantageous for them. Doubtless their first impulse was to hail the victor of Actium as the restorer of peace, and the saviour of the state from foreign aggression and domestic dissensions. The remains we possess of the literature of the period breathe this spirit of intense satisfaction, as at the revival of a golden age. The mission of the Romans is now declared to be, not to conquer all nations, to trample upon all national usages, or to luxuriate in the enjoyment of the world's wealth, but to bind all peoples together in one common union; to bend the necks of rebellious potentates to the yoke of international law; to quell all unruly ambitions, and inaugurate a reign of universal contentment and moderation. Once before, and once only, the ancient world had been brought under the sway of a single sceptre, and enthusiasts might have indulged under the Macedonian Alexander in such dreams of human happiness; but the fair vision had been quickly overclouded when his premature death left his empire to be torn in pieces by rival generals. The great bulk of the Roman people had no other anxiety about the empire of Augustus but the fear lest at his decease—and his constitution was weakly and his health precarious—the solid fabric of material prosperity he had raised should crumble under the violence of mere selfish usurpers. The idea of hereditary succession in political office had hitherto met with no favour in the republic; but the circumstances of the time now strongly recommended it; and without any formal concession of the principle, the minds of the Romans became implicitly reconciled to the anticipation of a dynasty of Cæsars.

His moderation and discretion.

But this favourable disposition on the part of the people would have been of no avail to maintain and perpetuate the empire had not Augustus been himself singularly endowed with the temper and talents required for advantageously using it. Heartless and cruel as he had proved himself in the pursuit of his ambitious projects, he henceforth prescribed to himself a career of clemency and considerate indulgence. He opened the field of public honours to men of all parties, and caressed with marked favour the kinsmen of his own most noted opponents. Even on those who actually conspired against him, he could not always be brought to inflict punishment. He gloried in constraining his public enemies to become his private friends. There may have been little genuine feeling in this course of policy,—the Romans themselves may not have been wholly deceived by this pretended generosity; but while they enjoyed the benefit of it, they did not criticise it too closely: Augustus succeeded in his object of securing their confidence and affection. He was not satisfied, however, with enlisting their personal feelings in behalf of his government. His ambition was not wholly selfish; he undoubtedly looked beyond his own greatness, his own security, or even the establishment of his family in greatness and security after him. He looked even beyond the establishment of his own future fame. He had a true and earnest desire to revive the fortunes of the Roman state, and launch it again, after the terrible crisis of the civil wars, on a fresh career of prosperity and glory. Unfortunately his views were warped by the common spirit of antiquity, the spirit of heathenism, which, devoid of a faith in Providence and hope for the future, always placed its ideal of excellence in some dreamy misconception of the past. Augustus sought to re-animate the life of Rome by restoring

SECT. XXXVII.—THE POLICY OF AUGUSTUS IN ITS MORAL AND SOCIAL ASPECT.

Acquiescence of the Romans in the disguised monarchy of Augustus.

Octavius, or, as he may now be styled, Augustus, retained the sovereign power to the end of his career, a period of more than forty years. During all that time his life and fortunes were assailed twice or thrice, but only by privy conspiracy among the nobles, never by any movement

Political
History.

His at-
tempt to
revive the
spirit of
antiquity.

the ideas and principles of a shadowy antiquity. These ideas, indeed, in so far as they had really guided the actions of the Scipios and the Camilli, had sprung from the laws and usages of their times: it followed then, so he fondly reasoned, that by restoring the usages the ideas themselves would be revived. By a strict execution of the functions of the censorship, by sumptuary laws, by police regulations, by reviving the honour of matrimony and the priesthood, by restoring the temples of the gods and the temple services.—by these and such-like measures he hoped to create again the people who had rejected the bribes of Pyrrhus, and retorted the invasion of Hannibal by an attack on Carthage. These efforts were no doubt wholly unavailing: the Roman people had lost its belief in religion, and therewith the only potent principle of self-control; the springs of public and private life had been poisoned by selfish and criminal indulgence; and by drawing closer the bands of law, Augustus only produced some outward decency at the expense of honesty and self-respect. The corruption of the times is more painfully marked in the affected decorum of Horace than in the glaring coarseness of Catullus, in the easy indifference of Ovid than in the open infidelity of Lucretius. In his vigilant control of the public administration, the imperial reformer was more successful. The ordinary procedure of justice was conducted with a firmness and equity unknown probably in the best times of the republic. A strong check was imposed on the violence and rapacity of the officials in the provinces. The Romans and their subjects were taught to regard each other with mutual respect. On the whole, whatever its drawbacks and defects, the policy of Augustus must be pronounced eminently successful in promoting the happiness and prosperity of the Roman world. Few or none of the citizens could look beneath the fair surface then presented to them, and anticipate the decay of public feeling, the decline of high principles, the growing acquiescence in merely sensual enjoyments, which would surely ensue from the stagnation of public life, and the concentration in a single hand of all the powers of the government. The Romans had had no example, on a similar scale and under similar conditions, of the transition from freedom to subjection. The autocracy of Augustus was an experiment in politics, from which they hoped the best, of which possibly they augured the best, but of which, whatever they might hope or augur, they felt in their inmost hearts the absolute and over-ruling necessity.

SECT. XXXVIII.—INTERNAL GOVERNMENT OF THE EMPIRE.

Pacific
policy of
Augustus.

On the restoration of universal peace, Augustus closed the temple of Janus, an act of grace which the citizens, who could record but two previous instances of it, celebrated with the loudest acclamations. His own military ardour was satisfied by the victories he had won over domestic enemies by the hands of Agrippa; he had no ambition for the fame of a conqueror; and henceforth he only led his legions to repress the brigandage of the Iberian mountaineers, or sent a grandson to demand from the Parthians the long-abandoned standards of Crassus. He allowed some minor expeditions to be undertaken against the predatory hordes which infested the frontiers of Egypt or Mauretania; and he sanctioned one wild and profitless expedition against the nomade tribes of Arabia. The border warfare on the Rhine, of which more special notice must be taken presently, was another exception to this pacific policy; but generally the arms of Rome, under Augustus were confined to securing the peace of the empire, and sedulously withheld from aggression in every quarter. A long period of repose was required to consolidate the heterogeneous elements which composed this vast dominion. Italy, the centre of the empire, and now made to comprise

the whole peninsula from the Alps to the Straits of Messina, was divided into eleven regions, and placed under the direct control of the prætor in the city. The rest of the empire was apportioned, as we have said, between the emperor and the Senate. The imperial provinces were the Tarraconensis and Lusitania in Spain; the whole of Gaul beyond the Alps, divided into several commands, including the Upper and Lower Germanies, as they were called, on the Rhine; Pannonia and Macedonia; Coele Syria, Phœnicia, Cilicia, Cyprus, and Egypt. To the latter were assigned Bœtica, Numidia, Africa, the Cyrenaica, Achaia, and Asia. Dalmatia, including Illyricum, at first given to the Senate, was soon afterwards taken by the emperor in exchange for the Narbonensis and Cyprus. Before the end of his career, Augustus annexed Palestine also to the empire, which then extended over every coast and island of the Mediterranean. In some quarters, as in Gaul and Pannonia, the sway of Rome penetrated some hundreds of miles into the interior of the continent; but the regions remote from the great inland sea, the highway of international traffic, were almost wholly barbarous. Gaul and Thrace were little better than vast forests; only a small portion of their soil was as yet subjected to cultivation. The great cities of the empire, the marts of human industry and emporia of commerce, were for the most part seated on the shore, or on the banks of navigable rivers. When the Romans boasted of having subdued the world, they really confined their view to the Mediterranean and the countries immediately bordering upon it.

Political
History.

Division of
the pro-
vinces, im-
perial and
senatorial.

The entire possession of this midland basin gave easy access to every province of the empire; and the facility thus presented for communication between them, when the police of the seas was vigilantly maintained, developed the capabilities of every country simultaneously, and bound them all together by the chain of a common interest. No empire was ever more favourably circumstanced than the Roman for the advancement of its national prosperity, and for the interchange of thought through all its members. So completely was peace the common interest of the inhabitants of all its inland shores, that the Mediterranean provinces were left almost wholly without military garrisons: every state and town could be trusted to maintain its own police, and keep watch over the behaviour of all the others. Italy, and Rome itself, were left without any regular defenders: the emperor entrusted his own personal safety to a few scattered cohorts of prætorians or bodyguards; it was not till the reign of his next successor that these battalions were even collected together in a camp at the gates of the city. Their numbers at no time exceeded 10,000 or 20,000. The legions which constituted the standing army of the empire were relegated to the frontiers, or to distant and turbulent provinces. Three of these divisions, each a little army in itself, were stationed in the Spanish peninsula. The banks of the Rhine were guarded by no less than eight: two were placed in Africa, two in Egypt, four occupied the eastern frontier, four more were posted on the Danube, and, finally, two were held in reserve in Dalmatia, within easy reach of Rome itself, if their presence should at any time be demanded there. The full complement of each of these 25 legions was 6100 foot and 726 horse; and this continued, with occasional variations, to be their strength for a period of 300 years. The cohorts of which they consisted were 10 in number, besides the squadrons or turms of horse. They were recruited generally from the mountains beyond Italy, at first from the genuine citizens of Rome in the provinces, but this restriction was not long maintained. The inhabitants of Italy itself began now to claim exemption from legionary service altogether, and were enlisted only in the prætorian bands. Numerous battalions of auxiliaries, with array and arms differing from those of the legionaries themselves, were

Military
establish-
ment.

Political History.

levied from the most warlike of the subject populations, and attached to each legionary division. Their numbers no doubt varied considerably; but it is generally computed that they equalled those of the legionaries, and we may thus assign a force of 340,000 men for the entire armies of the empire, exclusive of the cohorts in the capital.

Fiscal establishment.

The sources of revenue by which the establishments of the empire were maintained were numerous and varied. The public domain, reserved in ancient times to the state after each successive contest, had been perhaps wholly divided among the citizens, or remitted to the subjects; the tribute, or land tax, originally imposed upon citizens and subjects alike, had been remitted to the soil of Italy since the conquest of Macedonia; but this contribution was still levied throughout the rest of the empire, in money or in kind, and the capitation tax pressed alike on every inhabitant of the imperial dominions. Mines and quarries, fisheries and salt-works, were generally public property farmed by the state. Tolls and custom-duties were exacted on every road and in every city, and most of the objects of personal property, both dead and live stock, including slaves, paid a duty to the government in proportion to their value. Augustus imposed a legacy duty of a twentieth; but this experiment in direct taxation caused considerable murmurs. The great corn-growing countries of Egypt and Africa made a special contribution of grain for the supply of Rome and Italy. The largesses, both of victuals and money to the people, which had been an occasional boon from the early times of the republic, were henceforth conferred regularly and systematically; and there was no more fatal error in the whole administrative policy of the empire, though it was neither invented nor could perhaps be avoided by the emperors, than the taxation of industry in the provinces to maintain idle arrogance at home.

SECT. XXXIX.—THE REIGN OF AUGUSTUS.

Extent and population of the empire.

When Augustus had consolidated under his sway the regions between the Rhine, the Danube, the Euphrates, and Mount Atlas, the empire reached the farthest limits that it ever permanently retained. The population it embraced at this period may be approximately calculated at a little less than 100 millions; but it may be fairly supposed that, under the general reign of peace and domestic prosperity which prevailed throughout it, the number continued to increase at least for another century. With regard to the interesting question of the population of the great city, "the head and mistress of nations," now at the zenith of her glory, if not yet of her grandeur, some calculation will be exhibited in another place. It will be sufficient here to estimate it roughly at 700,000, and to add that this continued also to increase perhaps even after the general population of the empire had become stationary, or even declined, though it may never have much, if at all, exceeded one million. One of the principal cares of the new emperor was the embellishment of Rome. With this view, he erected himself many temples and public buildings, and he stimulated the great nobles of the city to follow his example. In this and in every other object of his policy he was ably seconded by his friend Agrippa, whose valour had won some of his most important victories, whose counsels were not less useful to him in peace than in war, and who distinguished himself above all his countrymen by the loyalty with which, having secured beyond dispute the second place in the commonwealth, he abstained from aiming at the first. More than once Agrippa was entrusted with the command of all the eastern provinces; but he executed his charge with an unshaken fidelity, which it was hardly less honourable in Augustus to appreciate without fear or jealousy. On the death of the young Marcellus,

M. Vipra-nius Agrippa and the imperial family.

Political History.

sister's son to the emperor, and his presumptive successor, Agrippa received the widow Julia, the daughter of Augustus, in marriage. Caius and Lucius, the eldest children of this union, were brought up as heirs to the empire, but both of them were cut off prematurely. Agrippa himself died many years before his patron, and Julia was married a third time to Tiberius Claudius Nero, the stepson of the emperor, whose mother Livia, a clever intriguer, contrived to secure the succession for him over the heads of her husband's direct descendants. The ambition and the vices of his own family caused Augustus, particularly in his latter years, more disquietude than the government of the empire.

Besides the advantage he derived from the assistance of C. Cilnius Agrippa, Augustus was supported, throughout the earlier part of his reign, by the tact and prudence of Mæcenas. This man had administered for him the government of Italy during the period of the struggle with Antonius. He continued to be his chief adviser in the settlement of the empire; and the Romans ascribed to him the first delineation of the principles of government which they saw gradually extended and confirmed from one reign to another. A popular tradition, for which there is probably no other foundation than the temper generally attributed to the men respectively, affirmed that when Augustus deliberated about resigning his power, he allowed Agrippa and Mæcenas to discuss the question in his presence, and that Agrippa counselled the restoration of the republic, Mæcenas the retention of supreme authority. The private manners and habits of the minister were not less serviceable to his master's position than his political counsels. Mæcenas contrived to attach to the new system many of the best and ablest public men of the day, while he secured in its favour the suffrages of the literary class. The table at which Virgil and Horace, Varius and Pollio, conversed genially together, under the patronage of Mæcenas, and in the presence of Augustus himself, was the field on which all the adverse theories of politics and philosophy laid down their arms and came to an amicable understanding. Never was a state revolution so gilded with the flattery of poets and historians as the seasonable usurpation of Augustus.

Nevertheless, successful as the emperor had been in the execution of his great enterprise, and in confirming its results, his latter years were not unclouded by reverses. While the citizens were getting at last a little weary of the monotony of his long despotism, suffering some disgust at the disgraces of his family, some apprehension at the prospect of an unpopular successor, they were suddenly alarmed and dismayed at the occurrence of a great military disaster. Though Gaul had long been pacified, the frontier was subject to the incursions of restless hordes from Germany, and it was necessary to keep up a large force and legions, as we have seen, in stationary camps on the Rhine. The temptation to employ these troops in aggression, no less than in defence, proved irresistible. The scions of the Cæsarean family were anxious for opportunities of military distinction. Augustus allowed his stepsons, Drusus and Tiberius, to conduct expeditions into Germany. Drusus penetrated as far as the Elbe, but died in early life from an accident. His successors in the command established the Roman outposts as far at least as the Ems or Weser, and the district between the Mayn and the Lippe was beginning to assume the form of a province, when the government of this district fell into the hands of Varus, a pedantic official, who so mismanaged his affairs as to excite against himself a general conspiracy of the natives, and allow himself to be surprised by them. Entangled in a country with which they were imperfectly acquainted, his legions, three in number, were attacked by overwhelming numbers, and destroyed in the forest of Teutoburg. Varus was slain, the whole Roman establishment overthrown, and

Wars in Germany.

The disaster of Varus.

Political
History.

the remnant of its soldiers and civilians driven in confusion behind the Rhine. In the face of such a disaster Augustus, now old and timid, gave way to nervous alarms. He trembled for the tranquillity of the city, for the loyalty of the citizens, much more than for the defence of the provinces. With the assistance, however, of Tiberius, he acted with sufficient vigour in recruiting his forces and restoring confidence. The younger Cæsar took the field, and made a show at least of offensive operations against the victorious Germans. He did not venture, however, to occupy again the footing lately held beyond the Rhine. Augustus, who died soon afterwards, in the year 767, left it in charge to his successor not to extend in any direction the limits of the empire.

Death of
Augustus,
A.U. 767,
A.D. 14.

SECT. XL.—REIGN OF TIBERIUS (A.D. 14–37).

Character
of Ti-
berius.

Tiberius, now in his fifty-sixth year, had discharged the most important offices in the Senate and the field, and was regarded as an able and accomplished prince. But the state of constraint under which he had lived as the presumptive successor of the empire, under a jealous and exacting stepfather, together with some sacrifice of the affections which had been extorted from him in his youth, had soured a temper naturally reserved and proud. For a time he had withdrawn altogether from public affairs, and during his retreat at Rhodes rumour had been busy in representing him as indulging in the grossest vice and cruelties. But his mother Livia, an able intriguer, watched over his interests. On the death of Augustus, the Senate learnt that he had been appointed the head of the Cæsarean family, and they readily, and indeed with much eager flattery, thrust upon him all the public honours and functions which Augustus had vacated. For some time he enacted the farce of pretending to refuse them; but this affectation was speedily overcome, and he retained a deep grudge against those among the senators who had been blunt enough to take him at his word. His first act, an omen of a bloody reign, was the assassination of a surviving son of Julia and Agrippa, called Posthumus, as having been born after his father's death; a youth of acknowledged evil temper and defective understanding, whom Augustus had himself removed from public affairs and relegated to an island. The jealousy of Tiberius soon extended to his nephew Germanicus, son of his elder brother Drusus, whom Augustus had required him to adopt and place on the same line of succession with a son of his own. Germanicus was a great favourite with the people. He seems to have been a man of military genius, which he exercised with considerable success against the Germans beyond the Rhine, though a naval expedition under his orders suffered a terrible disaster from tempest. He had formed a plan for the complete reduction of the country as far as the Elbe, and the spirit of the barbarians had been so far broken, in spite of the gallantry of their hero Arminius that in another campaign he might possibly have succeeded; but Tiberius was jealous of his fame and popularity, and forbade any more blood and treasure to be lavished on conquests beyond the bounds of the empire, as he had received it from Augustus. Germanicus was recalled to Rome, and allowed the empty honour of a triumph. The emperor was glad to rid himself of his presence on the first opportunity, and soon after dispatched him into the East, to overawe the Parthians. Not content with removing him from Rome, he deputed—such at least was the common belief—an officer named Piso to watch his conduct, and connived at this man's thwarting and disobeying his legitimate commander. Germanicus ordered Piso to surrender his office in Syria, but at the same time he found himself attacked by a debility, which, after a short interval, terminated in his death. His family accused Piso of foul play either by poison or at least by magical

Germani-
cus.

Death of
Germani-
cus.

incantations. Agrippina, the spirited consort of the deceased prince, prosecuted a charge of murder against him at Rome. Confident in the emperor's favour, Piso did not shrink from meeting it; but when he found that the emperor looked coldly upon him, and was disposed to abandon him to his fate, he anticipated the decision of the judges by a voluntary death. But the suspicions of the people were not thus averted from Tiberius. The deep sorrow they evinced at the loss of their favourite gave great umbrage to the tyrant, and induced him to treat with jealousy and harshness the widow and her children.

From the first, Tiberius had dissembled with the Senate, and he naturally distrusted them; while towards the other classes of his subjects, and particularly in the provinces, his conduct, though stern, was equitable; he took every opportunity to trample on the pride of the senators, to lower their estimation, and to make them feel his superior power. It was a great relief to them when, towards the middle of his reign, after devoting himself to the business of state with unwearied assiduity for many years, and never quitting Rome even for ordinary relaxation, he began gradually to withdraw more and more to the solitude of the isle of Capræ, an imperial domain purchased by Augustus, in which he took great delight. Though the popular notion, repeated by the historians, that he here abstained altogether from public affairs, and suffered the conduct of the administration to slip from his hands, seems to be grossly exaggerated, it was impossible but that an inordinate share of influence and power should accrue to the confidential minister whom he must leave in his place at Rome. Sejanus, the notorious favourite of Tiberius, had risen by artifice and ability to the highest office of state. He ventured to pay his addresses to a kinswoman of the emperor himself, and though he awakened thereby the emperor's jealousy, he seems not to have been unsuccessful. At all events, he effected the removal of some of his master's nearest relations, among them the luckless Agrippina, and the common rumour may not have been ill founded, that he aspired in his daring ambition to a share in the empire, and eventually to the succession. But Tiberius, it seems, had dissembled with Sejanus, as with others, and had allowed him to suppose himself more necessary to his master's policy than he really was. Once fully persuaded of the extent of his views and of his own danger in consequence, Tiberius had the energy to strike him down at a blow. Sejanus was in the city, in the ripeness of his power, surrounded by the senators and the soldiers; and Tiberius, now old and feeble, with scarcely a guard about his person, in his distant retreat, with only his ships to rely on for escape if the blow should fail. Great circumspection and artifice were required, but the tyrant was equal to the crisis. The missive which he sent to be recited in the Senate, in which he flattered and honoured his victim till he had thrown him completely off his guard, and then ordered the consul to arrest him, is celebrated as a masterpiece of king-craft. Sejanus fell amidst the execrations of the senators, who up to this moment had caressed him, and the people declared, with thoughtless exultation, that the state had been saved in the safety of Tiberius.

The citizens indeed were willing to persuade themselves that the tyranny under which they had lately suffered was due to the vile counsels of the upstart favourite, rather than to the evil disposition of their emperor himself. They entreated Tiberius to return to Rome, and administer the government in the presence of the people, as their potentates had done before. That the head of the Roman commonwealth should lead the life of a voluptuous loungee in the Grecian villas of Campania, seemed to them monstrous and degrading. Of a noble Roman who could so forget his country, and his duty to it, any horror might easily be believed, any crime, or vice, or unnatural torpi-

Political
History.

Retirement
of Ti-
berius to
Capræ.

Fall of Se-
janus,
A.U. 784,
A.D. 31.

The ac-
count of
Tiberius's
personal
vices.

Political History.

Political History.

tude, might be plausibly imputed to him. If, then, the account we have received of the vile debaucheries of Tiberius at Capræ exceed any modern instance of human depravity, it is not much more than might fairly be expected from the tongue of popular rumour exasperated at this glaring dereliction of duty and renunciation of conventional principle. Considering the sources from which we seem to have derived them, some shade of doubt must certainly attach to these reputed enormities. But even if we admit them in their fullest extent, we must still acknowledge that, frightful as they are, they may be paralleled perhaps in every particular in the conduct of less notorious personages of heathen antiquity. The cruelty and impurity ascribed to Tiberius belonged to his class as much as to himself, and were exercised by many a noble Roman at home and abroad, among their subjects and their parasites. The horrors of imperial vice have become especially notorious, from the pre-eminence of the personages to whom they were imputed in the histories of the times; but they were not the excesses of imperial power uncontrolled by law, so much as of our common human infirmity unsustained by religious principle. However this may be, Tiberius deserves credit as a ruler, for wielding his authority twenty-three years almost without drawing the sword, and for leaving his dominions in peace and prosperity. His end was precipitated, at the advanced age of seventy-nine, and on a sick-bed from which he could hardly again have risen, by the hands of an attendant in the interest of his grand-nephew Caius Caligula, impatient for the succession, and not without apprehensions for his own life.

a touch of actual insanity, he had none of the cowardice which generally accompanied tyranny. From the second year of his reign he continued to provoke the patience of the world by a series of indignities and injuries such as the provinces might have sometimes suffered from the worst of the proconsuls, but such as had never yet fallen upon the Romans themselves. His cruelties and oppressions were indeed generally inflicted upon the nobles, who had lost the respect and could no longer command the affection of the populace, while the populace itself he soothed and caressed by the profuseness of his shows and largesses; yet his blows fell sometimes among the crowd also, and the Romans shuddered at the terrible exasperation with which he uttered a wish that the whole people had but one neck.

The frantic dissipation in which this Cæsar indulged kept his mind and body in constant fever. His haggard countenance, his shattered frame, his agitated gait, his frenzy by day and sleepless perturbation at night, as described by the historians, form one of the most fearful pictures on record of the consequences of guilty indulgence. Shocking as such a picture must be in the case of a private individual, in a king of men—the tyrant of a hundred millions of fellow-creatures—it is truly awful. Caius had imbibed from the Jewish chief Agrippa, the companion and counsellor of his early years, the oriental idea of monarchy. He scouted the restraints of Roman law and usage; he tore away the veil of republican forms by which Augustus and Tiberius had disguised the real extent of their power; he determined that all his subjects should know that he was a despot, and that his will was practically as unrestrained as that of a king of Babylon or Alexandria. He scorned to dwell in a mansion suitable to a Roman noble, such as the palatium of Augustus and Tiberius, and covered a large part of the Palatine Hill with additional buildings, which he connected with the Capitol by a bridge flung boldly across the valley of the Velabrum. Over this bridge he marched in pomp to the temple of Jupiter, seated himself by the side of the god himself, and affected to whisper in his ear, and suggest the counsels of Providence. He aped the dress and style of the deities himself; and when his sister Drusilla died, with whom, like an eastern potentate, he had lived in incestuous commerce revolting to the feelings of the Romans, he declared that she had become a divinity, and required his subjects to pay her worship. He encircled his own head with the oriental diadem armed with spikes or rays, the well-known symbol of divinity in the East. Augustus had been honoured after his death with a temple and a priesthood at Rome—a tribute of respect which the Senate had refused to Tiberius; but had Caius lived a little longer, we can hardly doubt that he would have insisted on receiving divine worship himself from the citizens, as well as from the subjects of the state.

The extravagances of this wretched tyrant were chiefly shown in the games of the circus, in which he took a frantic pleasure, so as to threaten, it was said, to make his favourite horse a consul. The bridge of boats which he constructed across the Bay of Puteoli, for the sake of driving in triumph upon the ocean, was an extraordinary freak of reckless ostentation. The story, that instead of leading his troops, as he had promised, into Britain, he drew them up with great parade on the shore at Boulogne, and then bade them pick up shells, and return laden with “the spoils of the ocean” to Rome, may possibly be a misrepresentation. The account we have received of his expedition into Gaul, and his aimless enterprises in that quarter, is not much to be relied on. The commander of the forces on the Rhine had ventured to defy Tiberius in the old age of that timid emperor, and it was an object not unworthy of the boldness of Cains to throw himself in person into the camp of his formidable lieutenant, and inflict

Despotic character of his policy.

His extravagances.

Expedition into Gaul, A.D. 40.

Death of Tiberius, A.U. 790, A.D. 37.

Caius Caligula obtains the sole power.

His licentiousness and tyranny.

SECT. XLI.—THE REIGN OF CAIUS CALIGULA (A.D. 37–41).

Caius Cæsar, the son of Germanicus and Agrippina, had been bred in his father's camp, and received from the soldiers the familiar nickname of Caligula (from the *boot* or *caliga*), by which he is most commonly known at least in later history. He was adopted by Tiberius on the same footing as a younger Tiberius, the emperor's own grandson. As a few years older than his cousin, he was allowed, indeed, to regard himself as the immediate heir to the empire, though, according to the loose ideas of hereditary succession still current among the Roman statists, Tiberius was considered as having a presumptive claim to be associated with him when he should arrive at manhood. Thus Augustus had delegated a portion of his authority, first to Agrippa, and at a later period to the elder Tiberius. His successor, indeed, had never prevailed on himself to make any such surrender of his sole autocracy, nor was it possible, perhaps, for two kings to reign together again at Rome. From the first the young Caius, who assumed the empire at the age of twenty-five, felt the deepest jealousy of his unfortunate kinsman, and it was not long before he invented a pretext for destroying him. At first, indeed, no prince was ever more popular than this child of the people's favourite, succeeding as he did to a morose and odious tyrant. During the first months of the new reign both prince and people seemed to be equally intoxicated. The provinces partook of the exultation of the citizens. When the furious dissipation into which the young man plunged had prostrated him with an alarming illness, the Romans and their subjects combined in the expression of the deepest distress, and in frantic vows for his recovery. This assurance of his people's devotion seems to have removed from its object all sense of shame or apprehension. He indulged in every excess of vice and turpitude without scruple. Utterly devoid of the conscious reserve which had induced Tiberius to veil his indulgences from the prurient curiosity of his countrymen, Caius was equally free from the jealous fears which harassed his predecessor. Whether from the wanton gaiety of his disposition, or from

Political
History.

condign punishment upon him. We are loath to believe that a prince who could act so promptly and courageously on a suitable occasion, should have debased himself by the wretched trivialities imputed to him in connection with this expedition; nevertheless, we must remember that we are reviewing the career of one who can hardly be regarded in any other light than as a madman.

Caligula
assassin-
ated, A.D.
41.

This career, disgusting as it is, was happily cut short before the end of four years by the blows of an assassin. A madman in the possession of unlimited power must be considered beyond the pale of moral sanctions; and if there was no other way to remove him, no one would judge severely the man who wielded even the dagger against him. But Caius was not doomed to the death he so amply merited by the decree of the outraged Senate, or the general rising of an indignant people. He had provoked a domestic enemy in the person of an officer of his guard, and he was stabbed by a band of private conspirators in the vault of a passage in his palace. The blow was quite unexpected, and surprised both the Senate and the imperial family alike. There was none to claim the succession on the one hand; there was no plan for assuming the government on the other. After a moment's delay, the consuls, finding the throne vacant, proclaimed the restoration of the republic; but the citizens were wholly unprepared for such a revolution, and the soldiers of the guard, anxious only for the largess with which the accession of a new emperor must be accompanied, seized on Claudius, the uncle of the deceased, whom they found by accident lurking in a corner, carried him on their shoulders to the camp, and announced to the still trembling senators that they had chosen a chief for the republic.

SECT. XLII.—THE REIGN OF TIBERIUS CLAUDIUS (A.D. 41–54).

Claudius
follows the
political
example of
Augustus.

Resistance was perhaps impossible; none at least was attempted. The consuls took at once the oath of devotion to the new emperor, and the Senate and people followed their example. Tiberius Claudius was brother to Germanicus, and uncle to Caius. He had reached the age of fifty, during which his natural taste for retirement and study, as much perhaps as the jealousy of the heads of his family, and the weakness of mind and body currently imputed to him, had kept him almost entirely in a private station. He had applied himself to abstruse studies, and composed elaborate treatises, but he had made no acquaintance with the conduct of affairs, either military or civil. He was addicted to women, and had generally allowed himself to be swayed by them and by the freedmen who surrounded them. His accession to power was regarded as no augury of good government by any portion of his subjects: it was a relief, however, to be rid of the furious caprices of their last tyrants; and the pledges Claudius gave the Senate of deference to their counsels were accepted with grateful acknowledgments. Though betrayed occasionally into acts of harshness and cruelty towards men of distinction through his weakness rather than tyranny, Claudius continued throughout his reign to respect the character of the senatorial order. His principle of government was to follow the example of Augustus,—to restore and confirm ancient usages, to maintain the ancient laws, to enact the head of the family rather than the emperor of the state. His assiduity in business was extraordinary; presiding day by day at the tribunals, he tired out, infirm as he was, the judges and officers; and if at the close of an exhausting session he indulged with indecent avidity in the pleasures of the table, his excesses may be partly accounted for and excused by the exhausting labours to which he had devoted himself. His manners and his measures were equally those of a pedant on the throne; his awkward figure, rendered more uncouth by the effects apparently

of a paralytic seizure, gave occasion for much ribald mockery; but on the whole we must in fairness pronounce that his efforts at governing the world under such formidable disadvantages were truly meritorious, and his failure in a task to which he was constitutionally unequal a matter of commiseration rather than of ridicule.

Political
History.

Nor was it only in the city and on the judgment-seat that Claudius felt it incumbent on him to carry out the complete idea of the prince and emperor of the Romans. Augustus had placed himself at the head of the legions; feeble though he too was in bodily frame, he had fought against the enemies of Rome, and merited the glories of a triumph. The successor of Augustus must not shrink from following him in this field also. Caesar had imposed a tribute on the Britons; Augustus had insisted on its payment; but these obligations had been long evaded, and the threats of Caius had resulted in ridiculous failure. Claudius determined to seek his laurels in an enterprise against these distant enemies. He sent a lieutenant to secure a landing and make good a footing on the island; but he followed himself without delay, traversing the whole of Gaul at the head of his army; and after crossing the Thames he succeeded in bringing a British potentate to an engagement, and obtaining a decisive victory. The foundation of a colony at Camalodunum, or Colchester, secured the conquest of the southern part of Britain; and Claudius fully deserved the triumph with which his ambition was gratified. This success, though shaken by a later disaster under the emperor that followed, seemed to be completed by the capture of the bravest of the Britons, the renowned Caratacus. It does honour to Claudius, unless it may be ascribed to the greater humanity of the times—inhuman as in too many respects we must still regard them—that, instead of being strangled in his prison like Jugurtha or Pontius under the republic, this fallen enemy was treated with the consideration due to his valour, and suffered to live in freedom at Rome.

Conquest
of Britain,
A.D. 43.

The contempt with which the character of this unfortunate emperor has been loaded has been chiefly derived from the mishaps of his domestic life, and the fatal effects of the influence exerted over him by his worthless consorts. He had been more than once married as a private citizen; after he became emperor he united himself to Valeria Messalina, a woman whose name has become a byword for the excess of female dissoluteness. In his relations to this wanton woman, Claudius is represented as a miserable wittol, cajoled by a partner who hardly deigned to throw a veil over her flagitious infidelities. To her fatal sway was imputed many acts of cruelty and rapacity, covered by the name of the emperor. If she ruled him, she shared her influence with Pallas and Narcissus, freedmen and favourites of his court, who amassed vast fortunes by the crimes to which they extorted his consent. At last, to the relief of the Roman world, these hateful confederates fell out among themselves. Narcissus vowed to effect the ruin of Messalina. Her own conduct, now become utterly unguarded, soon furnished an opportunity, which he was bold enough to seize. Having fixed her roving passions on a comely young noble named Silius, she had the incredible audacity, so we are assured, to insist upon his publicly espousing her. Besides the monstrous impiety of the act in the eyes even of that careless generation, it was an open avowal of treason. Silius could have no other course but to overthrow, by force or fraud, the prince whom he had so grossly outraged. Not without difficulty did Narcissus open the eyes of Claudius to the insult he had sustained; with still greater difficulty he inspired him with courage to inflict a suitable punishment. The freeman insisted, and the emperor yielded: Silius and Messalina were arrested and slain; and the execution was hardly over before the stupidest of husbands was found to have forgotten all about it.

Domestic
troubles of
Claudius.

Messalina
and Silius.

Political History.

Political History.

Agrippina.

Such is an outline of the story related or confirmed by all our authorities. It is evidently derived from one source; but whether that source be the actual truth of the occurrence, or the fabrication of one whose position was such as to confer on it unmerited authority, may still be considered as doubtful; for Messalina was succeeded by another wife, Agrippina. Messalina left a son, Britannicus. Agrippina had also a son, Domitius. The great object of this last of the empresses was to advance the fortunes of this son by an earlier marriage, to secure for him the succession over the head of the orphan Britannicus. The wickedness of this intriguing woman is at least as well accredited as Messalina's, and it may easily be supposed that she would scruple at no falsehood to exasperate her husband against her predecessor, and to persuade him that Britannicus could not really be a son of his own begetting. However she may have represented the affair to Claudius, it is probable that in the memoirs of her times, which she is known to have written, she coloured them to suit her own purpose and deceive the citizens. The child of Messalina was to be disparaged in their eyes as well as in the emperor's, and the narrative of a palace scandal from the pen of a mistress of the palace was likely to meet with ready acceptance from the prurient curiosity of the Roman people. It is no unreasonable scepticism to withhold implicit reliance from the story of Messalina, even though told us by Tacitus.

The young Domitius was two or three years older than Britannicus, and when Claudius was persuaded to adopt him, he became, under the name of Nero Cæsar, the presumptive heir to the purple. Thus far successful in the accomplishment of her cherished object, Agrippina was now only solicitous to anticipate a reverse of fortune, and for this end she did not scruple to compass the death of the now doting emperor. She caused poison to be administered to him in a dish of mushrooms, and he died from the effects of it in her presence, almost at table, in the year of the city 807. She continued to conceal his decease till she had completed her arrangements for securing the succession to her son, who was led to the camp by Burrhus, the prefect of the prætorians, and accepted without hesitation, on the promise of an ample donative, as the heir of Claudius and the descendant of Germanicus. The Senate hastened to ratify the choice of the soldiers.

SECT. XLIII.—THE REIGN OF NERO (A.D. 54–68).

Domitius Nero, the favourite of the people.

The exultation with which the accession of Caius had been received on the demise of Tiberius, was renewed with increased favour on the auspicious transfer of imperial power from the old imbecile Claudius, to the gay young prince who now united the suffrages of all classes of citizens. With their late emperor, whether from the real defects of his character, or from the misrepresentations of it with which their minds had been abused, the Romans had become thoroughly disgusted; but the youth and beauty of Nero had made a very favourable impression on them, and this was heightened by the artful terms in which his accomplishments, his abilities, and his temper had been described to them. Seneca the philosopher, a man of known acquirements, and at the same time of popular manners, had been given him for his tutor. The young man had been bred in the school of wisdom and morality, which the sage seemed to find means to reconcile with the tastes and habits of the day. Nero was to combine the man of virtue with the man of fashion, and the world was invited to admire in his person the harmonious results of an alliance between things which hitherto pronounced incompatible. But the world accepted the announcement without misgiving, on the word of the philosopher, and echoed the applause with which he greeted the work of his own hands, anticipating in the advent of this

VOL. XIX.

favourite of fortune the return of a golden age, the descent of an Apollo upon the earth.

Nero possessed perhaps some graces of person, and some natural abilities. He was not devoid of natural feelings, of kindliness, and affection. With an impulsive temper, and a rather feminine susceptibility, he was easily led to seek the applause of those around him, and to shun their disapproval. The objects of interest which his tutor set before him were no doubt pure and virtuous, such as the love of his kindred, respect for his mother, regard for the common weal and for the pleasures of the people. But if Seneca led his pupil well, he exerted no moral power in controlling him. From the moment that the youth began to press upon the reins, Seneca relaxed his restraint, and gave full course to the indulgence of his passions. He hoped to retain a little influence by yielding much, and for some years after his accession the force of habit still inclined the restless pupil to lend an ear to his occasional suggestions. The first five years of the new reign, the *Quinquennium Neronis*, as this term was called by way of favourable distinction, have been celebrated as a period of really good and conscientious government; nevertheless, they were marked by crimes of the deepest dye, and no wise man could anticipate from the weak and wicked prince who committed such enormities any other development of his career than the frightful tyranny which actually succeeded to them.

Notwithstanding the marked applause with which Nero's accession was greeted by the Senate and the people, it was soon suggested to him that he might have cause of fear in the victim whom he had supplanted. The feelings of nature were too strong for those of custom, and still regarded Britannicus, the actual son of the late emperor, a more legitimate claimant of his throne than Nero, whom he had only adopted. The usurper was easily persuaded that it was necessary to remove the rightful heir; and by the agency of the notorious poisoner Locusta, the child of Messalina was murdered, not, it may be feared, without the sanction of Seneca himself. Nero was married to Octavia, the sister of Britannicus; but this creature, though celebrated both for her beauty and her virtue, gained no ascendant over him. He fell under the fascinations of the intriguer Poppæa, whom he took from his friend Otho, and under whose influence he engaged in the horrible design of ridding himself of his own mother. The rivalry between Agrippina and Poppæa had continued for some time. In her eagerness to retain her authority in the palace, the mother, it was said, had actually tempted her wretched son to incest; but when disappointed and defeated, she began to set up a rival court, and threatened to divulge the murder of Claudius, and recommend Octavia to the citizens, he was prevailed on to sacrifice her to the anger of his mistress, and what he considered the necessity of his own position. Again, it is reported that Seneca consented to the crime; it is more probable that he was not consulted about it; but undoubtedly both he and Burrhus, who had also the character of a brave and honest man, allowed themselves to justify it when done. Under the mildest view their conduct is without excuse. Nor was it of any avail. The people were horror-struck; the Senate, awakened by some sufferings of their own to the hollowness of their prince's professions of good government, resented it with murmurs and conspiracies. Seneca and Burrhus lost all favour and all influence, and both fell victims in a short time to their master's insatiable jealousy. Seneca, indeed, seems to have entered into a plot for his overthrow, the discovery of which cost the lives of many distinguished nobles, as well as of an old companion of Nero, the republican poet Lucan. The cruelties of Nero were now repeated and extended, falling upon the men most conspicuous for virtue, as well as the noblest and the wealthiest. The murders of Barca Soranus and of

Nero's tutor Seneca.

The "Quinquennium Neronis."

Death of Britannicus.

Death of Agrippina.

Death of Lucan and Seneca.

Political
History.

Pætus Thræsea, two of the staunchest professors of the Stoic creed of philosophy, seemed to aim at the "extinction of virtue itself."

Burning of
the city,
A.D. 64.
Persecu-
tion of the
Christians.

Amidst these dismal excesses of an unlimited despotism, the reign of Nero is remarkable for a disaster of another kind, of which, though imputed by many voices at the time to Nero himself, the hand of man may fairly be acquitted. In the year 817 Rome was swept by a terrible conflagration, which consumed a large proportion of the whole city. The populace, in their terror and distress, demanded victims, and the emperor suffered the Christians to be convicted on the charge of wilfully destroying it. Against the persons thus designated, of whom there were many now at Rome (but whether they were exclusively the believers in the gospel of Jesus Christ, or, partly at least, included the Jewish sectarians, the followers of false Christs, who had often caused disturbance even in the heart of Italy, is still liable to question), a cruel persecution, and the most cruel of punishments were directed. Death by burning was an ancient punishment of the republic for the crime of seditious incendiarism; and to this death the reputed burners of the city were devoted. They were tied to stakes and consumed in shirts smeared with pitch. The fierceness of the flames thus kindled, added to the horror of the execution, and the brutal levity of Nero in driving his chariot by the light of these human torches, heightened the commiseration to which the fury of the people had been quickly converted; but there can be no doubt that the invention of the pitched shirt was meant to shorten and not to aggravate the sufferings of the victims.

Nero's
licentious
amuse-
ments.

The horror with which Nero's cruelties were regarded by the Senate was enhanced by their indignation at the levities with which he gratified his own morbid passion for applause, and courted the flattery of the populace. He was devoted to the games of the circus, and insisted on outraging decorum by driving the chariot in person. He was not less addicted to the amusement, reported equally vile by the graver citizens, of playing and singing in public. It was said that in the midst of the general dismay at the great conflagration he had witnessed the scene from the top of a tower in his palace, and performed upon his flute the drama of the sack of Troy. This piece of unfeeling impertinence, followed by the avidity with which he seized on the space laid open by the flames to construct the immense extent of his "Golden House," gave colour to the suspicion above noticed, that he had actually caused the fire, or had at least forbidden its extinction. Soon after this event he quitted Rome to seek new laurels among the games and shows of Greece, where he expected to find his peculiar talents better appreciated than by his own morose or ignorant countrymen. He travelled from theatre to theatre, and won all the applauses and all the chaplets which Athens, Corinth, and Olympia could bestow. During the course of his reign foreign affairs had proceeded on the whole prosperously. A disaster in Britain had been retrieved. Some successes had been gained, by negotiation rather than by arms, over Parthia; and Nero had got much ridicule by claiming a triumph for them. His ablest lieutenant, Corbulo, he had wantonly put to death, when the breaking out of a revolt in Palestine demanded his best generals and his bravest legions. The conduct of this war was entrusted to the veteran Vespasian; but when at last a revolt broke out against him in his own army in Spain, he found himself without men or commanders to meet it. While he was still lingering in Greece, Galba, at the head of his forces, was marching towards Rome. The troops stationed in Gaul were induced to join the movement, or to observe neutrality. Nero returned in haste to Italy; but at the first news of some temporary success relapsed into his frivolous dissipations. The arrival of each succeeding courier roused him to paroxysms of alarm or confidence;

The "Gold-
en House."

Death of
Corbulo.

but he made no effective preparations to repel the danger, till the Senate, seeing the defencelessness of his position, summoned courage to anticipate the arrival of the avenger, by denouncing him as a public enemy, and setting a price on his head. The wretched tyrant evinced the utmost pusillanimity in this crisis of his fortunes. He fled from the palace in disguise, but despaired of ultimately escaping, and after much hesitation, and with much childish complaint, at last gave himself the death-blow.

Political
History.

Death of
Nero,
A.U. 821,
A.D. 68.

SECT. XLIV.—WARS FOR THE SUCCESSION (A.D. 68–69).

Galba, as he advanced towards Rome, declared that he had turned his arms against the tyrant in the interest of the Senate, and that he left to that venerable body the future settlement of the empire. He had lived to a great age in the tranquil discharge of high civil and military functions; and it is probable that he had first commenced his movement for his own safety rather than from motives of ambition. But when his enterprise was crowned with success, he could not doubt that the Senate would offer the empire to him, nor had he any scruple in accepting it. With Nero the last of the imperial race of the great Julius had perished: there remained no chief to whom the proconsul owed obedience. Galba was released from the military oath which bound him to the successor of Cæsar and Augustus, the descendant of Drusus and Germanicus. He accepted the honours proffered him, and having quelled all opposition to himself, and learnt the discomfiture of some military pretenders in the provinces, he entered the city at the head of his forces, and assumed the empire not less as the nominee of the army than as the chosen of the Senate. Servius Sulpicius Galba was a man of good family; the heralds tried to connect him with a mythological ancestry; but the transfer of empire from the race of the Julii, of whom three at least had been enrolled among their tutelary deities, gave a shock to the national feeling from which it never recovered. Never again could the Romans surrender themselves to the illusion, that their emperor reigned by right of a divine descent; the attempt to establish such a descent, though made in favour of some later rulers, never again laid hold of the national sentiment, and established itself as a popular superstition. As regarded the successor to Nero, it was wholly futile. The manners which Galba brought from the camp to the palace were rude and harsh; his principles were austere; he was frugal himself, and parsimonious in relation to others. He refused the soldiers their expected donative; and to both the soldiers and the people showed himself a strict disciplinarian. Such a commencement of a new reign—a reign founded on favour, not on right—irritated all classes, and made them apprehend a severity more galling than the capricious cruelties of the late tyrant. Warned, but not dismayed at the murmurs he heard around him, Galba selected an associate more young and vigorous than himself, named Piso; but intrigues were already in motion against him; Otho, once the confidant of Nero, and as profligate as his master, was tampering with the prætorians. Galba had exercised his power but one fortnight when this conspiracy burst upon him, and unsupported by the people, undefended by his own guards, he fell by the swords of a mutinous soldiery.

Death of
Galba, and
accession
of Otho.

The successor to Galba was proclaimed by the prætorians without even a pretence of consulting the senators, who tacitly acquiesced in the appointment, but abstained perhaps as far as they could from actually acknowledging it. While the emperor assumed the privilege of striking the gold and silver coinage, the privilege of issuing the more vulgar copper currency was accorded to the Senate. The fact, that no copper coinage of Otho's brief reign has been discovered, may be taken to show the reluctance of this outraged body to stamp their approval of his usurpa-

Political History.

Political History.

Death of Vitellius.

tion on the public money. But however this may be, the usurper's career was speedily cut short. The legions in the north of Gaul had already declared against Galba, and put Aulus Vitellius at their head to contest the empire with him. The report of Galba's death and Otho's succession made no difference in their measures. They wanted an emperor of their own creation, from whom they might receive a largess worthy of their services; perhaps they already thirsted for the plunder of Italy and Rome. Otho, though long steeped in luxury, was by nature gallant and high-spirited. He accepted the challenge with alacrity, and went forth to the Cisalpine to encounter the enemy. But his temper was light and capricious, and on the first check received by his followers, he resolved to put an end to the contest, of which he was weary rather than afraid, by falling on his own sword. The victory of Bedriacum, thus crowned by the self-sacrifice of his rival, there was nothing to prevent or delay the succession of Vitellius to power, enforced by the swords of his impatient soldiery, and accepted with entire submission by the Senate. At the head of his Gauls and Germans, the conqueror entered the city in military array and accoutrements; and Rome, for the first time, felt herself in the power of an undisguised invader.

Battle of Bedriacum, and death of Otho. Accession of Vitellius

Vespasian proclaimed in the East.

But the same high tide of revolution which had wafted Galba and Vitellius to Rome on the wave of military insurrection was preparing the triumph of yet another competitor for the purple. While the armies of the West were contending for the substantial rewards of nominating to the empire, the legions which occupied the opposite portion of the Roman dominions were not less eager to strike in with a claim of their own. The progress of the war in Palestine retarded their movements; but at last, suspending though not abandoning these important operations, which also promised abundant glory and plunder, their leaders agreed to set up Vespasian, chief in command among them, as the worthiest candidate for the empire. Vespasian indeed remained for a time in Egypt to secure the resources of that important province, and placed his son Titus in charge of the war against the Jews; but his friend Mucianus led a mighty force through Asia and Greece into Italy, and his lieutenant Antonius Primus engaged the Vitellians in the Cisalpine with the first division of his armaments. Vitellius was hardly seated in his palace, where he was disgracing himself by the vilest sensuality, and betraying a total incapacity for government, when his repose was shaken by the attack of these new assailants. A second battle at Bedriacum broke the strength of his forces. Antonius, anxious to secure the full merit of completing his success before Mucianus could come up with further reinforcements, followed on the heels of the Vitellians, and the partizans of Vespasian mustered so strongly in the Senate-house and the Forum that Vitellius, sluggish and pusillanimous, hastened to proffer his submission. Sabinus, the conqueror's brother, dictated the terms of his abdication; but his soldiers, enraged at his cowardly desertion, still retained their arms, and made a tumultuous night attack on the position of their adversaries in the Capitol. The venerable citadel of the republic was not regularly defensible. Climbing over the roofs of the adjoining houses, and flinging torches before them, they involved the august temple of Jupiter in flames, and burst in the confusion into the inclosure. Sabinus was captured and slain; Domitian, a younger son of Vespasian, escaped in disguise. Vitellius was compelled to resume the purple; but Antonius had now reached the outskirts of the city, and his opponents, who went forth without a leader to encounter him, were beaten back step by step within the walls, which he entered along with them, filling the streets with slaughter. A remnant of the Vitellians withdrew into the prætorian camp, but their last stronghold was speedily stormed.

Burning of the Capitol.

Their wretched emperor lingered about the palace, uncertain whether to fly or sue for mercy, but was seized by the infuriated soldiery, and slaughtered with many indignities. Mucianus, following in the rear of Antonius, and bringing Domitian with him, assumed the government in the name of Vespasian; and Rome once more settled down in the hope of tranquillity under the new usurper.

SECT. XLV.—REIGN OF VESPASIAN (A.D. 70–79).

Titus Flavius Vespasianus, the founder of the Flavian Accession dynasty, had been saluted emperor by his soldiers in the of Vespasian. East in July 822, and it was from that era that the years of his government were technically numbered; but his accession to power at Rome dates from the first days of 823 (A.D. 70), when he assumed the consulship, and received all the ensigns of imperial sovereignty from the Senate, though still absent from the city. He allowed some months to intervene before making his appearance in the capital, choosing perhaps to leave to his lieutenants the invidious task of punishing the most obnoxious of the citizens, and smoothing his entrance into power. When he arrived, about the middle of the year, he accepted the submission of the Senate with complacency, and assured it of his favour and consideration. He proclaimed the advent of a new era of peace, and this announcement was received with the same satisfaction as when Augustus closed the temple of Janus. But the announcement was at least premature, War in while the Jews still maintained, behind the walls of Judea. Jerusalem, their indomitable defiance of the power of Rome. Driven in three campaigns from almost every other stronghold they defended the Holy City with desperate obstinacy. Religious fanaticism supplied the place of skill or discipline. Though weakened by internal dissensions, they repulsed every attack of the enemy, and submitted to the extremity of famine rather than surrender to the sacrilegious assailant. Exhausted by a long blockade, they were at last overpowered by the perseverance of Titus; their walls were stormed one after another, the inclosure of the temple scaled, and the Holy of Holies given to the flames. The resistance was still protracted for a time in the streets of Jerusalem, and even when the city was taken and razed to the ground, a dying gleam of glory was shed over the fall of Judæa by the defence of Machærus and Massada. But Titus at length completed his bloody task, Fall of Jerusalem, A.D. 70. in which he had exercised relentless severity. On his arrival at Rome he was associated with his father in the honours of a triumph, commemorated by the arch, still existing, which bears his name, and received a share in the government of the empire.

The conquest of Judea had cost Rome a greater effort than any of her foreign wars since the great struggle with Carthage; but such was her energy, such at this period the extent of her resources, that she had continued to conduct it in the midst of the distractions of civil strife, and during the determined mutiny of one of her finest armies. Immediately on the departure of Vitellius for Rome, with Mutiny of a large portion of the Germanic legions, the German and Gaulish auxiliaries in the north of Gaul revolted against their commanders, set up the standard of a Gaulish empire, and succeeded in breaking up the whole of the Roman force in their country. Under the Batavian chief Civilis, they continued to defy the power of the empire till the overthrow of Vitellius allowed the new government at Rome to pour its legions across the Alps. Civilis was beaten in several encounters by the Flavian general Cerialis. Domitian advanced in person into Gaul to support the efforts of his lieutenant; but the resistance of the mutineers was crushed before his arrival on the Rhine, and in the north, as well as in the east, the sway of Vespasian was secured and consolidated.

Mutiny of the Germanic legions, A.D. 69–70

Political
History.

This fortunate soldier held the reign of empire ten years, during which period the Senate was allowed to resume much of its ancient consideration, and the personal virtues of the ruler, his simplicity and moderation of character, exercised a favourable influence on the manners of the age. A re-action set in, from the reckless extravagance fostered by the example of Nero. The fortunes of the great nobles had been broken down by the exactions of that rapacious tyrant, and had suffered still more perhaps in the confusion of the civil wars; many of the chief families had become extinguished, and their place in the Senate, and in the high offices of the state, was supplied by men of meaner birth and provincial extraction. Raised by Vespasian to their new dignities, these men took Vespasian for their model, and introduced into their households the fashion of economy and self-control. Though rude and unpolished himself, the soldier-emperor paid respect to letters, and established throughout his dominions a corps of salaried professors. On the other hand, he banished the philosophers from Rome; but to this harsh measure he was perhaps amply provoked by the pertinacity with which they preached disaffection and rebellion. Vespasian had none of the finer qualities of the high-bred Roman aristocrat; there was nothing genial or magnanimous in his character; once or twice he acted with revolting cruelty. But his rule was marked on the whole by equity and mildness, and his reign deserves to be noted as one of the brightest periods in the annals of the empire.

SECT. XLVI.—REIGNS OF TITUS AND DOMITIAN (A.D. 79–96).

Accession
of Titus.

Vespasian had prudently erected a temple to his predecessor Claudius, and he received a similar honour after death from his successor Titus. The Flavian family was formally admitted among the tutelary divinities of the Roman people; but the hero-worship of the emperors was a service from which the life and spirit had now wholly evaporated. The conqueror of Judea, who now occupied his father's place on earth, bore the character of a mild and studious philosopher. His conduct indeed in the field had been marked with the cold-blooded cruelty common to all the Roman generals, but towards the citizens, and especially the senators, he displayed the moderation and self-control which always commanded their warmest acclamations. Out of deference to the prejudices of his countrymen, he refrained from marrying the Jewish princess Drusilla, of whom he was passionately enamoured; and this condescension to national feelings gained him perhaps no less applause than the sentiment he was said to have once expressed, that "he had lost a day" in which he had performed no special act of virtue. There seems to have been some softness, and perhaps some effeminacy, in the character of Titus. He was addicted to voluptuous habits; he was prone to indulge in expensive ostentation; and had he not succeeded to a hoard of treasure amassed by his father's economy, which he did not live to exhaust, he might have resorted at last to the cruelties of a Nero to supply his prodigality. Though the Romans agreed in entitling this prince the "delight of the human race," they admitted that he was saved by an early death from the snares of a position to which he might have proved unequal. Titus died of a fever, his frame having been weakened by an immoderate use of the bath, after a short reign of only two years, in 834 (A.D. 81).

Death of
Titus.

Domitian.

Domitian, who succeeded to his elder brother, had never been regarded with the same hope and favour by the Romans. His head had been turned by the glories which accrued to his family in his tender years. During the short interval in which he had exercised power before his father's arrival at Rome, he had given the rein to his youthful passions, and the evil nature thus early developed in

him had been repressed but not eradicated by the control of Vespasian. The Romans declared that he had shown the cruelty of his disposition in early youth by his passion for killing flies. He seems to have had some taste for literature; he was himself a poet; he encouraged and rewarded poets, and instituted poetical contests and prizes. He persecuted the philosophers, indeed, like his father; nevertheless the reign of Domitian did not fail to produce many brilliant writers and enduring works of genius. But the temper of this emperor was weak and cowardly; and after a few years of professed deference to the Senate, he grew weary of the dissimulation he had practised, exacted from them the grossest adulation, watched all their movements with anxious jealousy, tormented them with his miserable fears, and decimated them, on the slightest pretext, with remorseless barbarity. He was himself tormented with the desire of emulating his father and brother in their military achievements. With this view, he did not hesitate to exchange the pleasures of the capital for the hardships of war. He made one campaign beyond the Rhine, and another beyond the Danube. He pretended to obtain successes, and to celebrate triumphs over both the Germans and the Dacians; and his equestrian statue, one of the most magnificent works of art at Rome, represented him trampling victoriously on the captive enemies of his country. Whether really satisfied or not with the applauses he demanded from the citizens, he could not bear to witness the genuine glory of a lieutenant. During the latter years of Vespasian, and through the short reign of Titus, the gallant Agricola, one of the best of the Roman captains, had conducted a series of campaigns in Britain. The country south of the Humber or the Tyne had been already reduced; but Agricola undertook to complete the conquest of the island, which he was the first to circumnavigate. In the course of eight years he penetrated to the foot of the Grampians, and finished his career of victory with the defeat of the Caledonian Galgacus. He drew a line of forts from the Firth of Forth to the Clyde, which was strengthened at a later period, and established as the boundary of the Roman possessions. But he would not have rested here, with his work half accomplished, had not the emperor suddenly recalled him to Rome, and reminded him of the danger of making himself too conspicuous among the subjects of so pusillanimous a master. He conducted himself at Rome with becoming modesty and reserve; but the jealousy of the tyrant was not to be appeased, and his death, which speedily followed, was too surely attributed to poison.

Political
History.

Domitian had purchased the favour of the populace by shows and largesses, but at the expense of the nobles, whose estates he confiscated; and as his enemies multiplied and his fears increased, he was constrained to secure the support of the soldiers by raising their pay, and indulging their indolence and vanity. The guards had now become well aware of their position as the real masters of the city and of the empire. Their vanity and their licentiousness were almost equally odious to the citizens, over whom they domineered with impunity. The life and power of the emperor were in their hands, and he was obliged to wink at their excesses. They could only be restrained by the strong arm of a soldier like themselves. They had quailed before veteran Vespasian,—they had respected the victorious Titan; but Domitian, whose futile pretences to military prowess they despised, could only retain their swords by yielding immediately to all their caprices. Thus supported, however, the nobles, now trembling daily for their lives, could not venture to assail him. He continued to persecute them with unceasing barbarity, while himself so apprehensive for his own safety that he shut himself up in apartments mirrored on every side, and so thickly carpeted that his footfalls could not be heard beneath. At

Agricola in
Britain.Domitian
reigns by
debauching
the
soldiers.

Political History.

Political History.

Death of Domitian, A.D. 96.

Death of Nerva, A.D. 98.

Trajan nominated by Nerva.

His institutions, his works, his military achievements.

last, however, vengeance overtook him from the centre of his own palace. He was wont to inscribe on his tablets day by day the names of those he meant to put to death, continuing to treat them, till the moment arrived, with attentions which disarmed all suspicion. An accident discovered the fatal record to the Empress Domitia, who was dismayed at finding her own name set down in it, together with those of others in high office about the emperor's person. To these she imparted the secret; and they all conspired together to save themselves by assassinating their treacherous master. The tyrant of Rome fell by the hand of a Greek freedman; and with him the line of the Flavian emperors came to an end. He left no children, nor would the indignant senators, who met to nominate a new ruler before the guards could recover from their consternation, have endured another scion of a stock now rendered detestable to them. Domitian was the twelfth of the Cæsars, a name or title which the Flavian emperors had continued to bear, and which was still perpetuated in their successors; but the accident, perhaps, of the *Lives of the Cæsars* by Suetonius terminating with him has limited its special application in popular language to these twelve only.

SECT. XLVII.—REIGNS OF NERVA AND TRAJAN (A.D. 96–117).

Nerva chosen by the Senate.

The prætorians were irresolute, the populace was indifferent; and when the Senate declared that Cocceius Nerva, an aged veteran of high birth and character, should succeed to the chief place in the state, his election might be regarded as ratified by the suffrage of the Roman people. But Nerva, it was remarked, was the first of the emperors of Italian, not of Roman parentage. His family came from Narnia, in the Umbrian territory; and he might still, it seems, be stigmatized as a foreigner, though the Italians had now enjoyed Roman citizenship for nearly two centuries. In this respect the new appointment of the Senate was considered by some as a striking innovation on the ideas of antiquity. It was remembered, however, that the elder Tarquin, one of the most popular of the kings, was by birth an Etruscan; and a saying was current among the curious in such matters, that the Romans had generally prospered most by their native genius under foreign rulers. But such reflections as these, delivered to us by some of their latest writers, were no doubt the sophisms of another age: at the moment, the citizens thought little of the origin of their new emperor; they were occupied with feelings of vengeance against the slaughtered tyrant, whose images they overthrew, while the Senate decreed that his "acts" should be abolished, and the honour of the apotheosis refused to him. The man of their choice was pledged to support their authority and respect their persons. Nerva bound himself by an oath that no senator should suffer death during his reign; a pledge which was formally repeated by some succeeding sovereigns. This was the charter of the Roman constitution under the new dynasty, which depended only on the word of the emperor, but was preserved inviolate at least by Nerva and his next successor. Under this pledge of personal safety the senators again raised their heads, and enjoyed a considerable share of real authority in affairs. Nerva, indeed, was a man of no great strength of character, nor were his health and vigour of body such as to allow him to enter on any struggle with the patrons who had advanced him to the head of the commonwealth. The Senate, however, on their part, fully acquitted themselves of their share in the compact implied between them, exalting the natural mildness and moderation of his temper as the highest sense of justice and most unbounded clemency. It mattered little to them that the poor old man surrendered to the clamours of the prætorians the freedmen who had slain Domitian; and when he himself put swords into the hands of some

nobles whom he knew to be conspiring against him, they extolled what was perhaps mere conscious helplessness as the most magnanimous intrepidity. It was in the interest of this class that the legislation of Nerva seems to have been principally conceived. He enacted rigid laws against the informers, and screened the senators from delation, not in cases of treason only, but of other criminal charges; while he enforced the utmost severity of the barbarous law of Rome against the slaves of their households. The reign, however, of this prince did not last long enough to try the principles on which he conducted it. He died, after holding power a little more than sixteen months, but not before he had conferred the greatest of all boons on the Roman empire, in the choice of the best and ablest of his subjects to succeed him.

This man was M. Ulpius Trajanus, a native of Italica in Spain, distinguished for his bold and straightforward character, as well as for his military capacity. It was for these qualities, and not for his rank or riches, for he was the son of a plain officer in the armies of Vespasian, that the emperor chose him for the support of his own throne, and adopted him into his family. This was, moreover, the best way of securing the tranquil transmission of the empire on the vacancy which might soon be expected to occur. Trajan was in command of the forces at Cologne at the time of Nerva's death; but not only the Senate and people, but the prætorians and the soldiers generally, acquiesced with perfect satisfaction in the announcement of his succession. He seems, indeed, to have been personally popular with all classes; nor did he, throughout the whole course of his reign, seek to ingratiate himself with any one at the expense of the others. The accounts delivered to us of this reign, as well as of others of the same period, are unfortunately very meagre. We possess, however, abundant evidence that the Romans, not then only, but for many generations afterwards, regarded it as the brightest epoch in the imperial annals. The Senate continued to enjoy the highest respect and consideration; the people were gratified by shows,—not indeed the aimless extravaganzas of Nero, but the martial displays of the amphitheatre, barbarous and disgusting, no doubt, according to our ideas, yet dignified in Roman eyes by ancient national associations. The government of Trajan is also distinguished by the attention it paid, for the first time perhaps in the political history of antiquity, to the relief of poverty by eleemosynary institutions. The provision it made for the maintenance of orphans in Italy, though we can but imperfectly understand it from the notices which remain, is a marked feature in the public economy of this interesting period. The architectural works of Trajan for the embellishment of the city were conceived on the grandest scale, and executed with no want of taste. He constructed, moreover, the naval stations of Centumcellæ and Ancona. But the bent of his genius was military, and he humoured the passions of the army, as well as his own, by the wars he waged against the enemies of Rome. He avenged the humiliation inflicted on the empire by the Dacians and their king Decebalus, which the pretended triumph of Domitian had failed to disguise, and reduced the countries of modern Hungary and Transylvania to the form of a province. The remains of Roman cities, and the deep root still held there by the Latin language, prove the completeness of the conquest he effected, though his next successor thought fit to resign this tardy acquisition. The Pillar of Trajan at Rome, sculptured with the events of the Dacian war, still exists as another monument of the conqueror's prowess. The emperor carried his arms also across the Euphrates, and annexed to the empire some districts in Mesopotamia. He penetrated into the deserts of Arabia, extending the empire, nominally at least, as far as the city of Medina. It is said that his lieutenants carried the eagles beyond Syene on the Nile, and subjugated Nubia. But these,

Political
History.Death of
Trajan,
A.D. 117.Persecu-
tion of the
Christians.

conquests, if they really deserve the name, were also surrendered on the death of the conqueror, which took place at Selinus in Cilicia, in the year 870, after a reign of nineteen years and a half.

The chief blot on the character of this able and potent prince is the persecution which he suffered to be inflicted upon the Christians, who were becoming at this period an important element in the population of the empire. By the earlier Cæsars the Jews had been treated with great favour, both in their own country and in Rome. This people had taken the part of Julius Cæsar in their hatred of Pompeius; they had sided with Augustus against Antonius; and thus had been suffered to return to practise their rites unmolested in the city, and to make a great harvest of proselytes among the noble and wealthy classes, particularly of the female sex. Under Tiberius, indeed, and Claudius, their turbulence had subjected them to rigid measures of repression; they had been banished for a time from Rome; but these measures were soon relaxed, and they returned in no less numbers nor less turbulently-disposed than before. In their own country the leaders of these repeated seditions had been known by the appellation of Christs, and when the true disciples of Jesus of Nazareth became first conspicuous in the city, we might expect them to be popularly confounded with the deluded followers of Judas the Galilean, or Theudas, who had made the name of Christ odious to the Roman people. We have seen how Nero gratified the Roman populace by sacrificing the Christians at Rome to their fury, and we have remarked that under this name, not the true disciples only, but the unbelieving Jews also, may possibly have been included. The fierce struggle which ensued in Palestine, ending in the overthrow of Jerusalem and a general dispersion of the native population, exasperated the feelings of the Romans against the Jews, and it is probable that, though the Christians were now of almost every nation under the Roman dominion, the fundamental connection of their religion with that of the Jews marked them as in some sense pertaining to those detested enemies of Rome. Hence every jealous measure directed against the Jews themselves, or against their rites and usages, would apply with equal force to the Christians; the believers might be required at any moment, at the discretion of the rulers and governors, to give a pledge for their loyalty to Rome by swearing in the name of the emperor, or by sacrificing to his genius. This was a simple test, which saved all discussion on the character of the Christians or the merits of their religious tenets; the prætors in the provinces might be anxious to show their zeal for their master by exacting this compliance; they were bound at least to exact it in the case of any person denounced to them as the holder of dangerous opinions, whether specified as Jewish or Christian, and hence we find such inquisition made, and cruel punishments inflicted, both under Domitian and Trajan. The latter prince checked the zeal of his officers by expressly forbidding, as in the case of Pliny in Bithynia, any inquiry for Christians to be made. If denounced, then indeed the test must be applied, but not otherwise. Thus circumscribed, the persecution seems to have quickly relaxed, and before his death, Trajan, with his natural justice and benevolence, resolved to suppress it altogether.

Commence-
ment of
decline in
military
spirit.

Trajan was undoubtedly the greatest of the Roman commanders after the days of Cæsar, and under him the frontiers of the empire were advanced to the farthest limits they ever attained. The legions were never more triumphant; the bravery of the soldiers, the conduct of their officers, never more conspicuous: the military power of Rome was raised perhaps at this epoch to its highest pitch. It may be doubted, however, whether the men who bore the eagles of Trajan were really animated with the same spirit of devotion to the service, of discipline and endurance, as the conquerors of Zama or of Pydna: they won many victories,

but it was over barbarian enemies; and their constancy was seldom tried by defeats. The practice, introduced indeed before, but carried out most systematically by Trajan, of defending the frontiers of the empire by long lines of fortifications, such as that which may still be traced in many places from the Rhine to the Danube, must have contributed to weaken the soldier's reliance on his own strength and courage, and taught him to depend on the shelter of ditches and ramparts. Thus protected, he would soon begin to relax in his attention to drill and exercise. It is probable, indeed, that the immediate object for which these works were raised was not so much defence as employment. The legions on the frontiers had too little occupation. On the Danube they had broken out in dangerous mutinies; on the Rhine they had set up an emperor of their own against the emperor of the Senate. The Roman soldier had been always taught to use the pick-axe as well as the sword; the raising of earthworks and fixing of palisades were part of his business as much as the leaping, running, swimming, and fencing which formed his daily exercise. Every night on march, on arriving at his halting-place, he was required to throw up a wall of turf round his camp before betaking himself to rest. The arrangement and dimensions of the camp are fully set forth by the historian Polybius, from which we may calculate the amount of labour imposed on the legionary in the best age of the republic. But under Trajan we find that a new system of castrametation was in practice, known by the name of its expounder Hyginus, according to which an equal number of men was lodged in an encampment of not more than half the size of those of the Cæsars and the Scipios. We cannot suppose that the armies of the empire carried with them less baggage or required fewer followers than those of the republic; and we can only see in this reduction of the size of the camp a relaxation of discipline, and a concession to the indolence of the legionaries. The walls of Trajan in Germany and Moldavia, and the diminished extent of the Hyginian encampments, are the first visible symptoms of decline in the military spirit of the Romans.

Political
History.

SECT. XLVIII.—REIGN OF HADRIAN (A.D. 117–138).

The wise and vigorous rule of Trajan seems to have Hadrian completely restored the harmonious working of the different nominated orders and classes in the empire. The sovereign authority by Trajan. of the Senate was recognised on all hands; and the emperor, when engaged on his distant expeditions, could leave the reins of government to the consuls without fear for his own power or for the tranquillity of the state. When he suddenly died in a corner of an obscure province, the mere assertion by his wife Plotina, that he had nominated Hadrian his heir and successor, was received without opposition or question; and, in default of sons of his own, it was considered most natural and proper that he should thus endow with the purple a man of known ability and experience, a native of his own province, and allied to his own family. T. Ælius Hadrianus, who really owed his elevation to an intrigue of the palace rather than to the actual choice of his predecessor, was a man whom even a Trajan, the best hitherto of the Roman emperors, might be proud of appointing to succeed him. Though his private conduct was not devoid of defects, and though his temper was eventually spoiled by indulgence, he seems to have possessed on the whole the highest combination of princely qualities that ever graced the Roman purple. Though a brave and skilful captain, he refrained from the Hadrian unprofitable pursuit of military laurels, and chose rather to abandon some of Trajan's conquests, than waste the resources of the empire in retaining them. The Euphrates and the Danube became again, and long continued to be, the frontiers of his ample dominions.

Political History.

Political History.

While he retained the swords of the legionaries in their scabbards, he did not shrink from passing a large portion of his time, as an emperor should do, among them; and whether in the camp or in the field, he set a noble example of abstinence and simplicity. He marched at the head of his troops generally on foot, never in a litter, from one end of the empire to the other; his fare was as rude as that of the meanest soldier; he wore no covering to his head, but he endured without a murmur the oppressive weight of his arms and corslet. But the merits of Hadrian as a commander were far outshone by those he manifested in the conduct of civil affairs. He visited every province in succession, exercising a vigilant control over the local administration, securing to his people the due execution of justice, alleviating their fiscal burdens, adorning their cities with sumptuous edifices, labouring night and day, with the assistance of the ablest counsellors, for the happiness and prosperity of his subjects. Hadrian was the first to undertake the great work of codifying the Roman law, a work which Cæsar had proposed, but which none of his successors had ventured to lay their hands to. This object, indeed, was not destined to be accomplished by any single emperor; but Hadrian deserves the full credit of showing it was practicable by commencing it. In the attitude he assumed towards the religious creeds of his subjects, he proved himself an intelligent statesman. In the absence of any definite views of his own, he displayed an enlightened tolerance of those of others, and relaxed the harsh restrictions which the empire still placed, in the spirit of antiquity, on many foreign superstitions. Unfortunately his liberality deserted him, like so many other philosophers of heathendom, in the presence of Christianity alone. Against the true believers he did not scruple to exercise the rigour of old Roman prejudice. He still confounded them apparently with the Jews, from whom they could not yet be at first sight easily distinguished; and the Jews had alarmed and irritated him by a furious revolt, which, commencing under Trajan, continued to rage far into the reign of his successor, and to demand for its suppression all the energy and unscrupulous cruelty of the ruling people. On the ruins of Jerusalem Hadrian planted the colony of *Ælia Capitolina*, called *Ælia* after himself as the founder, and *Capitolina* after Jupiter of the Roman Capitol, whose shrine he reared on the spot once honoured by the temple of Jehovah. The Jews were now at last finally subdued, and they never made head again against the power appointed to overthrow them.

His energy and prudence.

Persecution of the Christians and conquest of the Jews.

Hadrian's buildings.

The state-religion of the empire was honoured by several monuments of Hadrian's munificence. The temple of Rome and Venus which he erected, the remains of which are still visible between the Forum and the Colosseum, was the largest of all the buildings devoted to the worship of the gods in the city; while that of Jupiter Olympius, which he completed at Athens, the work of a series of governments and princes, was reputed the most magnificent of all earthly shrines, and alone worthy of the mighty being to whom it was dedicated. But while the emperor paid this external homage to the religious sentiment of his people, he did not scruple to outrage it by exalting to divine honours a minion of his own, the beautiful Antinous, who was drowned accidentally in the Nile. Both the compliment and the outrage, however, were regarded probably with equal indifference by the great majority of his subjects, whose notions of the supernatural world were limited for the most part to a belief in omens and incantations, while the outward forms of religion served them merely as a

pretext for the cultivation of art and taste. Hadrian has left another monument to himself deserving of notice in our own island. Consistently with his uniform policy of withdrawing the presidial garrisons of the frontier from the least tenable outposts, he abandoned the forts of Agricola between the Forth and Clyde, and drew a line of military stations, connected with a fosse and rampart of earth, from the Tyne to the Solway: this became now the boundary of the province of Britain.¹ It is probable that he also completed the rampart of Trajan between the Rhine and Danube, which is sometimes called after him the *Limes Hadriani*.

With such claims to respect in his public character, it must be confessed that Hadrian showed much personal weakness. It is probable that no man, in that age of moral decline, could cultivate every intellectual faculty to the utmost without betraying some pitiable vanity and overweening self-confidence. Not in the arts of government only, but in letters, in science, in taste, he would allow of no superior. He put to silence the grammarian Favorinus, who found it prudent, as he said, to desist from arguing "with the master of thirty legions." It is asserted that he put to death the architect Apollodorus, through jealousy of his professional accomplishments. In his latter years he became more than ever impatient of contradiction, and the fretfulness of his temper, which degenerated at last into gloominess and cruelty, was aggravated by painful infirmities. Towards the end of his reign he adopted L. Verus, with no other merit than that of being the handsomest of the Roman nobles; but this intended successor fortunately died before him, and on his death-bed he made the more auspicious choice of T. Aurelius Antoninus, a man of the highest promise, which promise he amply fulfilled. Hadrian died, worn out by bodily sufferings, in the year 891 (A.D. 138), at the age of sixty-three, after a reign of twenty-one years, having unfortunately lived long enough to cloud with indelible stains the career of the wisest of the Roman emperors.

Defects of Hadrian's character.

Death of Hadrian, A.D. 138.

SECT. XLIX.—REIGNS OF ANTONINUS PIUS AND M. AURELIUS (A.D. 138–180).

Before his death Hadrian had raised the mausoleum in Antoninus which he wished his ashes to repose; and the remains of Pius. This immense work still existing constitute one of the most striking monuments of antiquity at Rome. But his reputation he was obliged to leave in the hands of jealous survivors, and the Senate would have vented its spite on his memory by refusing him the honours of an apotheosis, had not his successor interfered, and exerted all his influence to gain him the coveted distinction. Antoninus earned, it is said, the title of "Pius" by the affection he thus displayed towards his adoptive father. The character of this prince was truly amiable; and the strict though generous discipline of his immediate predecessors had fortunately so calmed the temper of the Roman people, and suppressed all irregular ambitions, that the heir of their power was enabled to carry on the government on the principles of magnanimous moderation which naturally belonged to him. During the three-and-twenty years of Antoninus's reign we read of no intestine dissensions; nor was even the peace of the frontiers disturbed by foreign aggressions. Hadrian is accused of being the first to sanction the fatal policy of bribing the barbarians. How far he is justly amenable to the charge we do not positively know. He certainly did not adopt any such plan generally, and exceptional occasions there may have been on which it was not

¹ Some modern writers affirm that not the rampart only, but the wall which runs mostly parallel to it a few paces to the north, was the work of this emperor. The wall has more commonly been ascribed to Severus. The Roman authorities are vacillating and inconsistent. Gildas and Bede ascribe the wall to the latest period of Roman dominion in Britain. Amidst this uncertainty, it may be sufficient to remark that the rampart, running along the southern slope of the hills, must have been constructed for shelter rather than for defence; the wall, which follows the summit of the ridge, indicates a time when defence was paramount to every other consideration.

Political
History.

unwise to employ it. However this may be, we find that the peace of the empire was now substantially secured for more than a quarter of a century. Antoninus, indeed, saw reason to depart from Hadrian's cautious policy in Britain, where his lieutenant, Lollius Urbicus, advanced again to the boundary-line of Agricola. He departed from it also in another particular, in which we may take a greater interest, by repressing the persecutions which had so long raged against the Christians. On the whole, however, there is no period of equal length in the Roman annals of which we know so few particulars as this. This is owing partly, no doubt, to the uneventful character of the times, and partly also to the tameness of the Roman people themselves, who seem to have produced no men of prominence in public life during this reign. Even in arts and literature the spirit of Rome seems to have been quiescent; but Greece witnessed a great revival in letters, and was distinguished by a flourishing school, if not of original genius, at least of correct and elegant imitation. But the single history of the times which survives is peculiarly meagre, and we must regret the transient glimpse which is allowed us of a reign so full of social if not of political interest.

Death of
Antoninus
Pius,
A.D. 161.

M. Aure-
lius, "the
philoso-
pher."

Antoninus Pius evinced his regard for his predecessor by honourably fulfilling the obligation imposed upon him of adopting M. Aurelius, the son of Annius Verus, and his own nephew. For this youth, even in his tender years, Hadrian had shown a great predilection, being struck by his noble character as well as his excellent abilities. He used to call him, not Verus, but Verissimus; and on the death of his associate Ælius Verus, he was only prevented by his extreme youth from nominating him at once as his successor. Aurelius was carefully educated under his uncle, whose daughter Faustina he received in due time in marriage. Acquiring after his adoption his father's name Antoninus, he became distinguished from him in common speech by the further title of "the Philosopher." He devoted himself to the study of the Greek writers on morals, and professed himself a strict disciple of the Stoic school. The memoir he has left, consisting of reflections on his own life and conduct, is considered one of the most interesting relics of antiquity. It presents us at least with a picture drawn from life of a man in high station, and full of public cares, striving ingenuously to square all his actions to the rules of the truest wisdom of the ancients. Austere and pure as the Stoic principles were, they were not, it seems, too high-flown to be practically fulfilled by a man of strong resolution, lofty feeling, and thoroughly in earnest. The noble Roman, imbued with the Grecian philosophy, formed the fairest combination of moral excellences of which heathen antiquity was capable. Aurelius succeeded Antoninus in the year 914 (A.D. 161), and following again the arrangement prescribed so long before by Hadrian, associated with himself Lucius Verus, a son of Hadrian's favourite. This man was indeed of a very different character from himself; but while Aurelius, whose health was not strong, inclined to a quiet career of business and study at home, he might expect to find in his colleague, who was a man of great vigour of body, without any tincture of letters, an able assistant in the affairs of the camp. Immediately on the death of Antoninus the Parthians threatened the empire with war, and Verus was dispatched to take the field against them. But neither did Aurelius contemplate a life of tranquil retirement. The Chatti, a German people on the Mayn, were assuming an attitude of defiance; and an insurrection was at the same time apprehended in Britain. The defence of the West was undertaken by the Philosopher in person.

Verus as-
sociated in
the empire.

Victories
in the
East.

While the vigilance of Aurelius kept the Germans and Britons in check, the lieutenants of Verus, rather than Verus himself, who indulged without stint or shame in the licentious voluptuousness of his Syrian head-quarters, in-

flicted a severe defeat on the arrogant Parthians. The successes of the eastern war were celebrated by the two emperors in a splendid triumph, and commemorated in the sounding titles they appended to their names. But in the midst of these rejoicings a double calamity was impending over the empire: a combination of hostile tribes along the northern bank of the Danube, known by the terrible names of the Marcomanni, the Quadi, the Alani, and the Sarmatæ, was preparing to pour over the frontier and overwhelm the Pannonian and Illyrian provinces; at the same time the seeds of a fatal pestilence had been imported by the soldiers of Verus from the East, and become disseminated among the mass of the population almost throughout the Roman dominions. The alarm and distress of the people were aggravated by the inclemency of the seasons. The city was visited by one of the fearful inundations, periodically recurring, against which no adequate precautions had been taken through so many centuries, which swept away the magazines of corn by the river's side, and cut off the supplies of the turbulent multitude. The two emperors went forth together to combat the enemy on the frontier, and returned after a temporary success. Again they were summoned to the rescue, and this time Verus died on his march. The prevalence of the plague rendered recruiting slow and difficult; and Aurelius, determined to spare no effort in the defence of his country, did not scruple to enrol slaves and gladiators in his legion, a resource which had never been adopted but in the greatest extremity. At the same time he made what was to him a much less sacrifice, by selling the vast stores of jewels and furniture amassed by a succession of princes in the imperial palaces. The victory of Aurelius over the Quadi, in 927 (A.D. 174), is rendered memorable by the claim advanced by the Christians to a miraculous interposition. The affairs of the Romans were retrieved, it seems, by the occurrence of a seasonable storm; a fact which is commemorated on the column erected by the emperor in Rome. Some fathers of the church maintained, at a later period, that the rain was sent in answer to the prayers of a legion of Christian soldiers, to which the name of *Fulminatrix* ("the thundering") was in consequence given. They added that Aurelius suspended the persecution of the believers in consequence of this manifest sign of the Divine favour towards them. It has been proved, however, that the name of *Fulminatrix* was of earlier origin; and modern Christian divines will not allow that there was any suspension of persecution during the reign of the philosophic emperor. The story, we must suppose, was embellished, perhaps unconsciously, by the fervid imagination of Tertullian.

Political
History.

Great
plague and
other dis-
asters.

The "Thun-
dering Le-
gion."

But before he had broken the power of the Danubian tribes, Aurelius was called away to confront a more pressing danger in the East. The Empress Faustina, the daughter of the good Antoninus, inherited, it seems, none of her father's virtues. The dissoluteness of her conduct is said to have been notorious at Rome, and her husband, who loved her tenderly, was alone blinded to it. A crime of still deeper dye is imputed to her by the historians. Apprehensive of the risks the emperor ran from the infirmity of his health, as well as from the chances of distant warfare, and trembling for the succession, in case of his sudden death, of her young son Commodus, she intrigued, we are assured, with Avidius Cassius, the commander in Syria, offering him her hand in the event of her husband's demise; an offer which might be considered equivalent to an invitation to accelerate it. While Cassius was deliberating on this proposal, a false rumour of the emperor's death actually reached him. He immediately started up as a candidate for the empire, and his soldiers were not indisposed to lead him in triumph to Rome. Aurelius, on his part, prepared to meet him in the East; but when the conflict was on the eve of commencing, the usurper was assassinated by one of his

Intrigues
of Fausti-
na, and
revolt of
Avidius
Cassius.

Political History.

own officers. The conduct of Aurelius, while the event was still uncertain, seems to have been truly noble. He declared that he only wished to have an opportunity of pardoning his inconsiderate rival; and it is much to be lamented that the history of Rome should have been deprived of so rare an instance of imperial clemency.

Attacks of the barbarians.

Aurelius set the affairs of the East in order, still retaining his generous confidence in the guilty Faustina, who accompanied him on his progress, but who died by her own hand, as some affirmed, in the course of it. He visited Egypt and Athens, and celebrated a triumph at Rome in the year 929. After six months' respite, he was dragged away again to the Danube, where he continued to conduct operations against the restless barbarians for two more years. His self-devotion was crowned with repeated successes, but he was still unable to make a decisive impression on the wide-spread combination of Germans and Sarmatians. Vexed by the cruel destiny which retained him so long in the camp, but lamenting still more deeply the manifest weakness of the empire, which his arm only could uphold, he sank at last, from fatigue and chagrin, in the year 933 (A.D. 180), the fifty-ninth of his age, and the twentieth of his reign. His career, though calamitous, had been glorious. He had attained the fame which he never coveted, of a warrior; but he has earned still greater fame, and such as he would doubtless have more dearly prized, as a patriot and a philosopher. He seems to have lived up to his professions, and those professions the highest perhaps that a heathen could make, more fully than any heathen and almost any Christian moralist. No character, at least in ancient history, deserves to be held in higher honour by the wise and good of all ages. In his virtues, in his sufferings, in his triumphs and his reverses, he ran very nearly the same course as our English Alfred; but Alfred has been appreciated more and more by the advancing goodness and wisdom of his countrymen, Aurelius, in the now rapid decline of the empire, found no Roman imitators and few admirers.

SECT. L.—REIGNS OF COMMODUS AND PERTINAX.

Commodus, the unworthy son of M. Aurelius.

If the good and wise Aurelius betrayed some weakness of character in suffering himself to be blinded to his wife's infidelities, he erred more seriously in allowing the succession to his empire to devolve on a son so unworthy as Commodus. This youth seems to have possessed none of his father's virtues, nor had the training in wisdom which we must suppose his father to have given him produced any fruit. Though eminently handsome in person and skilful in his martial exercises, he was coarse and brutal in manners, cruel and cowardly in disposition. Admirably as the empire had been governed from the time of Nerva, and, with the exception of Domitian's reign, from the time of Vespasian, a period of more than a hundred years, it now became evident that the happiness of the Roman world depended on the general good qualities of the sovereign, and not on the stability of the principles on which the administration was founded. Vespasian had restored the dignity of the Senate, and the improvement he introduced in the manners of the nobility had contributed to strengthen its position in public opinion. Succeeding emperors, with one base exception, had condescended to lean upon the authority of this illustrious body, to consult it in the conduct of affairs, to defer to it in cases of adoption or association in their supreme power. The Senate, on the other hand, had had the good sense and modesty to accept the part assigned it without presuming further: it had responded to the emperor's appeals, but had refrained from dictation and perhaps even from suggestion. It is undoubtedly one of the most remarkable incidents in history, that two co-ordinate powers, so unequally matched in real force, should have continued to maintain for so long a period the tacit understand-

VOL. XIX.

Political History.

ing which secured the peace and happiness of mankind. The machine had hitherto moved so easily that no one perhaps at Rome was aware, at the moment of Aurelius's death, how precarious were the ties which actually held it together. Aurelius himself was unable to anticipate the certain disruption which must ensue from the collision of a rude and selfish prince with a proud but impotent nobility.

The detestation which the new emperor incurred may throw some suspicion perhaps on the details transmitted to us of his cruelties and other enormities, in which he is said to have equalled the jealousy of Domitian, the caprice of Nero, and the extravagance of Caligula. But with these loathsome particulars we need not much concern ourselves. The peace which, immediately on his father's death, he made with the Marcomanni was undoubtedly premature; it is not necessary to inquire whether, as asserted, it was purchased with money. After his departure for Rome the frontiers were more than once assailed by the barbarians, but successfully defended by the captains trained under the brave Aurelius. Commodus commenced at once a career of profusion and dissipation, showing too plainly the weakness of character which an untoward accident soon exasperated into fury. The jealousy of a sister towards his wife seems to have been the cause of the first conspiracy against him, which only failed from the hasty exclamation of the assassin, "The Senate sends you this!" Commodus had time to parry the blow. His life was saved, the conspirators punished; but his suspicions had been awakened, and from this time he could never rest while he saw before him the wise and able men whom his father had introduced into the highest places of the state. All his moments were now divided between extravagant amusements on the one hand, and sanguinary precautions for his own safety on the other. His sensuality was as brutal as that of the worst of his predecessors; his prodigality in shows and entertainments as excessive: he exhibited his skill in shooting the beasts in the circus; but the Roman spirit, even in this stage of its decline, was outraged by his assuming the name and attributes of Hercules, and requiring (the first of the Roman emperors) that divine honours should be paid him while still living. He commanded that not one only, as Julius, Augustus, and others, but all the twelve months should be named after his own titles, and that the city and empire itself should be designated, not as Roman, but *Commodian*. All power he threw into the hands of a favourite named Perennis; but this man was eventually murdered by the prætorians. Disgusted and incensed as the senators were at the outrages of all kinds committed by this abominable tyrant, they were utterly incapable of concerting any plan for overthrowing him. They neither raised the people against him, nor won over his guards, nor invited the commanders of the legions to draw the sword in their behalf; they had not even confidence enough in one another to plot his assassination. He fell at last, after a career of twelve years, by an intrigue of the palace. The contriver of his death was his own concubine Marcia, who discovered, it was said, her own name on the list of the victims he was about to massacre.

Death of Commodus, A.U. 945. A.D. 192.

The Senate, it seems, was not privy to the murder, and had made no preparations to profit by it. Lætus, the prefect of the guards, and Eclectus, chamberlain of the palace, agreed to present Publius Helvius Pertinax, an officer of obscure family, but of distinguished ability, to the prætorians, and by the promise of a liberal donative their support was purchased. The Senate, to whom Pertinax next exhibited himself, accepted the nomination with joy, and declared that he was the emperor of their own choice. Probably the empire could have furnished no worthier successor to Trajan than this brave and virtuous veteran, and the nobles of Rome might be proud of the respect and deference he manifested towards them. It seemed as if, after

Pertinax.

Political History.

a momentary eclipse, the principles of government consecrated by so many virtuous rulers, from Vespasian to Aurelius, were about to shine out again. But it was too late. The interregnum of Commodus had lasted too long. The interval of licentiousness in the court had corrupted the discipline of the camp. The prætorians, thoroughly debauched by the indulgence of the late tyrant, disdained the restrictions placed upon them by their new master. An attempt at reform and repression resulted in a military insurrection, in which Pertinax lost his life, after a brief reign of only three months. Though the real power of the Senate had long passed away, it had still retained up to this fatal epoch a shadow of authority, and we have seen how throughout the Flavian and Antonine period all the good emperors, all, that is, but two of the series, had lent their countenance to its pretensions. Though ruling by the sword themselves, they had kept the sword carefully under the gown, or suspended it from the palace wall. This moderation had been well rewarded. The good emperors of Rome had reigned long and prosperously. The honours they had bestowed on the Senate had been repaid them by the Senate, the people, and, so at least the Romans might believe, by the gods of Rome also. This period has often been distinguished with the title of "the happiest era of the human race." It is difficult indeed to point to any period, at least of ancient history, in which so large a portion of mankind enjoyed peace so nearly unbroken, wealth so widely diffused, laws so generally equitable, manners so polished, the appliances of art and science so numerous and so accessible. Yet we cannot commit ourselves to so bold a panegyric on an age in which morality was so lax, religion so effete, public spirit so nearly extinct. Even amidst unclouded material prosperity such deficiencies as these must have left a canker in millions of hearts, and poisoned, though unseen, the actual enjoyment of life. Indications, however, are not wanting that even the material prosperity of the Romans was undergoing through this period a slow but steady decline. Population was stationary or decreasing; production was suffering with the decay of industry and the vital forces of the state. When a nation has arrived at this turning-point in its career an external shock from war or pestilence may give it a blow from which it cannot recover. At a healthier and stronger period the onslaughts of the barbarians on the frontiers, and the ravages of the plague within, would have been cheerfully encountered and rapidly repaired. But stricken as she was at heart, Rome could now recover from neither. The barbarians ever continued to prey on her vitals through the remainder of her feeble career, and the great plague of Aurelius swept away resources which she had no longer strength to replace.

Murdered by the prætorians.

The so-called "happiest period of the human race."

SECT. LI.—REIGNS OF JULIANUS AND SEVERUS (A.D. 193–211).

Didius Julianus.

From this epoch all the interest of Roman history, as the record of a political organization, must cease. We enter upon a period of an hundred years, during which the government remains an undisguised military usurpation, extorted and retained by the drawn sword. On the death of Pertinax the Senate lost all hope. The men of the gown cowered in silent despair; while the prætorians proclaimed aloud that they would offer the empire to the men of their choice, and allowed, it is said, more than one competitor to bid for their suffrages with largesses. Didius Julianus, a wealthy but incapable senator, promised most, and was accordingly accepted. He commenced his reign at Rome with the acquiescence of the civil power, but under the protection of the guards; but the legions were not content with leaving such lucrative patronage in the hands of a few favoured cohorts, and as soon as the accession of their nominee was known in the camps abroad, the

army of Illyricum proclaimed their own general, Septimius Severus; that of Syria, Percennius Niger; and that of Britain, Clodius Albinus. Of these, Severus was the nearest to Rome, and he was perhaps the most active and energetic of all the competitors. He marched without delay upon the capital, and the Senate hastened to anticipate his reprisals by decreeing the death of Julianus. The puppet of the prætorians was deserted by his mercenary patrons, and suffered without an attempt at defending himself. Severus had conquered Rome, and this fact he made no affectation of disguising. Supported by the army, he disarmed and broke up the prætorian cohorts; he punished also the murderers of Pertinax; but he did not pretend to rule by any other means but force, and he immediately replaced the old guards of the city with more numerous battalions of legionaries. Having thus fortified his position in the city, he prepared to encounter the rivals arming against him in the provinces. It was easy to deceive the voluptuary Albinus with overtures for a division of the empire; but Niger was a man of spirit and ability, and required to be met boldly in the field. The shock of battle took place near the Gulf of Issus in Cilicia in the year A.D. 174, and ended in the defeat of the Syrian pretender. Niger was soon afterwards slain, and Severus exercised remorseless vengeance on his adherents. From thence he turned his steps westward, first attempting to effect the death of Albinus by assassination, but when that failed, leading his victorious troops to encounter him in Gaul. Against a man so vigorous and resolute the British commander had no chance of success; but the hopes of donatives and plunder still animated his men, and they ventured to contend with the forces of the emperor near Lyons. Albinus was completely routed, and fell on his own sword. Severus again followed up his victory with a bloody vengeance. But though relieved from all his rivals, and secured against the renewal of domestic hostilities, the conqueror was not permitted to rest for a moment. The overthrow of the Syrian army had laid bare the frontier of the Euphrates, and the Parthians invaded the undefended province. Severus hastened to confront the foreign foe with unabated alacrity, and the exploits of his legions in the East, under his able guidance, might be likened to those of Trajan, the greatest commander of the empire.

Political History.

Death of Julianus.

Victories of Severus over Niger and Albinus.

The reign of Severus was in fact a series of marches from one end of the empire to the other. His sojourns in Rome were few and transient, but his conduct when there was marked with the arrogance and harshness of a mere soldier. The nobles, whom he insulted and harassed, hailed his departure with satisfaction. Old and infirm, he determined at last to visit Britain in person, and complete the subjection of the Caledonians, by whose inroads the province was repeatedly afflicted. He recovered the territory south of the Clyde and Forth, and penetrated some way into the Highlands. The Roman stations, which may still be traced as far north as the Moray Firth, are due perhaps to the energy with which he pushed his successes. But he was now suffering from gout; his constitution was broken by excessive fatigues; and while his conquests were yet uncompleted, he retired to Eboracum (York) to die. His last watchword, given on his death-bed, *Laboremus* ("we must be doing"), marks the character of this indefatigable warrior, whose whole idea of political government was unceasing movement and action.

Death of Severus, A.D. 211.

SECT. LII.—THE SUCCESSORS OF THE FAMILY OF SEVERUS (A.D. 211–235).

Severus left his inheritance in partnership between his sons Bassianus, vulgarly called "Caracalla," and Geta. The elder proved him a monster of tyranny, of the coarse type of Caius and Commodus; the younger hardly promised

Political
History.

Caracalla.

better; but he was early cut off, being stabbed by his own brother in his mother's arms, before he had fully developed his evil qualities. Of the other crimes of Caracalla, his dissoluteness and ferocity, there is no occasion to say more; they will be too easily understood from the examples already presented to us. Timid as well as ferocious, he too was assassinated by Macrinus, the prefect of his own guards, after a bloody reign of six years. The Roman world was already weary of him. The vast edifice which he had constructed for the pleasures of the people bore the title of *Thermæ Antoninianæ*, for down to Caracalla the successors of the first Antoninus had all assumed his venerated name in conjunction with that of Augustus; but this once-cherished appellation was now rendered odious to the Romans, and was henceforth dropped from the imperial appellations. Yet, notwithstanding his personal excesses, the reign of Caracalla deserves to be noticed as an epoch in Roman jurisprudence. The administration of the wise and learned Papinian extended over the latter years of Severus, and commencement of the following reign, and was distinguished by the application of just principles of law and government. That great jurist himself fell a victim to his young master's jealousy; but to him may probably be ascribed the grand and comprehensive measure by which the boon of citizenship, the cause of so many contests in earlier times, was finally extended to the whole mass of the free population throughout the empire. It is true that this concession was no longer regarded as a favour. It conferred no privilege or exemption, as in days of yore; on the contrary, it brought all the subjects of the emperor within the scope of the direct tax on successions, which had been imposed by Augustus on the citizens of Rome only. But the effect of this great measure was to obliterate henceforth all distinctions of descent and race, and complete the fusion into a single nation of a hundred millions of civilized men.¹

Extension
of citizen-
ship
throughout
the empire.

Macrinus,
A.D. 217.

The deed of blood had been accomplished on the borders of Syria, where the emperor was engaged in leading an expedition against the Parthians. Severus had enjoined his son to pay court to the soldiers, and despise all other classes of his subjects; and the army, which was attached to him, would not have conferred his power on Macrinus had it been aware that the assassination had been committed at that chief's instigation. Macrinus, however, as the ablest of its officers, was now chosen for the command; and the distant Senate was informed, probably with no punctilious phrases, that a new ruler had succeeded to the throne of the Cæsars. The Senate would have offered no resistance; but in fact it had not time to resist. The news of the election could hardly have reached Rome when Macrinus himself fell by a revolt of the province in favour of a cousin of Caracalla, a Syrian by birth, Elagabalus, priest of the Sun at Emesa, who bore himself the name of the divinity he was appointed to serve. It was time that all the nations of the empire should coalesce into one when their rulers were thus repeatedly chosen from the provinces. Trajan and Aurelius had been Spaniards, Antoninus a Gaul, Severus an African. But these men were great themselves, and the nations to which they belonged deserved to be respected by the Romans. Elagabalus was a miserable stripling, without virtue or talent; and the Syrians, as a people, were despised for their effeminacy and profligacy. The claim of affinity with Severus was the sole recommenda-

Elagaba-
lus,
A.D. 218.

tion this unworthy creature possessed; but his grandmother Mæsa was a clever intriguer, and played on the affections of the soldiery, who eagerly embraced his cause. They quickly overthrew the upstart Macrinus, who perished with his son and associate Diadumenianus. Macrinus had already purchased peace from Parthia. The soldiers carried their new emperor to Rome, where he speedily immersed himself in the vilest and most disgusting debauchery. The majesty of the purple, often as it had been sullied by stains of every kind, was never perhaps so utterly prostituted and degraded as by the nameless enormities of Elagabalus. For four years the prætorians endured him; then even their patience was exhausted, and they rose and slew him ignominiously.

Political
History.

The empire was now offered to another scion of the stock which claimed connection with Severus. Mæsa, the sister of that emperor's consort, had had two daughters. Soemias, the elder, was the mother of Elagabalus; the younger, Mammæa, had borne Alexander Severus, whose character throws one bright though transient gleam over this gloomy period. Under the prudent training of his mother, this prince had unfolded both virtues and abilities; and he continued to profit on the throne by the lessons he still permitted her to instil into him. With the aid of Ulpian and other illustrious jurists, he carried on the great work of Roman legislation; the sole but sufficient token which enables us to augur that, amidst the depravity of its rulers and the violence of its soldiers, the empire was still the cherished home of private graces and tranquil enjoyments. The rescripts of Alexander himself, and the digests of his ministers, are more significant monuments of the civilization of the age than the baths, the columns, and the palaces which continued to be raised to the vanity of princes, or for the gratification of the populace. The reign of this gallant emperor was prosperous both in peace and war, but he too was required to buckle on his armour for a contest in the East. The revolution, indeed, by which the dynasty of the Parthian Arsaces was overthrown, and the Sassanidæ, a native race, succeeded to power at Seleucia, was an augury of evil days to come. The great Eastern Empire, henceforth no longer Parthian, but Persian once more, as of old, sprang up in renewed vigour, and inflicted, under succeeding rulers, many terrible blows on Rome.

Alexander
Severus,
A.D. 222.

The last of the Alexanders gained, however, a great victory over the foes of his illustrious namesake, and returned to celebrate a triumph in the Capitol. Scarcely had he enjoyed the reward of his bravery, when he was summoned to repel another attack of the Germans on the Rhine, and the necessary enforcement of discipline caused a mutiny among the enervated legions on that long peaceful frontier, in which he unfortunately lost his life. His reign had lasted thirteen years, and for that brief space his prudence and vigour had arrested the decline, now too clearly apparent, of the empire. It had now become abundantly manifest that it was by the soldiers alone that an emperor could be made, and that the soldiers themselves could not long endure the creatures of their own making. The long list of military princes who now follow in rapid succession presents us with one or two names only that command the slightest respect; while the events of our history become as uninteresting as the characters of the chief actors in them. A rapid glance will suffice for the period of half a

Revolution
in Parthia.

Death of
Alexander.

¹ By this number we intend to specify approximatively the whole population of the empire. Of course it will be understood that the slaves, included properly in the total of the population, are excluded from citizenship. Of the numbers of this class it is impossible to form any calculation. The guess of Gibbon and others, that the slaves were as numerous as the freemen throughout the empire, is wholly gratuitous, and appears to us extremely wide of the mark. In the great cities, in Italy, and in some special districts, they were undoubtedly numerous, though nowhere, we conceive, did they approach at all near to this proportion. But throughout the greater part of the provinces they must have formed but a small section of the population. In this respect the condition of modern Turkey presents perhaps the nearest analogy we can discover with the Roman empire in the third century; and our statisticians have not generally thought it worth while, in enumerating the elements of population in Turkey, to take any account of the slaves at all. Possibly the slaves in Rome might be one-third, those in Italy one-fifth, those in the provinces generally one-tenth or even one-twentieth of the whole numbers.

Political
History.

century, from the death of Alexander in 235, to the accession of Diocletian in 284.

LIII.—ATTEMPTS OF THE SENATE TO RECOVER AUTHORITY.

Such is the variety of names which now rapidly succeed one another at the head of the Roman world, that it will be well to divide the period on which we now enter into two parts, according to the leading features which distinguish it. The first comprises the attempts of the Senate to resume its sovereignty over the empire; the second signalizes the efforts of the generals, when these attempts have completely failed, to secure the permanence of military supremacy by restoring the discipline and subordination of the soldiers. The elevation of the Thracian peasant caused an unwonted shock to the susceptibilities of the Roman nobles; and if their disgust was enhanced by the report of his severities and barbarous violence, they were encouraged to make head against him by his continued absence from Italy, which, during his short career of undisputed power, he did not even deign to visit. It was not from the Senate, however, or in Italy, that the movement against Maximin arose. While he was occupied with military operations on the northern frontiers, the chief inhabitants of Africa raised an aged noble named Gordianus to the purple, in which they associated with him his son, and invoked the Senate of Rome to accept him as their leader against the emperor of the army. The Senate acquiesced; denounced Maximin as a usurper, and called on all the provinces to rise against him. The summons was not ineffectual. Maximin found himself deserted both by provinces and armies. But a fresh insurrection in Africa cut off both his rivals; and when he led his troops into Italy, and besieged Aquileia, he found himself opposed, not by the Gordians, but by Maximus and Balbinus, whom the Senate hastily elected in their place. Maximin fell in a camp mutiny; Maximus and Balbinus were slain soon afterwards in a military insurrection; but a third Gordian, a mere stripling, had been already associated with them, out of respect for the great virtues of the grandfather, and the soldiers suffered this nominee of the Senate to retain possession of the purple. The third Gordian was amiable, but probably weak in disposition. The reins of power were held for him with a strong hand by his prefect Misitheus; and the government was conducted, while this man lived, with credit and success. The formidable attitude of the Persians called the emperor to the Syrian frontier. Misitheus was cut off by the intrigues of Julius Philippus; and when this man succeeded to the post of prefect, the emperor fell helplessly into his power, and was soon sacrificed to his ambition. Philip, who now seized the empire, was a native of Bostra. He is generally called "the Arab," but it is not necessary to suppose that he was of Arabian extraction. At all events, he was received without a murmur by the Senate, whose feelings were gratified, no doubt, by the celebration of the Secular games, which he instituted in 248, on the thousandth anniversary, for so it was reckoned, of the foundations. The government of this emperor was mild and prudent. Some Christian writers have claimed him for a convert. If the evidence for the fact is slender, the arguments against it may be dismissed as nugatory; but the Christians, it may be enough to remark, were disposed to speak favourably of the victim of a man who was notorious as one of their fiercest persecutors. Philip fell in a military insurrection, and was succeeded by Trajanus Decius, an excellent officer, and a man of genuine Roman descent. Thus recommended to both the soldiers and the Senate, he confirmed the predilection of the first by the bravery with which he made head against the attacks, now renewed year by year, of the Goths and Sarmatians in the north; and of the latter, by the sweeping attack he made

against the long-hated sect of the Christians, of whom we have for some time lost sight in our history.

The Christians, harmless as they were both socially and politically, had been objects of popular hatred from the time when they were first confounded in the common apprehension with the turbulent and rebellious Jews. They had fallen under the suspicions of emperors and prefects, and had often been required to make proof of their loyalty by performing acts of heathen sacrifice, or swearing by the imperial name; and the firmness with which, on such occasions, they had maintained their religious principles had consigned them too often to tortures and death. More than once the anger and alarm of the civil authorities had prompted still further inquisition into the tenets of the new sect, and from single and occasional cases of violence the persecution had extended to congregations and communities. It is probable, however, that the persecution was first general under Decius; and we may believe that to the vigorous and systematic effort this emperor made for the suppression of the true faith he was prompted not only by his wish to conciliate the nobles at Rome, but by a long-growing persuasion that the evils which afflicted the empire might be traced to the alleged impiety of these reputed fanatics. The recent celebration of the secular games had given a stimulus to Roman superstition; and this now wreaked itself, without stint or scruple, on the unresisting victims, whose marked indisposition to enroll themselves in the military service of the state rendered them doubly objects of suspicion in the general panic which prevailed throughout the empire. For this panic, indeed, there were sufficient grounds, both within and without. The northern nations, then known under the names of the Quadi and Marcomanni, had been controlled by M. Aurelius, and had remained generally quiescent during the seventy years which had followed; but now the Franks, the Goths, and the Alemanni were pouring in ever-increasing numbers across the Rhine and Danube: the inundation, long pent-up, had gathered force and volume, and threatened to overflow the whole empire. The resources of the government, first shaken by the long-protracted pestilence of the Antonine period, had never been restored. The population and wealth of Italy and the provinces continued gradually to decline; but if these distant symptoms of decay were yet hardly visible except to statesmen, the plagues which swept the great cities of the empire in succession, between the years 250 and 265, alarmed men of every class with the prospect of its impending dissolution.

Political
History.

Persecution of the
Christians.

Great in-
vasion of
barbarians.

Repeated
pestilences.

SECT. LIV.—THE EMPERORS OF THE CAMPS (A.D. 251–284).

There was no hope for Rome in the favour of its gods nor in the virtues of its people; but there was still hope in the personal bravery of its captains; and from this time we find, with only one or two interruptions, a remarkable succession of able chiefs at the head of its affairs. Decius fell in battle against the Goths. The legions, satisfied with the late appointments, left the choice of his successor to the Senate, and Gallus purchased a respite from attack by the payment of tribute to the barbarians. This disgrace was soon wiped out in his blood. Valerian, a favourite officer of Decius, reigned in his stead. The Franks and Alemanni were checked in the West; but in the East the Goths made an irruption into Greece and Asia Minor, crossing the Black Sea, and traversing the Hellespont, and were stopped rather by the effects of luxury and climate than by the sword of a defender. When these swarms were cleared away from the fertile lands they had desolated, Valerian had a harder task to perform in hurling back the Persians from Syria. Defeated and taken by Sapor, he was condemned to chains and menial offices, while his son Gallienus, a dissolute youth, refused to arm for his recovery.

Gallus,
A.D. 251.

Valerian
and Galli-
enus,
A.D. 253.

Maximin
and the
three Gor-
dians,
A.D. 235–
244.

Philippus
the Ara-
bian,
A.D. 244.

Secular
games,
A.D. 248.

Decius,
A.D. 249.

Political History.

Political History.

Odenathus and Zenobia.

The advance of the Persians was checked, not by the emperor and the legions of Rome, but by the brave Odenathus, and the still braver Zenobia his wife, the rulers of the tributary kingdom of Palmyra. Elated by his success, and vain of the splendour of his capital in the desert, Odenathus was not content with aspiring to independence, but claimed, it is said, to be associated with Gallienus in the government of the empire. But pretenders to the purple sprung up now in various quarters. The attacks of the barbarians called forth the legions on every frontier into the field, and whenever a victory was gained, or an imposing front assumed by the defenders of the state, there a new emperor was proclaimed, and the submission of the Senate and people demanded. To this host of competitors, most of whom fell quickly by one another's hands, the name of the "thirty tyrants" was popularly given. Their real number was little less than twenty. One of the most successful of them, Aureolus, penetrated into Italy, and Gallienus fell in a tardy attempt to assert his power and dignity against him.

The "thirty tyrants."

Claudius, A.D. 268.

But the usurper was shut up in Milan, and the death of Gallienus served only to raise up a stronger antagonist in the person of M. Aurelius Claudius, whom the Italian forces appointed their commander. Claudius was a man of high military virtue. He destroyed Aureolus, overcame the Germans, and totally routed the Goths in the great battle of Nissa, from which he derived the title of "Gothicus." But this brave chief was speedily cut off by sickness on his route to the East. Claudius breathed his last at Sirmium on the Danube, and it was at Sirmium that Aurelian, his illustrious successor, had been born. This man, the son of an Illyrian peasant, was one of the greatest, as he was almost the last, of the heroes of the Roman legions. He was intelligent as well as brave; and after defeating a fresh attack of the Goths, he recognised the policy of withdrawing the outposts of the empire from beyond the Danube, and finally renounced the conquests of Trajan in Dacia, which seem to have been re-occupied after the time of Hadrian. A still more urgent necessity compelled him to admit into his pay large bodies of these formidable enemies, which, for a time at least, added fresh vigour to the Roman arms. Aurelian led his forces against the Queen of Palmyra, Odenathus being now dead. Though gallantly resisted, he overcame his presumptuous rival, and exhibited Zenobia in his triumph at Rome. He continued to rule with vigour and discretion; but the barbaric inundation was still swelling on the frontiers, and at last a body of Alemanni burst into Italy, and advanced for a moment within the confines of Umbria. At this crisis the safety of the city itself seemed in question. Aurelian condescended to secure it by tracing the ample lines of fortification which now for the first time encompassed the capital of Augustus and Trajan. But the legions, under a chief like Aurelian, formed still a stronger rampart than brick or stone. The Alemanni were speedily repulsed. Aurelian was summoned soon afterwards into the East; but while leading an expedition against the Persians he was assassinated in his tent, at the instigation of his secretary Mnesteus. The soldiers lamented his loss, and avenged it with the blood of the assassins. They paid a higher tribute of respect to his memory by awaiting six months the election of his successor by the Senate. When that body placed the victorious but aged Tacitus at their head, they cheerfully acquiesced in the well-meant but imprudent choice. Tacitus led his troops manfully against the Scythian Alani. He was victorious in battle; but the fatigues of the campaign were too much for his enfeebled powers, and he died of exhaustion in the course of a few months.

Tacitus, A.D. 275.

Probus, A.D. 276.

The army now chose their own leader, and they also chose well. Aurelius Probus was accepted by the Senate, and Florianus, the brother of Tacitus, who had assumed the purple, without authority either from the one power or the

other, relinquished the contest he had provoked by a voluntary death. Probus, like Aurelian, was a native of Sirmium, and he proved himself worthy of military rule,—the only rule now possible,—by his skill, his bravery, and his hardy virtues. During a short but active reign of six years he defeated the Germans on the Rhine and Danube, and constructed, or rather repaired, the rampart which connected those rivers. He overthrew the Goths; and, passing from the West to the East, led his forces against the Persians. From this enemy he extorted an honourable peace, and then, having put down some competitors for power, employed his legions in draining marshes and planting vineyards. But the discipline he enforced, and the wholesome labours he required, alike disgusted his licentious warriors; and Probus, who never quitted the camp, lost his life in a mutiny.

The head-quarters of the deceased monarch were again the spot on which his successor was to be elected. The choice of the soldiers fell once more on a rude but valiant soldier named Carus, and the Senate once more ratified it without a murmur. These warrior-princes paid no attention to Rome, and the nobles of the city had discovered that if they lost in dignity, they were gainers by their absence in ease and security. The movements of the army, wholly recruited and supplied from the frontier provinces, were regarded with little interest by the voluptuaries of the capital. These unworthy Romans were content to leave the task of defending the empire to men who claimed from them only a few empty titles in token of their submission. Carus, associating with himself his sons Carinus and Numerianus, gained some fresh victories over the Goths. Leaving Carinus in the West, he again confronted and overthrew the Persians. He advanced as far as Ctesiphon on the Tigris, where his career was suddenly arrested by a stroke of lightning, according to the popular account, but more probably by some secret conspiracy. The sons of Carus were unable to retain the diadem of their father: Numerianus was slain by his prefect Aper, though his death was speedily avenged by Diocletian. The soldiers in the East immediately proclaimed this man their emperor, regardless of the claims of Carinus, which were supported by the armies in the West. The contending powers met on the plains of Mœsia. Diocletian was worsted in battle; but in the moment of his success Carinus was slain by an officer whose wife he had dishonoured; and thus suddenly deprived of a leader, the victorious legions united with the vanquished in acknowledging the surviving candidate.

Carus, A.D. 282.

Diocletian, A.D. 284.

SECT. LV.—THE EMPIRE RE-CONSTITUTED BY DIOCLETIAN (A.D. 284–305).

The accession of Diocletian to power marks the last great epoch in the history of the Roman empire. Hitherto, however intrinsically weak, the Senate had found opportunities for putting forth its claims to authority; if it was but rarely allowed to exercise its cherished prerogative of election to the throne, it was still regarded as the legitimate centre of administration, the fountain of law and social order. There was at least no constituted authority to oppose it. The chosen of the legions had been for some time past the commander of an army rather than the sovereign of the state. He had seldom quitted the camp, rarely or never presented himself in the capital; content with the provision for his own pride and power extorted from the provinces in which he quartered himself, he had allowed the ordinary march of government to proceed in its usual routine; the social fabric continued to be upheld in Italy and throughout the provinces by the force impressed upon them by the Antonines. But this was the torpor of decrepitude, not the tranquillity of contentment. The provinces lay at the mercy of the armies of the frontier; and the empire might split asunder at any moment into as many kingdoms as there were armies,

Accession of Diocletian.

Political
History.

unless the chiefs of the legions felt themselves controlled by the strength or genius of one more eminent than the rest. We have noticed many local revolts, and no doubt many more of the kind were constantly occurring. Gaul, Britain, Africa, or Egypt were more than once the prey of soldiers who aspired to become independent sovereigns; the chief of the strongest camp and largest army, who called himself the emperor, found prompter aid in the daggers of assassins than in the swords of his own legionaries: his opponents were generally struck down by their own unruly followers; and it was by fortune rather than by any controlling principle of cohesion that the frame of the empire was still held together. The danger of disruption was becoming from year to year more imminent, when Diocletian arose to re-establish the organic connection of the parts, and breathe a new life into the heart of the empire.

A jealous edict of Gallienus had forbidden the senators to take service in the army or to quit the limits of Italy. The degradation of that once illustrious order, which was thus made incapable of furnishing a candidate for the empire, was completed by the indolent acquiescence of its members in this disqualifying ordinance. The nobles of Rome relinquished all interest in affairs which they could no longer aspire to conduct. The emperors, on their part, ceased to regard them as a substantive power in the empire; and in constructing the new imperial constitution Diocletian wholly overlooked their existence. Nevertheless it would seem that he was still haunted by the undying tradition of the majesty of Rome itself, and it seemed more fitting to abstain from visiting the city than to take up his residence there without paying due respect to the Senate, which was still enthroned on its seven hills. While he disregarded the possibility of opposition at Rome, he contrived a new check upon the rivalry of his distant lieutenants, by associating three other chiefs with himself, welded together by strict alliances into one imperial family, each of whom should take up his residence in a different quarter of the empire, and combine with all the rest in maintaining their common interest. His first step was to choose a

The Augusti-Diocletian and Maximian, A.D. 286.

single colleague in the person of a brave soldier of obscure origin, an Illyrian peasant like himself, by name Maximian, whom he invested with the title of Augustus, in the year 286. The associated rulers assumed at the same time the epithets of Jovius and Herculus; auspicious names, which made them perhaps popular in the camp. Maximian was deputed to control the legions in Gaul, and to make head against the revolt of Carausius in Britain, while Diocletian opposed the enemies or pretenders who were now rising up in various quarters in the East. His dangers multiplied, and again the powers of the empire were subdivided to meet them. In the year 292 Diocletian created two Cæsars: the one, Galerius, to act subordinately to himself in the East; the other, Constantius Chlorus, to divide the government of the western provinces with Maximian. The Cæsars were bound more closely to the Augusti by receiving their daughters in marriage; but, though they acknowledged each a superior in his own half of the empire, and admitted a certain supremacy of Diocletian over all, yet each enjoyed monarchical sway in his own territories, and each established a court and capital as well as an army and a camp. Diocletian retained the richest and most tranquil portion of the empire, and reigned in Nicomedia (now Asia Minor), Syria, and Egypt; while he entrusted to the Cæsar Galerius, established in Sirmium, the more exposed provinces on the Danube. Maximian occupied Italy, the islands, and Africa, stationing himself however, not in Rome, but at Milan. Constantius was required to defend the Rhenish frontier; and the martial provinces of Gaul, Spain, and Britain were given him to furnish the forces necessary for the maintenance of that important trust. The capital of the western Cæsar was fixed at Trèves. Inspired with

The Cæsars Galerius and Constantius Chlorus, A.D. 292.

a common interest, and controlled by the superior genius of Diocletian himself, all the emperors acted with vigour in their respective provinces. Diocletian recovered Alexandria, and quieted the revolt of Egypt. Maximian routed the unruly hordes of Mauretania, and overthrew a pretender to the purple in that quarter. Constantius discomfited an invading host of Alemanni, and wrested Britain from the hands of Allectus. Galerius brought the legions of Illyricum to the defence of Syria against the Persians, and though once defeated in the plains of Carrhæ, he succeeded eventually in reducing the enemy to submission. Thus victorious in every quarter of the empire, Diocletian celebrated the commencement of the twentieth year of his reign with a triumph at Rome, and again taking leave of the city of the Cæsars, returned to his customary residence at Nicomedia. The illness with which he was attacked on his journey suggested, or more probably fixed, his resolution to divest himself of the purple; and on the 1st of May, A.D. 305, being then fifty-nine years old, he performed the solemn act of abdication on the spot where he had first assumed the empire at the bidding of his soldiers. Strange to say, he did not renounce the object of his ambition alone. On the same day a similar scene was enacted by his colleague Maximian at Milan; but the abdication of Maximian was not a spontaneous sacrifice, but imposed upon him by the influence or authority of his elder and greater colleague. Diocletian had established the principle of patrimonial succession by which the supreme power was to descend. On the abdication of the two Augusti, the Cæsars Constantius and Galerius stepped into their places respectively, while each of them called up another Cæsar to supply the posts thus vacated by themselves. Flavins Severus succeeded to Constantius, Maximinus Daza to Galerius. Having seen the completion of all these arrangements, and congratulated himself on the success of his great political experiments, Diocletian crowned his career of wisdom and moderation by confining himself strictly during the remainder of his life to the tranquil enjoyment of a private station. Retiring to the residence he had built for himself at Salona, he found occupation and amusement in the cultivation of his garden; and the story went, that when his more restless colleague solicited him to resume the honours from which he had disengaged them both, he invited him to see the vegetables he had grown, and learn a lesson of simplicity and contentment.

Political
History.

Abdication of Diocletian, A.D. 305.

The wisdom and moderation of Diocletian's character have been justly praised, and it is with pain that we notice how he forfeited both the one and the other in his sanguinary and obstinate persecution of the Christians. The disciples of the true faith were still increasing in numbers; they were continuing more and more to absorb into their body the intelligence, the activity, and the moral force of the empire. Diocletian cannot have been blind to the impossibility of reviving the spirit of heathenism, or raising up in the strongholds either of superstition or philosophy any moral or intellectual force to combat them. Nor can we suppose that he was actuated by the alarms so prevalent as we have seen fifty or a hundred years earlier, when many of the best, and some no doubt of the wisest of the heathens, really believed that the calamities of the empire were caused by the anger of their gods at the impiety tolerated in its bosom. The era of Diocletian, under the sway of a bold and able ruler, was a period of comparative revival and hopefulness. The worst seemed to be past. A better day had dawned. New objects were in view, new principles of government were coming into operation. The Senate of Rome, the stronghold of old and vain tradition, had ceased to exercise any influence in the government. Diocletian had no need to sacrifice to its prepossessions, or to buy its favour by the concession of a principle. The fury which animated three at least of the emperors (for Constantius alone held aloof from the persecution which now raged through three-quarters of

Persecution of the Christians.

Political
History.

the empire) must be traced to a different source. The object of Diocletian's policy was to establish a uniform system of administration, radiating from each centre of government. During the last century the government of the empire had become completely de-centralized. Each province had provided for itself; each army had drawn its supplies from its own neighbourhood. The authority of the Senate had hardly extended beyond Italy; the power even of the emperor had generally been limited to the territory in the midst of which his army was quartered. Even Decius and Probus, vigorous as they proved themselves in their own camp, might fear to provoke a resistance which they had not leisure to quell, if they tried to enforce their edicts in Gaul or Africa. But when, by the multiplication of sovereigns, the executive authority was extended once more throughout the empire, it became necessary to show that the imperial power was no longer a mere shadow. The laws were to be enforced, uniformity to be restored, every province and every subject to be made to acknowledge the paramount supremacy of the monarch's will. Christianity, however innocent in act, had become in its forms and in its ideas a state within the state. Whatever the government might think of its opinions, it could not fail to see a rival in its organization. Counts and prefects were jealous of metropolitans and bishops; and the claims of the church to admit to, or exclude from, a share in privileges of membership, which had now become connected with the enjoyment of benefices and endowments, might seem to trench upon political prerogatives. Having subdued every external enemy and competitor, Diocletian turned his attention to the domestic foe, for as such he regarded it, which had set up a co-ordinate sovereignty within the limits of his own jurisdiction: he proclaimed internecinal war against the Christian society, the extent of which he perhaps miscalculated, the moral power of which he totally misapprehended; and he committed himself to a struggle in which success was impossible, though he did not live himself to know how completely he was defeated.

SECT. LVI.—WARS OF DIOCLETIAN'S SURVIVORS.

Notwithstanding the ability which Diocletian had displayed in the government of the empire, the distribution he made of power on his abdication marks caprice and weakness, and was speedily followed, as might have been expected, by fresh disturbances. Instead of inviting both the Cæsars to associate with them princes of their own choice, he had allowed his son-in-law and favourite, Galerius, to nominate both the new candidates, and to pass over the claims of Constantine, the son of Constantius, altogether. The Cæsar of the Gaulish provinces was far distant in Britain, and was ill: Galerius expected his death, or ventured to overlook him in his absence; and hoped, by calling creatures of his own to the succession, to secure supreme authority over the whole empire for himself. But the moderation of Constantius, which had made him an object of dislike and jealousy to his unscrupulous colleagues, endeared him to his own subjects as well as to the Christian faction throughout the empire. Great multitudes of the new faith had taken refuge under his sway, and had enjoyed his protection. The legions admired him for his victories over the Alemanni and the Caledonians; and when, at the moment of his death, they proclaimed his son Constantine emperor in their encampment at York, the nomination was received with enthusiasm by the population of the western provinces. Galerius did not venture to oppose this demonstration of feeling. He suffered his new rival to exercise authority in the place of his father, but claimed the right, as the eldest and first of the associated princes, to assign him only the fourth rank among the rulers of the empire, with the subordinate title

Constantine, son of Constantius, appointed Cæsar, A.D. 306.

Political
History.

of Cæsar. Constantine was satisfied for the present, and continued for six years (A.D. 306–312) to confine himself to the administration of the Gaulish prefecture. During this period he carried out his father's policy in every particular. He chastised the barbarians in the north of Britain, and put the Roman possessions in that island in a complete state of defence. He flew to the succour of the garrisons on the Rhine, which, on the death of Constantius, were immediately assailed by fresh incursions of the German tribes; and followed up the great victory of Novio by the most terrible massacres of his captives. At the same time he displayed the utmost moderation and clemency towards his subjects, tolerating and protecting the Christians, and remitting the fiscal burdens of all classes of the community. Though personally indifferent perhaps to all forms of religion, he could not fail to mark how great were the numbers, how active the intelligence, of the Christian society, and to feel the miserable impolicy of alienating them by persecution. His vigorous imagination was at the same time kindled by the claim these sectarians advanced to divine interferences and miraculous powers; it is probable also that the deference which their bishops were willing to pay to him as the temporal ruler, while the pagan hierarchy regarded him with undisguised dislike, affected him favourably from the first towards the outward forms of Christianity. While watching his opportunity for raising himself to the highest place in the empire, Constantine was already perhaps meditating terms of alliance with the greatest spiritual influence of the period.

Meanwhile, the Senate also, the centre of heathenism, exhibited for a moment fresh signs of vitality. Affecting indignation at the claims of its late ruler Maximian being entirely postponed to those of Galerius, it had taken on itself to confer on his son Maxentius the title of Augustus. Maximian himself, defying the remonstrances of the aged Diocletian, issued from his retirement, and re-assumed power, under pretence of lending the weight of his name and experience to the cause of his son. He gave his daughter Fausta in marriage to Constantine, and cemented an alliance between the prefect of Gaul and the claimant of Italy. But no sooner did Maxentius taste of power than he drove his own father out of his dominions; and Constantine suffered his father-in-law to find an asylum in Gaul only on condition of resigning a second time all share in the imperial government. When, on the report of Constantine's death, the restless veteran again assumed the purple, he was attacked, defeated, and put to death without remorse by the Gaulish emperor.

Death of Maximian, A.D. 310.

The death of Maximian was followed in 311 by that of Galerius, whose painful sickness was ascribed with grim satisfaction by the Christians to a divine visitation. Four Augusti of equal rank now once more shared the empire; but it was immediately apparent that, without the avowed ascendancy of one, in genius if not in power, the rude edifice of the Cæsardom must inevitably fall in pieces. The genius, indeed, of Constantine soon proved to be pre-eminent; but his ascendancy was admitted by none of his colleagues, and it remained to be seen whether he had the means of establishing it by force. Maxentius in Italy and Africa, and Maximian in Asia and Egypt, ruled in voluptuous indolence, making themselves more and more detested by the provinces which had fallen under their sway. Severus was already dead, and Galerius had survived to replace him in Illyricum by a Dacian peasant named Licinius, recommended to him by his military abilities and his popularity among the soldiers. This man had now at least discretion enough to ally himself with Constantine; he contrived also to leave his new confederate to conduct hostilities against Maxentius alone, while he watched himself from a distance the issue of the contest. Scarcely, indeed, was Galerius dead before the two Augusti of the West rushed into deadly conflict with one another. Constantine crossed the Alps, and gained three successive victo-

Death of Galerius, A.D. 311.

Political
History.

Battle of
the Milvian
Bridge,
Oct. 3,
A.D. 312,
and death
of Maxen-
tius.
The decree
of Milan.

ries at Turin, at Verona, and, lastly, at the Milvian bridge, two miles from Rome. Maxentius, routed in this final engagement, was drowned in the Tiber; and Constantine entered Rome towards the end of the year 312, where he was received with acclamations, and was acknowledged as chief of the empire by Italy and Africa, as well as by the provinces of his own prefecture. He had already issued from Milan the famous decree which assured the Christians of his favour and protection; and it was on his march towards Rome, before the battle of the Milvian bridge, that he beheld, according to the historians, the vision of the cross in the heavens, inscribed with the blazing legend—"By this conquer."

Constantine had little sympathy for the name of Rome, or for the Senate which represented it; nevertheless, upon entering the old capital of the Cæsars in triumph, he affected to restore the consideration of that illustrious but decrepit body, while he took measures for preventing Rome from ever again giving laws to the empire, by disbanding the prætorian guards and destroying their fortified camp. With this military institution the imperial power departed finally from Rome, and the seat of empire was henceforth to be established wherever the emperor should choose to take up his own permanent residence. Master of the West, Constantine was not satisfied till he had brought the East also under his sceptre. His rival Licinius equalled him in ambition, but neither in ability nor fortune. During the contest in Italy the prefect of Illyricum had been prosecuting his own views of conquest no less successfully in Asia. He had overthrown Maximin, and seized all the eastern provinces of the empire, confirming his victory by the massacre of all the children of Galerius and Severus, as well as of Maximin himself. So far did he carry his precautions as to insist on the execution of the widow and daughter of Diocletian. Thus triumphant in opposite quarters of the empire, the two competitors were equally prepared for a struggle with one another. In the first contest between them, Constantine wrested Illyricum from Licinius. After an interval of eight years, war was renewed.

Overthrow
of Licinius,
A.D. 323.

Licinius was overthrown in the great battle of Adrianople, in the year 323; but his spirit was still unbroken, and while Constantine was occupied in the siege of Byzantium, he collected a numerous force of raw levies to try his fortune in another field. The battle of Chrysopolis brought the contest to a final decision. Licinius was deprived of his imperial honours, and permitted to retire to Thessalonica, there to pass the remainder of his days in a private station. But Constantine had not magnanimity enough to observe the conditions he had imposed on himself. The deposed emperor was soon afterwards accused of intriguing with foreign powers for his restoration, and the victor did not scruple to secure his own supremacy by putting his last rival to death. The family compact devised by the astute Diocletian resulted, in the second generation, in the re-establishment of an undivided monarchy.

SECT. LVII.—UNION OF THE EMPIRE UNDER CONSTANTINE.

Union of
the empire
under Con-
stantine.

Conscious of his own energy and abilities, and sensible of the inherent weakness of the scheme for dividing the imperial powers devised by his predecessor, Constantine determined to retain in his own hand the sceptre of the united empire, while he contrived a more elaborate scheme for lightening the burden it imposed upon him. The original policy of Augustus, according to which the emperor was regarded as the delegate of the state, and his functions were only those of the various popular magistracies combined together in one person, had become utterly obliterated for at least a century. The specious constitutionalism of the early Cæsars had vanished, but no organized system of despotism had been substituted in its place. The chiefs of the state had been content, as we

have seen, to rule with the sword, and to announce their caprices from the camp. In return, their title had received no sanction in the feelings of their subjects. They had been accepted by the Senate and the people as emperors *de facto*, but no idea of right had clung to their names and titles, no honour had been paid to their families, no respect shown to their memories. The notion of monarchical government had been in a state of transition; the old foundations had perished; it remained for Constantine to replace them with the ideas of hereditary succession, of divine right, and of organized administration, upon which they have subsisted throughout Europe to the present day.

It was only in the oriental courts that the imperial reformer could find the exemplar of government by which to shape his own system. He surrounded his own person with the pomp and ceremony of Asiatic sovereignty, affecting the reserve of a superior being, and allowing access to him only through a crowd of eunuchs, chamberlains, and ministers. The old Roman idea of the essential equality of the emperor and his chief nobles was entirely swept away. A complete separation was made between the civil and military authorities; and again the vital principle of the ancient republic, according to which every citizen was a soldier, and the chief civil magistracies wielded the power of the sword, was finally abolished. All the great offices of state were accordingly re-modelled, with new titles suited to the new arrangements. They were classed in the three ranks of *Illustres*, *Spectabiles*, and *Clarissimi*, and distributed among the three departments of the court, the army, and the civil service. The officers of the court and of state were chiefly the lords of the bed-chamber and the palace, with special ministers of finance, of justice, of the interior, of the crown revenues, and of the household guards. The army was controlled by a commander-in-chief, assisted by generals of infantry and generals of cavalry; and below these were officers of inferior rank, known as dukes (*duces*) and counts (*comites*).

New con-
stitution of
the empire.

The civil department was divided into four great prefectures: those of the east, including Thrace and the Asiatic provinces; of Italy, comprising Italy, Rhætia, Noricum, and Africa; of Illyricum, embracing Illyricum, Pannonia, Macedonia, and Greece; and of Gaul, which comprehended the provinces of western Europe. Under the four prefects were thirteen high functionaries, who presided over the thirteen dioceses into which the prefectures were sub-divided, and who were known by the titles of *comites* or *vicarii*. Asia, Africa, and Achaia were governed by proconsuls, and the whole number of provinces, each under a separate but dependent governor, a proconsul, a corrector, a consularis, or a præsidens, amounted to 117. The department of the imperial court was occupied by seven high functionaries, of a character entirely new in the history of the Roman monarchy. The chief of these was the *præpositus sacri cubiculi*, or lord chamberlain; next to him the *magister officiorum*, who may be compared to a modern minister of home affairs; the *quæstor*, or lord chancellor and keeper of the seals; the *comes sacrarum largitionum*, or chancellor of the public exchequer; the *comes rerum privatarum divinæ domus*, or lord of the privy purse; and finally, two *comites domesticorum*, or captains of the imperial body-guard. While the machinery of government was thus re-constructed, the finances by which it was to be kept in motion were placed upon a new footing. We may suppose that for many years the collection of the revenues had fallen into the utmost confusion. It had become necessary to review the entire basis of the land-tax, the most permanent and certain source of the imperial revenues; and the Indictions, or fifteen years' settlements, which became important eras for the chronology of succeeding ages, are dated from the acquisition of Italy by Constantine, in the year 312.

Dukes and
counts.
Prefectures
and dio-
ceses.

Indictions.

Political History.

Establishment of the Christian church.

Discouragement of paganism.

Baptism of Constantine.

Political History.

Death of Crispus.

Council of Nicæa, A.D. 325.

Foundation of Constantinople, A.D. 330.

Conclusion.

The Christian church, which the emperor determined to convert into a great instrument of government, was already modelled to his hand in the hierarchical form in which he desired to cast the state. Its metropolitans, its primates, its archbishops and bishops, with the inferior classes of clergy, formed a spiritual subordination of powers similar to that which he introduced into the civil administration, and quite unlike anything which had existed in the sacerdotal arrangements of Greek and Roman antiquity. The Romans had never recognised a distinction between clergy and laity; they had never admitted the powers of priestly absolution or excommunication; the idea of a spiritual authority independent of the civil was totally alien from their views of polity. But undoubtedly the spread of Christian ideas, and the gradual decay of those which were most essentially opposed to them, had rendered these principles more and more familiar to subjects and rulers; and Constantine was struck with the vast influence they evidently exercised over the minds of their votaries, and was prepared to subject his own fervid imagination to their control. When he found that the Christian priesthood had discovered a way of reconciling their own spiritual claims with a technical supremacy in the ruler of the state, he was satisfied with the terms of the alliance they offered to him, and quickly determined to exchange the toleration he had already extended to their religion for special favour and formal establishment. The revenues bequeathed in past times by private piety to the uses of Christian worship, which had been confiscated under the persecutors of the faith, were sedulously restored, the Christian temples repaired and reopened, many public halls or *basilicæ* especially appropriated to Christian use, and fresh endowments secured to them; the bishops and ministers of the Christian religion were invited to court, and placed in situations of trust and favour about the emperor's person. On the other hand, the institutions of pagan worship were placed under many jealous restrictions: the old distinction between public and private, licensed and unlicensed cults, was harshly enforced, and many shrines shut up, many special services abolished. The civil laws against immorality and indecency were applied to many licentious usages connected with the heathen ceremonies; and, discountenanced as the ancient worship was by the emperor and the court, it may be supposed that the magistrates were often tempted to stretch the powers accorded them by legislative enactments to the control and even the persecution of the falling faith. Personally, indeed, Constantine still halted between two opinions. Up to the age of forty at least (A.D. 314), he continued to make public profession of paganism, although he had already struck severe blows against its interests as well as its pride of exclusiveness. His devotion was divided between the gods of Olympus on the one hand, and Christ and the saints of Christendom on the other. As late as the year 321 he insisted on consulting the Haruspices. The consolidation of his power confirmed his wavering confidence in the Being whose favour he was assured he had gained, even by the limited honour he had paid to him. After the defeat of Licinius he surrendered his conscience to his favourite bishop, Eusebius of Cæsarea, allowed his children to be educated as Christians, and assumed without scruple the headship of the Church and the presidency in its councils, which its rulers freely tendered to him. It was not, however, till he felt the approaches of a mortal disease, in the sixty-third year of his life, that he finally enrolled himself among the converts to Christianity, by submitting to the rite of baptism, which he was taught to regard as the pledge of a blessed death rather than the token of a new life.

The policy indeed of the emperor, raised to a precarious elevation, and maintaining himself by force or craft against innumerable jealousies and animosities, was constantly de-

manding the perpetration of some crime which struck his awakened conscience with horror and alarm, though he had not courage and religious confidence to repudiate it. His execution of his son Crispus is still the deepest stain upon a character which, notwithstanding its many great qualities, must ever be subject to the charge of dissimulation and cruelty. There seems reason for questioning the justice of the charge commonly made against him, of having caused the assassination of his wife Fausta; and generally we must remember that the hostility of the pagan writers is quite as marked in their account of this prince as the favour of the Christians. It is to the encomiums of the latter, no doubt, that he owes the appellation of "the Great," which has been appended in after-ages to his name; nevertheless so distinguished a title is not undeserved by one who, not to mention his claims to the respect of Christian posterity, effected the consolidation of a vast unwieldy empire by his personal valour and ability, and maintained it in honour and prosperity against all enemies, foreign and domestic, for more than thirty years. In the history of the Christian church he assumes a prominent place, from the zeal with which he devoted himself to adjusting the dogmatic differences which prevailed in it during his reign; and especially from the council of Nicæa, at which he presided in the year 325, in which the orthodox creed was triumphantly established. But with this, and with the controversies which followed, the history of Rome has nothing to do. We have felt, during our account of the last hundred years or more, how far we have drifted away from the ideas which animated the records of Rome during the earlier periods of her existence. We can with difficulty recognise any bond of continuity between the Rome of the lower empire and that of Augustus and the Scipios. From the time that all the subjects of the empire became comprehended in a common citizenship we have lost all interest in the name of Romans. Since the edict of Gallienus, which interdicted military service to the senators, we have ceased to regard the nobles of the capital as an element in the polity of the state. The armies of the empire have long been composed almost wholly of subsidized barbarians, and been led almost without exception by provincials, half-barbarian themselves. Roman literature, which revived from the false taste of the silver age of Nero and Domitian, and produced a school at least of correct imitators under the Antonines and Severi, perished utterly in the age which followed, or was transferred to the camp of the Christians, and became the inheritance of Gauls, Africans, and Asiatics. The contempt and decrepitude into which Rome had fallen is finally marked by the incident, which may on some accounts be considered the most memorable in the memorable reign of Constantine,—the foundation of the new Rome on the Bosphorus, to which he gave the name of Constantinople, and which he made the seat of his government and the capital of the Roman empire. It was in the year 330 that this revolution was effected. Though Rome, as we have seen, had long ceased to be the residence even of the western emperors, her influence, and in some sense her authority, as a metropolis, might still be recognised as long as no rival was formally installed in the place of honour she had so long held unquestioned. The removal of the seat of empire to the East carried away many of the ancient families still surviving in the palaces of the republic; it converted the descendants, if any still remained, of the Claudii and Cornelii into Greeks and Asiatics. It left to ancient Rome her name, her buildings, a more obstinate attachment to old forms and traditions, to the old pagan cult, and to the observation of heathen auguries; but it broke for ever the continuity of her political history, which must henceforth be transferred to another centre, and assume another title. (See CONSTANTINOPOLITAN HISTORY.)

(C. M.)

Romano
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Romans,
Epistle to
the.

ROMANO, a town of Austrian Italy, in the province and 13 miles S.S.E. of Bergamo, in a rich country, near the Seno. It is well built, with broad, straight streets, many of them lined with arcades. There are here some elegant churches, a convent, and an hospital. Silk-spinning, tanning, and tile-making are carried on; and much-frequented markets are held. Pop. (1846) 4199.

ROMANS, THE EPISTLE TO THE, claims our interest more than the other didactic epistles of the apostle Paul, because it is more systematic, and because it explains especially that truth which became subsequently the principle of the Reformation, viz., righteousness through faith. At the period when the apostle wrote the Epistle to the Romans, he had passed through a life full of experience. Paul was at this time between fifty and sixty years old. After having spent two years and a half at Ephesus, he planned a journey to Macedonia, Achaia, Jerusalem, and Rome (Acts xix. 21). Having spent about three months in travelling, he arrived at Corinth, where he remained three months (Acts xx. 2); and during this second abode at Corinth he wrote the Epistle to the Romans (comp. 1 Cor. xvi. 1-3, and 2 Cor. ix. with Rom. xv. 25). He despatched this letter by a Corinthian who was then travelling to Rome (xvi. 1), and sent greetings from an inhabitant of Corinth (xvi. 23; comp. 1 Cor. i. 14). The data in the life of the apostle depend upon the year in which his conversion took place. Some think that this event occurred as early as A.D. 35 or 41; but it is by far more probable that the epistle was written about the year A.D. 58 or 59. The congregation of Christians at Rome was formed at a very early period, but its founder is unknown. Paul himself mentions two distinguished teachers at Rome, who were converted earlier than himself. According to Rom. i. 8, the Roman congregation had then attained considerable celebrity, as their faith was spoken of throughout the whole world. From chap. xvi. we learn that there were a considerable number of Christian teachers at Rome; from which we infer that the congregation had existed there for some time; and it is most likely that the Jews at Rome were first converted to Christianity. Under Augustus there were so many Jews at Rome that this emperor appointed them quarters beyond the Tiber. These Jews consisted mostly of freedmen, whom Pompey had carried to Rome as slaves; and some of the early Christians at Rome followed mercantile pursuits. At the time when this epistle was written, there were also Gentile Christians in the Roman church; and from passages like xi. 13; xv. 16; i. 7 and 13; we learn that the Gentile Christians were then more numerous than the converted Jews. It is well known that in those times many heathens embraced Judaism (Tacitus, *Annal.* xv. 44; Juvenal, *Sat.* xiv. 96). These converts to Judaism were mostly women. Among the converts from Judaism to Christianity, there existed in the days of Paul two parties. The congregated apostles had decreed, according to Acts xv., that the converts from paganism were not bound to keep the ritual laws of Moses. There were, however, many converts from Judaism who were disinclined to renounce the authority of the Mosaic law. The opinions concerning the occasion and object of this letter to the Romans differ according to the various suppositions of those who think that the object of the letter was supplied by the occasion, or the supposition that the apostle selected his subject only after an opportunity for writing was offered. In earlier times the latter opinion prevailed, as, for instance, in the writings of Thomas Aquinas, Luther, Melancthon, Calvin. In more recent times the other opinion has generally been advocated, as, for instance, by Hug, Eichhorn, and Flatt. Many writers suppose that the debates mentioned in ch. xiv. and xv. called forth this epistle. Hug, therefore, is of opinion that the theme of the whole epistle is the following—Jews and Gentiles have equal claim to the Kingdom of God. According

to Eichhorn, the Roman Jews being exasperated against the disciples of Paul, endeavoured to demonstrate that Judaism was sufficient for the salvation of mankind; consequently Eichhorn supposes that the polemics of St Paul were not directed against Judaizing converts to Christianity, as in the Epistle to the Galatians, but rather against Judaism itself. This opinion is also maintained by De Wette (*Einleitung ins Neue Testament*, 4th ed. § 138). According to Credner (*Einleitung*, § 141), the intention of the apostle was to render the Roman congregation favourably disposed before his arrival in the chief metropolis, and he therefore endeavoured to show that the evil reports spread concerning himself by zealously Judaizing Christians were erroneous. This opinion is nearly related to that of Dr Baur who supposes that the real object of this letter is mentioned only in ch. ix. to xi. The journey of Phœbe to Rome seems to have been the external occasion of the epistle: Paul made use of this opportunity by sending the sum and substance of the Christian doctrine in writing, having been prevented from preaching in Rome. The apostle had many friends in Rome who communicated with him; consequently he was the more induced to address the Romans, although he manifested some hesitation in doing so (xv. 15).

Contents of the Epistle to the Romans.—It belongs to the characteristic type of St Paul's teaching to exhibit the gospel in its historical relation to the human race. In the Epistle to the Romans, also, we find that peculiar character of St Paul's teaching which induced Schelling to call the apostle's doctrine a "philosophy of the history of man." In the Epistle to the Romans Paul commences by describing the two great divisions of the human race, viz., those who underwent the preparatory spiritual education of the Jews, and those who did not undergo such a preparatory education. The chief aim of all nations, according to St Paul, should be the δικαιοσύνη ἐνώπιον τοῦ θεοῦ, *righteousness before the face of God*, or absolute realization of the moral law. According to St Paul, the heathen also have their νόμος, *law*, as well religious as moral internal revelation (Rom. i. 19, 32; ii. 15). The heathen have, however, not fulfilled that law which they knew, and are in this respect like the Jews, who also disregarded their own law (ii.) Both Jews and Gentiles are transgressors, or by the law separated from the grace and sonship of God (Rom. ii. 12; iii. 20); consequently if blessedness could only be obtained by fulfilling the demands of God, no man could be blessed. God, however, has gratuitously given righteousness and blessedness to all who believe in Christ (iii. 21-31). The human race has gained in Christ much more than it lost in Adam (v. 12, 21). If some of the Jews are left to their own obduracy, even their temporary fall serves the plans of God, viz., the vocation of the Gentiles. After the mass of the Gentiles shall have entered in, the people of Israel also, in their collective capacity, shall be received into the church (xi.)

The Authenticity and Integrity of the Epistle to the Romans.—The authenticity of this epistle has never been questioned. The Epistle to the Romans is quoted as early as the first and second century by Clemens Romanus and Polycarp. Its integrity has lately been attacked by Dr Baur, who pretends that chs. xv. and xvi. are spurious, but only, as we have observed above, because these chapters do not harmonize with his supposition, that the Christian church at Rome consisted of rigid Judaizers. Schmidt and Reiche consider the doxology at the conclusion of ch. xvi. not to be genuine. In this doxology the anacolouthical and unconnected style causes some surprise, and the whole has been deemed to be out of its place (ver. 26 and 27). We however observe, in reply to Schmidt and Reiche, that such defects of style may be easily explained from the circumstance, that the apostle hastened to the conclusion, but would be quite inexplicable in additions of a copyist who

Romans,
Epistle to
the.

Romans. had time for calm consideration. We find an analogous instance in Ephes. iii. 20, 21, where a doxology occurs after the mystery of salvation had been mentioned: we are therefore of opinion that the doxology is rightly placed at the conclusion of ch. xiv., and that it was in some codices erroneously transposed to the conclusion of ch. xiv., because the copyist considered the blessing in xvi. 24 to be the real conclusion of the epistle. In confirmation of this remark we observe that the same codices in which the doxology occurs in ch. xvi. either omit the blessing altogether, or place it after the doxology.

Interpreters of the Epistle to the Romans.—Chrysostom is the most important among the fathers who attempted to interpret this epistle. He enters deeply, and with psychological acumen, into the thoughts of the apostle, and expounds them with sublime animation. Among the Reformers, Calvin is distinguished by logical penetration and doctrinal depth. Beza is distinguished by his grammatical and critical knowledge. Since the period of rationalism the interest about this epistle has been revived by the *Commentary* of Tholuck, the first edition of which appeared in 1824. It was translated into English in 1834–36. No other book of the New Testament has, since that period, been expounded so frequently and so accurately. From 1824 to 1844, there have been published as many as seventeen learned and critical commentaries on it; and, in addition to these, several practical expositions. In the *Commentar*, von Rückert, 2d ed., 1839, 2 vols., we find copious criticisms of the various interpretations, and a clear and pleasing, although not always carefully-weighed, exposition. The *Commentar* von Fritzche, 1836 to 1843, 3 vols., exhibits a careful critique of the text, combined with philological explanation, but the true sense of the apostle has frequently been missed. The *Commentar* of Olshausen, 2d ed., 1840, generally contains only the author's own exposition, but presents a very pleasing development of the doctrinal contents. It has been translated into English in 1850. De Wette manifests on the whole a correct tact (3d ed., 1841); however, his book is too comprehensive, so that the contents of the epistle do not make a clear impression. Lately there has been published in French also an interpretation of the Epistle to the Romans, worked out with much diligence and ingenuity, by Hugues Oltramare.

The principal English works on the Epistle to the Romans are—Willet, *Hexapla, or a Sixfold Comment on the Epistle to the Romans*, 1611; Taylor's *Paraphrase and Notes on the Epistle to the Romans*, 1747; Jones, *The Epistle to the Romans analysed, from a development of the circumstances by which it was occasioned*, 1801; Cox, *Horæ Romanæ*, 1824 (translation, with notes); Turner, *Notes on the Epistle to the Romans*, New York, 1824 (exegetical, for the use of students); Terrot, *The Epistle of Paul to the Romans*, 1828 (Greek text, paraphrase, notes, and useful prolegomena). Stuart, *Commentary on the Epistle to the Romans*, Andover, U.S., 1832, is undoubtedly the greatest work on this epistle which has been produced in the English language; Hodge (also an American author) *On the Romans*; Peile, *Annotations on the Epistles*, 1850; Knight, *A Critical Commentary on the Epistle to the Romans*, London, 1854; Purdue, *A Commentary on the Epistle to the Romans*, Dublin, 1855; Davidson, *An Introduction to the New Testament*, London, 1848; Brown's *Epistle to the Romans*, 1857.

ROMANS, a town of France, in the department of Drôme, in a picturesque situation on the right bank of the Isère, here crossed by a handsome bridge communicating with Peage on the opposite side, 10 miles N.E. of Valence. It is still partially inclosed by its ancient walls and towers; and entered by five gates. There are no buildings in it of any note except the theatre, and the curious Gothic church of St Antoine. Silk, hosiery, woollen fabrics, serge, and

leather are manufactured here; and there is much trade in wool, hemp, linen, silk, wine, and other produce of the surrounding country. Romans has a court of commerce, chamber of manufacture, and ecclesiastical seminary. Pop. 7228.

ROMANUS I., *Lecapenus*, Emperor of the East, was admiral of the fleet on the Danube in 919, when he determined to seize the supreme power during the reign of the young prince Constantine VII. Sailing forthwith to Constantinople, he executed his enterprise with great success. The influence of the dowager empress was gained; his daughter was married to the emperor; and he himself soon afterwards assumed the title of imperial colleague, and the real authority of sole sovereign. Romanus long enjoyed the undisturbed possession of his ill-gotten power. Several predatory inroads of the wild Bulgarians were the only events that at all endangered his security for nearly five-and-twenty years. It was not until 944 that his dissolute conduct provoked a conspiracy. In that year, during the stillness of a winter noon, the two sons of Romanus seized their father in his palace, smuggled him away to a monastery on a small island in the Propontis, and that it might not be lawful for him to resume the sceptre, lost no time in shaving his head. Thus hopelessly dethroned, he commenced the quiet life of a monk, invited his unnatural sons to share his herbs and water, when they were soon afterwards exiled to the same place, and died within the convent in 948.

ROMANUS II., Emperor of the East, succeeded his father Constantine VII. in 959. The beauty and excellences of his person made him a gymnast and a sportsman. His days were spent in the circus, in the tennis-court, and in hunting the wild boar on the Asiatic side of the Bosphorus. The welfare of his government was left to the mercy of those unprincipled times. Accordingly, in 963 his wife Theophano, a remorseless wretch, poisoned him.

ROMANUS III., *Argyros*, Emperor of the East, was living in 1028 an unambitious and married life, when a strange fortune called him to the throne. One day in the midst of his conjugal felicity a mandate came to him from the dying Constantine VIII., commanding him to repair to the palace, in order that he might be made the husband of the princess Zoë, and the successor of the emperor. He refused to leave his present spouse; but the alternative of losing his eyes was held up to him. He then preferred to suffer that penalty; but his self-sacrificing wife prevailed upon him not to forego his own welfare for her sake. The crown thus forced upon Romanus was the cause of nothing but evil. A repulse which the Arabs gave him in Syria produced a discontent among his subjects. The repeated successes of his generals against the same foe increased his unpopularity. Taking advantage of the public feeling, his faithless wife formed a conspiracy against him. At length, in 1034, she poisoned him, and gave her hand and the empire to her paramour Michael the Paphlagonian.

ROMANUS IV., *Diogenes*, Emperor of the East, was raised to the purple in 1067 by a very romantic incident. He had been sentenced to death for treason against the Empress Eudoxia. On the eve of his execution that princess ordered him to be brought into her presence. The manly beauty of the ill-fated felon immediately won her heart. His sentence was repealed; and in a few days afterwards he found himself the husband of the empress. Romanus wore the crown worthily. Taking the field soon after his coronation, he boldly attacked the Turks, who, under the able Sultan Alp-Arslan, had encroached as far westward as Phrygia. His movements became rapid, precise, and energetic. The scattered hordes of the enemy felt themselves checked and driven back at every point. Defeat was followed by defeat, until, at the end of the third campaign, they were swept beyond the River Euphrates.

Romanus.

Rombouts
||
Rome.

The fourth campaign, however, in 1071, was ruinous to Romanus. His plans were disconcerted at the outset by the dexterous manœuvres of Alp-Arslan. He was forced to fight at a disadvantage on the banks of the Araxes. There, after struggling during a long autumn day, his troops were completely cut to pieces. He himself, fighting like a lion among the slain bodies of his attendants, was overpowered by numbers, and taken prisoner. It is true that his brave foe treated him generously, and released him under certain conditions. But on returning to his dominions he found that his subjects had rebelled. In vain did he employ force to regain his crown. He was twice defeated, was compelled to surrender, and was at last put to death with most diabolical cruelty. (See Gibbon's *Decline and Fall of the Roman Empire*.)

ROMBOUTS, THEODORE, an eminent Flemish painter,

Rome.

was born at Antwerp in 1597, and studied first under Abraham Janssens, and then at Rome. His ready invention, correct design, animated expression, and brilliancy of colour, gained for him valuable patronage wherever he went. A nobleman at Rome gave him a commission for twelve pictures from the Old Testament. The Grand Duke of Tuscany employed him to embellish the palace at Florence. The citizens of Antwerp on his return hired him to paint pieces for their churches. His talent, in fact, was so much flattered that he actually entered into competition with the great Peter Paul Rubens, who was then in the full blaze of his fame. Theodore Rombouts, however, died in 1640, before he had convinced the age that he was at all equal to his competitor. One of the best known of his pictures is "The Taking Down from the Cross," in the cathedral at Ghent.

R O M E.

THE SITE OF ROME—HISTORY OF THE CITY.

THE city of Rome is situated (*i.e.*, the observatory of the Collegio Romano) in N. Lat. 41. 53. 52., E. Long. 12. 28. 40. It is about 14 miles in a direct line from the coast, and the cross on the summit of St Peter's church may be seen above the hills from the sea. The mean level of the River Tiber, where it flows through Rome, is 20 feet above the level of the Mediterranean. This stream divides the modern, as it did formerly the ancient city, into two unequal parts, the larger portion having been always on the left or eastern bank. The modern city indeed, while it nominally retains and at one point overlaps the limits of the ancient, is chiefly built on a part only of the ancient site,—*i.e.*, on a plain formed by a sweep of the river to the north of the cluster of hills, seven, as they are commonly reputed, in number, which are historically identified with the name of Rome. These hills, which form the most remarkable feature of the locality, present a nearly continuous ridge extending over a large segment of a circle, and embracing one eminence in the centre, more distinctly marked than any of the others, named the Palatine. To the north, the Capitoline, which forms one horn of this ridge, approaches within 300 yards of the river; while to the south, the Aventine falls almost directly into it. These two hills are almost wholly separated from the common ridge, but the Quirinal, the Viminal, the Esquiline, and the Cælian present a continuous elevation of nearly uniform altitude, and are distinguished from each other only by their interior outline. On the east and south they melt insensibly with a common slope into the Campagna.¹ The Pincian, included at a later period in the city, and not counted among the seven hills, is another offshoot from this plateau to the north; and they are confronted on the opposite side of the Tiber by the Janiculan, from which the best general view of Rome may be taken, and by the Vatican. These hills are spurs of the loftier range of Monte Mario.

The calculations of the height of these hills which pretend to exactness give various and apparently conflicting results. The Janiculan, which is considerably the highest, is said to reach 260 feet near the Villa Spada; while the Vatican hardly exceeds 100. On the left bank the hills attain a nearly equal level of 150 or 160 feet. But the site of the Villa Negroni, at the back of the Esquiline, is said to be 200 feet above the level of the Tiber. As early as

the second century the Romans remarked that the summits of the hills had been considerably raised by the accretion of debris from the ancient buildings. But this accretion must be now much greater in the valleys, from the quantity of soil continually washed into them by the rains. The level of the lower parts of Rome may now be estimated generally at 15 feet higher than it was in the second or third century, and that of the Forum at considerably more. Vast masses of debris must have been wafted also into the Tiber; but so great is the scour of that rapid and often violent stream, that its bed seems not to have been raised more than two or three feet at most. Of this fact we are enabled to judge from the remains of the piers of some of the ancient bridges, and from the arch of the Cloaca Maxima, where it enters the river. Hence, though the waters often rise formidably in their deep channel, and sometimes overflow their banks, the modern city is not liable to the terrible inundations which in ancient times repeatedly carried devastation to the foot of the Pincian and the Quirinal.

The stratum of soil on which Rome immediately rests is chiefly a tertiary marine deposit; but it is not strictly correct to infer, as is sometimes done, that the spot was once occupied by an arm of the sea running up from the Mediterranean. At the period when the site of Rome was submerged beneath the waters of the ocean the relations of land and sea in these regions must have been wholly different from the present. The hills of Rome are of later origin, and have been thrust up from the surface of the marine deposit by submarine volcanic action. The base of these hills is generally a red volcanic tufa, known as "tufa lithoide," of which a great part of the ancient and modern city has been built. It was after the extrusion of these hills, according to the views of the geologists, that the surface of the Campagna was raised from the bed of the sea, and fresh-water lakes or marshes formed upon it. Again, a still later series of igneous revolutions thrust up the Alban and other volcanic hills, the craters of which are now conspicuous in the basins of Albano, Nemi, and others. Among these hills masses of fresh-water deposits are found. From the volcanic action which caused these latter changes were formed the beds of peperino, as well as of pozzolana and tufa granolare, used extensively for mortar in the buildings of the city. The primitive legend of the monster Cacus, who breathed forth fire in his cave in the Aventine, seems to indicate an early observation of the igneous for-

¹ Brocchi and Dr Arnold compare the first three of these hills, with the Pincian farther N.W., to the back of a man's hand, the fingers representing the hills, slightly forked out from one another, but connected with a common surface sloping in the opposite direction at the back, the knuckles forming, as it were, the watershed. Adopting this image, we would liken the Cælian, which is less closely connected, to the thumb; it is the right hand that must be thus compared. (See Arnold's *Rome*, i. 51, note.)

History. mation of the Roman hills. Warm springs and gaseous emanations still occur within the limits of the city, and are said to have been once more widely distributed than at present.

Earliest occupation of the site of Rome. It was the observation of Cicero that Rome was admirably adapted for human habitation, from the healthiness of its situation in the midst of an unhealthy tract of country.

This is in a great measure true at the present day, some parts of the city being still remarkably exempt from the malaria common to the Campagna generally, which, however, seems to have encroached upon the site of the city itself far more than in ancient times. Partly, however, for its healthiness, but still more, it may be presumed, from its strength, as a tract of rocky hills in the midst of an extensive plain, this spot seems to have attracted settlers from a very early antiquity. To the traditions regarding these early settlements current among the Romans themselves at a later period we can only allude in passing.

The Capitoline and Janiculan are represented as the first of the summits then occupied, the one by Saturn, the other by Janus, who gave their names to the strongholds erected upon them respectively. The appellation of Janiculan survives to the present day. That of Saturnia was early lost in the name Tarpeian, supposed to be an Etruscan word for "rock," and this again gave way to the more common designation of Capitoline, now transformed into Campidoglio. The original settlement of the Palatine was ascribed to Evander, a fugitive from Arcadia, and the name of the hill itself, which has remained unchanged through all the revolutions which have passed over the site, was derived by the Roman antiquarians from the founder's son Pallas.

A more specific and circumstantial notice of the early city, though not perhaps really more historical, is that of the settlement of Romulus. This, according to the legend, was also upon the Palatine; and the stronghold here erected was said to have been surrounded by a wall running along, not the crest, but the foot of this hill, pierced by three gates, after the fashion of the cities of Etruria. A narrow belt of ground within and without this wall, under the name of *pomerium*, was kept free from buildings, and formed the limit within which the "auspices" could be taken, and the most important religious and political acts be performed. The limits of this original city are accurately traced by Tacitus, and nearly correspond, as far as we can follow them, with the trapezoidal area of the Palatine Hill, the four sides of which, measuring along the crest, vary from four to five hundred yards in length.

The Palatine and Aventine are separated by a hollow called the Vallis Murcia, through which flows a little stream named by the ancients the *Aqua Crabra*, now Marrana. Here, outside the walls, Romulus placed his circus, called afterwards Maximus, an oblong inclosure for games of skill, speed, and strength, originally of turf, afterwards fitted with wooden galleries, and lastly with seats of stone and marble. It was 600 yards in length, and was ultimately capable of holding 260,000 spectators. The stream which now creeps through this area must either have been arched over, or carried by an artificial channel on one side of it.

While the Palatine was thus occupied by the tribe of

Latins, Etruscans, or mixed races, to whom we give the name of Romans, the Quirinal, and possibly the Viminal and Esquiline, were held by a Sabine people. The Capitoline seems to have been an object of contention between them, but the Roman tradition represents these hills as originally in possession of the Romans. The reported result of the conflict may be presumed to be historical: the two hostile tribes coalesced together, divided the disputed site between them, and occupied the intervening hollow, under the name of the Forum Romanum, as a common place of meeting.

Of the foundation of cities on the Cælian and Aventine different accounts are given. The Aventine at least seems to have been assigned to an outlying tribe, politically dependent on the Romans, but not admitted to full citizenship with them. We also find this hill used as the place of meeting of the great Latin confederacy, under the patronage of the goddess Diana, whose temple stood throughout the period of Roman history on its summit. This edifice is supposed, but on very slight grounds, to have overlooked the Circus, and faced the Palatine; its exact site may in that case be nearly indicated by the existing church of S. Prisca. The temple of Romulus, under the name of Quirinus, was said to have been erected by the Sabine Numa upon the Quirinal, which then assumed that name, having been previously denominated Agonus. The fortification of the Janiculan is attributed to the fourth king, Ancus Martius, who is also said to have constructed the Mamertine prison, on the N.E. face of the Capitoline.

It was not, according to the Roman authors, till the reign of Servius Tullius that the hills of Rome were united in a single city, and included in a common line of fortifications.¹ This original circumvallation seems to have presented in some places a strong rampart of stone, traces of which are supposed to have been discovered quite recently on the slope of the Aventine, and possibly elsewhere. The rear of the Quirinal and Esquiline was defended by an earthen mound, known as the Agger Servii, and of this also some vestiges may still be detected. The heights of the Tarpeian Hill, which is generally precipitous, were left perhaps to the protection of their natural strength; and we are expressly told that the stream of the Tiber was considered a sufficient defence for the city, where it reached the river-bank. The Janiculan was probably at first an unconnected outpost, communication between the Transtiberine suburb and the city being maintained by a wooden bridge, the Sublician, placed under the care of the pontiffs, who thence derived their name (*i.e.*, bridge-makers), and repaired solely with wood down to the latest period of the empire. The actual position of this celebrated bridge is still a matter of dispute. It is generally supposed, indeed, to have stood immediately under the Aventine, where some stone piers are still visible at low water. There is great difficulty, however, in reconciling the authorities with this position, and besides that the locality seems not sufficiently central, nor to correspond with the lines of traffic on either side of the river, there is an obvious inconsistency in identifying the primitive wooden bridge with existing piers of stone.²

History.

The Servian city, and remains of regal Rome

¹ The seven hills were those on the left bank, viz., the Capitoline, Palatine, Aventine, Quirinal, Viminal, Esquiline, and Cælian. The Janiculan was not included among them; and the several heights of the Esquiline, the Mons Cispius and Oppius, and others, were all merged in one common appellation.

² The story of Horatius Cocles, as told both by Livy and Dionysius, seems very clearly to imply that the bridge led directly into the city. On the other hand, the account of the death of C. Gracchus in Val. Maximus and Aurelius Victor is relied on to show that it reached the left bank *outside* the walls, and the *porta trigemina* under the Aventine. These latter passages seem, however, to admit of another interpretation; at all events, Livy and Dionysius are to be preferred to the inferior writers their successors. The easy access this bridge gave to the open city might be the reason for placing it under the care of the priests and the sanction of religion,—*i.e.*, in the power of the patrician caste; and its construction in wood was to be maintained in order that it might be readily broken down at a moment's notice.

History.

Among the citadels which originally crowned the summits of most, perhaps, of these hills, it was natural that one, when all the hills were united together, should assume the pre-eminence, and become the proper citadel, or *Arx*, of Rome. The Tarpeian Hill rises in two summits, that to the N.E. being about 30 feet higher than the other to the S.W., with a small level space, known to the topographers by the name of the *Intermontium*, between them. One of these summits was already occupied by the fortress of Rome, the other was crowned by the Tarquins with the national temple which received the name of Capitolium. The precincts of this temple formed a square of about 200 feet each way, surrounded by porticoes, in the centre of which was placed, under a common roof, the triple shrine of Jupiter, Juno, and Minerva. The importance of this building, as the focus of the national rites, caused the whole hill to assume the name of Capitoline, the term Tarpeian becoming specifically restricted to the S.W. summit, or more strictly to that portion of it which presented a precipitous cliff, over which political offenders were thrown. But, strange to say, the critics are utterly disagreed as to which summit was surmounted by the *Arx* and which by the Capitol. The remains of ancient literature afford us perhaps no decisive passage on the subject, though the constant application of the epithet Tarpeian to the Capitol can hardly in fairness be explained away as merely archaic or poetical phraseology. It is not intended to enter into a discussion of the question here. It will be sufficient to say that the earliest writers on Roman antiquities, following the tradition of the middle ages, assumed that the Capitol stood on the S.W. summit; that this view was first impugned by some Italian writers in the seventeenth century, the most eminent of whom was Nardini, but they seem to have been mainly influenced by a wish to identify the Capitol with the existing church of Araceli; and possibly by a crude idea that the N.E., as the loftiest summit, was the fittest site for the most important temple in the Roman world. This view, however, was accepted with little examination, and generally prevailed among the learned, till a knot of German antiquarians, among whom Niebuhr was the most conspicuous, subjected the question to a critical investigation, and carried the tide of opinion back to the earlier theory. The native antiquarians, the school of Nibby and Canina, never indeed allowed themselves to be convinced on a point which became almost a national question, and within the last few years they have received an accession of strength from the defection to their side of the German *Æmilius Braun*, carrying with him an English writer of great authority, Mr Dyer. The Italian view now reigns triumphantly in Rome, and most of our countrymen who examine the question under the guidance of local antiquaries are naturally led to adopt it. It has been stereotyped in the minds of English travellers by the compiler of Murray's *Hand-Book*. The present writer, however, still professes himself a firm adherent of the ancient theory.¹

A monument of very great antiquity, popularly ascribed to the period of the Tarquins, and still existing in the Cloaca Maxima, or large subterranean drain, which has been traced from the river as far as the upper part of the Velabrum, a course of about 800 feet. It is said to have been constructed to carry off the waters which accumulated in the hollow between the Palatine and the Capitoline hills, together with the contents of the various sewers directed into it from other parts of the city. The network of ancient sewers beneath the streets of Rome seems to have been com-

plicated and extensive; a few of them have been discovered here and there, but there has been no attempt to make out a regular plan of them. The great Cloaca is an arched channel, vaulted with immense blocks of peperino, and 10 or 12 feet in width. It is high enough to admit one of the small waggons in use among the ancients, and Agrippa, who made a cleansing of it in the time of Augustus, went up it in a boat. The solidity and durability of this extraordinary work are deservedly admired; but an attempt has been recently made to throw suspicion on the great antiquity claimed for it, on the ground that the principle of the arch was certainly not adopted by the Romans when they tunnelled under the Alban Hills, at a much later period. Such an objection will not generally be deemed conclusive.²

One other remnant of the so-called kingly period still existing is the Mamertine prison above mentioned. It consists of two chambers, one above the other, with a hole in the floor of the upper one through which prisoners were let down into the cell below. History records the confinement of Jugurtha, Sejanus, Vercingetorix, and the Catilinarian conspirators in this dungeon: an ancient ecclesiastical tradition asserts that St Peter was also imprisoned here. The upper chamber has accordingly been fitted up as an oratory dedicated to the apostles; and a church has also been erected above it.

After the period of the Etruscans, or, as Niebuhr seems to hint, the pre-Etruscan Pelasgians, passed away, we have no more monuments of gigantic masonry to point out until we arrive at the historic era of Rome. A century, or perhaps more than one century, intervened from the date of the Cloaca and the Servian walls, and we find the city occupied by a race of degenerate mortals, who built their houses, and probably even their temples, merely of wood or baked mud, and thatched them with straw and shingles. The Forum was still a swamp, the cliffs of the Palatine and Capitoline were still fringed with briars and brushwood, when the Gauls swept away the ancient city in one great conflagration. Roman antiquarians might pretend, indeed, some centuries later, to point out the Ruminal fig-tree, the hut of Romulus, the temple of Vesta, and other monuments of a primitive age; but the genuineness of these alleged antiquities was belied by the admitted records of its history, as well as by its intrinsic improbability. The first topographical notice of the republican period on which we can rely is the reference of Livy and Pliny to the enormous substruction of the Capitoline, by which the hill itself was encased and supported, of which some trifling vestiges only can be traced under the north-east angle at the present day. But after the fire of the Gauls, the city, we are told, was generally rebuilt in a hasty and irregular manner, without regard even to the old lines of the streets, or of the sewers beneath them. The lanes which choked the plains and hollows were tortuous and narrow, with lofty houses obstructing the light and air; while the hills were almost entirely occupied by the temples, or by the mansions and gardens of the nobles. The names of a good many of the streets or alleys of the lower city are recorded; but there is hardly a single one that is known to have run over the summit of any of the hills—a significant indication that the great mass of the population was now confined, and indeed continued always to be confined, to the valleys. But indeed, in all Rome there was at this time but one street that deserves the name of an avenue, and offered a common thoroughfare for men, horses, and vehicles. This was the line along

History.

¹ It may be presumed that the early Roman history represents at least a genuine tradition, when it supposes the Tarpeian Hill to have been occupied by a fortress before the erection of the temple. It would be preposterous to imagine that the fortress was placed on the lower summit, commanded by another within half-bowshot, at a time when either might have been chosen. It would follow that the temple was built on the lower summit, i.e., the S.W.

² This is the argument of Mr Duppa, as cited by Lord Broughton in his *Italy*, vol. ii., p. 116.

History.

which the procession of the triumphs passed; and it was for this and other sacred ceremonies that its width and straight direction were preserved. Entering the city at the Porta Triumphalis, near the S.W. extremity of the Capitoline, the victorious general was conducted across the Velabrum into the Circus Maximus, and so, following perhaps exactly the line of the ancient pomerium, along the valley which separates the Palatine from the Cælian. At the spot now marked by the arch of Constantine, his route made another angle to the left, climbed the gentle slope of the Velia, at the top of which he came directly in sight of the Arx and the Capitol. From hence he descended, keeping the right side of the Forum, to the foot of the Capitoline, which he ascended, making another bend to the left, by the Clivus Capitolinus, till he reached the temple of Jupiter. This road was dignified with the name of the Sacra Via. The Appian Way, which branched off from it, and issued from the city at the Porta Capena, was paved in 312 B.C., and the Flaminian in 220; but it was not till 174 that this care was extended to the streets in the city itself, and to the Clivus Capitolinus. Wherever the accretion of the soil has been removed in the line of the Sacred Way, an ancient pavement, consisting of large angular blocks of basaltic lava, has been found, still in admirable preservation.

Of all the localities of Rome at this period, the Forum alone admits of any specific topographical account. This open space, appropriated to the meetings of the Roman people, lay, as has been already indicated, at the foot of the Capitoline, and reached to the slope of the Velia, embracing the area of the modern Campo Vaccino. The Italian antiquaries have generally given it a lateral extension, between the Capitoline and Palatine, in the direction of the Velabrum; but at all events, they must confess that at a later period it was confined on this side by the Basilica Julia. This oblong space, such as we consider it, narrowing as it approached the Velia, was inclosed north and south by the lines of the Sacred and the New Way. Along these lines stood rows of open wooden booths, fronted by stone pillars; the southern row was interrupted by the house of Numa, the temple of Vesta, and possibly that of Castor and Pollux. An altar near the middle of this area marked the site of the Curtian Pool, which in early times had been a mere swamp; and three sacred trees, a vine, a fig, and an olive, were carefully preserved and renewed hard by, still showing that the spot had been formerly a jungle. The Forum was already decorated with some statues of illustrious citizens. The Comitium, an open platform raised a few steps above the Forum, was the meeting-place of the patricians, and was adorned with their curia. Upon it, and opposite to the curia, stood the rostra, the pulpit from which the orators addressed them. The Comitium may best be placed at the N.W. angle of the Forum. C. Gracchus was the first to turn, in his public harangues, from the patricians on the Comitium to the commons in the Forum below.

While the houses of the chief nobles were generally placed on the Palatine, the Cælian, or in a street called the Carinæ, on the slope of the Esquiline, the dwellings of the poor plebeians were crowded for the most part about the principal seats of traffic—the Velabrum on the one side of the Forum, and the Suburra on the other. The mansions, however, of the nobles were also frequently surrounded by the cabins of their clients, resting against their walls, so as to form a single block of building with them. A single house, standing by itself, was called a *domus*; a cluster of dwellings, such as has been just described, received the designation of an *insula*; but the little cabins which went to form the aggregate *insula* were often loosely denominated *insulae* themselves. It was not till after the reduction of the Grecian settlements in Italy, and afterwards

History.

of Greece proper, that the Romans began to decorate their city with handsome architectural monuments; and these, it may be supposed, were constructed by Grecian artists, and were simply reproductions, or at least adaptations, of the Greek style. The models generally followed were the florid edifices of the Corinthian order. The most interesting of the temples of the republican period is that of Concord, erected by Opimius after the slaughter of C. Gracchus. It stood immediately beneath the Intermonium, facing the Forum, and became in the last century of the republic the most usual place of meeting for the Senate. It was here that Cicero pronounced the first and last of his speeches against Catiline. Some portion of the pavement of this temple has been discovered on the spot; and the word *Concordia*, engraved upon one of the stones, sufficiently serves to identify it.

The public amusements of the Romans were consecrated to religion; and, next to the temples, we may refer to the theatres of the city. The first scenic representations at Rome were derived, not from the Greeks, but from the Etruscans, and the first theatres were constructed before the introduction of Grecian models. The Romans, indeed, had not the same facility as the Athenians for excavating their theatres out of the solid rock; it was not, therefore, till they had advanced to a high pitch of luxury and extravagance that they undertook to erect edifices of stone capacious enough to receive a large portion of the citizens. The first permanent theatre in stone was that of the great Pompeius, which was placed in the Campus Martius, the common resort of the people for purposes of entertainment. It was connected with porticoes and groves, and was combined with a temple, to which the seats of the theatre formed, it is said, a magnificent ascent. The consul Flaminius built a second circus, also in the Campus Martius, below the Capitoline. In this quarter stood also the *septa*, or polling-booths, of the Roman people, when they assembled in their military organization, by classes, to elect the magistrates of the republic; and here also, in the temple of Bellona, their generals were wont to meet the Senate on their return from foreign service, for the citizens of Rome were not suffered to enter the city under arms. During the last century of the republic the erection of basilicas, or halls for public business, and of private palaces, as well as of temples, went on with increasing magnificence, particularly in the neighbourhood of the Forum. The mansions of C. Octavius, of Æmilius Scaurus, of Crassus the orator, and of Catulus, the prince of the Senate, are specified among the finest of their day; but these were speedily eclipsed by those of Crassus the Rich, of Lepidus (consul B.C. 78), and others. The house of this last magnate was adorned with a profusion of Numidian marble, and was esteemed the most splendid of its day in Rome; but only thirty-five years later, according to Pliny, it was outshone by no less than a hundred aristocratic mansions. The gardens of Lucullus and Sallust may be mentioned among the chief monuments of advancing luxury. The latter stood on the Pincian Hill, near the Porta Salara, and continued to hold a high place among the ornaments of the city in the period of the emperors.

Among the most remarkable features of Roman architecture were the aqueducts, which supplied the city with water from many distant sources. Two of these were constructed under the republic,—the Aqua Appia by Appius Cæcus in 312 B.C., and the Anio Vetus, as it was called, B.C. 273, by Curius Dentatus. The first of these was led from a spot on the road to Præneste, 7 or 8 miles from the city, to the Salinæ, outside the Porta Trigemina, under the Aventine; but the water was conveyed in leaden pipes to the Porta Capena, and the twelve arches on which it was carried into the city seem to have extended only 60 paces. The second began beyond Tibur, and was not less

History. than 43 miles in length; but this also was built on arches only 221 paces, where it entered the city at the back of the Esquiline. Such were the humble beginnings of a series of works which became at a later period some of the noblest embellishments of the city and neighbourhood.

The tribune Saturninus was blockaded in the Capitoline in the year 100 B.C.; but he was reduced to surrender by cutting the pipes which supplied the citadel, and no injury was done to the buildings. The Capitoline temple was less fortunate in the wars of Marius and Sulla, when it fell a prey to the flames, together with some adjacent buildings. Sulla plundered the unfinished Olympieum at Athens to decorate the restored edifice; and Catulus, who was charged with the task of completing it, had the honour of inscribing his name on the entablature. He added to the splendour of its architectural features, though he was forbidden to make any change in its ground-plan or proportions. Hence, though conspicuous from its position, and the centre of religious interest to the Roman people, the Capitol was neither spacious nor lofty, and we never find it extolled for the grandeur of its dimensions. Catulus rebuilt also the Tabularium, or public record office, in front of the Intermonium, between the Arx and the temple; and his name, which he inscribed upon it, has actually been discovered among its ruins in modern times.

The first imperial period, B.C. 59,—A.D. 64.

We may date the first imperial period of the city from Julius Cæsar, who commenced a great revolution in its external appearance. The Julian basilica on the right, and the Æmilian on the left, defined the future limits of the area, which must now be distinctively entitled the Forum Romanum. For Cæsar, perceiving that the population and business of the city had outgrown the accommodation provided by the Forum of the early republic, undertook to extend it with characteristic boldness and energy. The Julian Forum, which he laid out with surrounding porticoes, and a temple of Venus in the centre, to the north of the Roman, was the first of a series of works of a similar character with which succeeding emperors filled the level space at the foot of the Viminal and Quirinal. To make room for these open places in the heart of the city great numbers of the inhabitants, even though the population must have been reduced by the civil wars, were undoubtedly displaced; and from this time, perhaps, dates the first encroachment of suburban habitations on the public domain of the Campus Martius. Cæsar, indeed, designed a great extension of the Campus by turning the stream of the Tiber; but this and other projected changes were intercepted by his death. On the spot where the dictator's body was consumed—in front, that is, of the temple of Vesta in the Forum—a small chapel was erected to his divinity, which was afterwards embellished and enlarged. The spot was probably a little in advance of the modern church of St Francesca. The reign of Augustus, who succeeded him, and consolidated the empire on a peaceful foundation, forms an important epoch in the history of the city. In the first place, this emperor undertook a general restoration of the sacred buildings, which had fallen into a lamentable state of decay; but he also founded several temples of his own, together with other public edifices. Of these, the most important were the temple of Mars Ultor, which was placed in the centre of a new Forum to the north of the Julian; the temple and library of Apollo on the Palatine; the portico and library of Octavia, and theatre of Marcellus, at the entrance of the Campus Martius. Augustus constructed also a basin for mimic sea-fights and other amusements on the right bank of the Tiber, below the bridges, and a magnificent mausoleum for his family, near the modern Ripetta. But the efforts of Augustus himself were rivalled by some of his wealthiest nobles. Statilius Taurus erected a theatre in the

History. Campus Martius, and Agrippa constructed several magnificent edifices in the same quarter, embracing baths, fountains, porticoes, and a hall for the payment of the troops, called the Diribitorium, with a roof of wider span than any other in the city. The Pantheon, generally supposed to have been a temple, but the real design of which has not been satisfactorily explained, still remains as the greatest existing monument of the Augustan city.

A tolerably vivid picture of Rome at this period is presented to us in the contemporary description of Strabo, of which we can afford room for a portion only:—"It may be said that the ancient Romans neglected the beauty of their city, being intent upon greater and more important objects; but later generations, and particularly the Romans of our own day, have attended to this point as well, and filled the city with many beautiful monuments. Pompeius Julius Cæsar, and Augustus, as well as the children, friends, wife, and sister of the last, have bestowed an almost excessive care and expense in providing these objects. The Campus Martius has been their special care, the natural beauties of which have been enhanced by their designs. This plain is of surprising extent, affording unlimited room not only for the chariot-races and other equestrian games, but also for the multitudes who exercise themselves with the ball or hoop, or in wrestling. The neighbouring buildings, the perpetual verdure of the grass, the hills which crown the opposite banks of the river, and produce a kind of scenic effect, all combine to form a spectacle from which it is difficult to tear oneself. Adjoining this plain is another (the Campus Flaminius), and many porticoes and sacred groves, three theatres, an amphitheatre, and temples, so rich and so close to one another, that they might appear to exhibit the rest of the city as a mere supplement. Hence this place is considered the most honourable and sacred of all, and has been appropriated to the monuments of the most distinguished men and women. The most remarkable of these is that called the Mausoleum, a vast mound near the river, raised upon a lofty base of white stone, and covered to its summit with evergreen trees. On the top is a bronze statue of Augustus; while under the mound are the tombs of himself, his relatives, and friends, and at the back of it a large grove, affording delightful promenades. In the middle of the Campus is an inclosed space where the body of Augustus was burnt, also constructed of white stone, surrounded with an iron rail, and planted in the interior with poplar trees. Then, if we proceed to the ancient Forum, and survey the numerous basilicas, porticoes, and temples which surround it, and view the Capitol and its works, as well as those on the Palatine and in the portico of Livia, we might easily be led to forget all other cities."¹

The regulation of Augustus, recorded by this writer, forbidding any houses to be constructed in future of more than 70 feet in height, may serve to remind us that, while the numerous public edifices of this period were systematically erected in the style of Greece, with long columnar façades, strong horizontal lines, and generally of low elevation, the private houses in the older parts of the city still retained their native character, and were tall and narrow, with projecting upper-works, and sometimes with lofty gables. The subsequent career of building in Rome was marked by the gradual displacement of the Italian by Grecian features. Augustus could boast, towards the end of his reign, though with considerable exaggeration, that he had found Rome of brick and had left it of marble: no doubt the old Italian materials of wood and brick were displaced also from year to year by masses of solid masonry which befitted a style of architecture fashioned on that of Athens or Corinth. It was not, however, till the time of Nero, when the great fire, presently to be de-

¹ Strabo, lib. v., translated in Mr Dyer's art. "Roma," Smith's *Dictionary of Classical Geography*.

History. scribed, swept away the larger part of the ancient city, that full scope was afforded for the development of this revolution in taste. Before proceeding to this epoch, we must notice the new division of the city by Augustus into fourteen regions. The four Servian quarters, which occupied the space within the old walls, were now re-distributed into six; but the walls themselves had been long neglected as lines of defence; they had been passed in almost every direction by suburban buildings, and had become obliterated, if not actually demolished, in many places. It does not seem that Augustus scrupulously preserved the old limitation. At all events, he added as many as ten new regions, including the Transtiberine, making fourteen in all, in which he embraced, we may suppose, all the continuous buildings which had grown up round the city, together with some considerable open spaces which it might be convenient to comprehend in one municipal system. It seems that the principal addition of private habitations lay in the direction of the Cælian and the lower Aventine; but the public edifices which now thronged the Campus Martius were also included in the new city, as were also the extensive range of private parks and gardens which skirted it on the north and east from the Pincian Hill to the Esquiline.

The house which Augustus first occupied on the Palatine was the modest mansion of a noble but not illustrious family. When this was consumed by fire he was encouraged by the citizens to enlarge and embellish it. He connected it at the same time with the official residence of the chief pontiff, attached to the temple of Vesta. The original *palace*, as it now came to be called, of the Cæsars occupied the north-west angle of the Palatine Hill. The chief architectural works of the next emperors were still further enlargements of the imperial residence. Tiberius extended it along the west side of the hill. Caligula made considerable additions, and seems to have connected it by open colonnades with other distant buildings. He threw a bridge, possibly of wood, over the Velabrum, to unite it with the temple of Jupiter on the Capitoline. The conceptions of Nero were still more extravagant. After commencing a temple to Claudius on the Cælian, he suspended or pulled down his work, in order to erect on the spot a wing to his palace; and he connected the house of Mæcenas, which had become imperial property, on the Esquiline, with the Palatine, by means of a colonnade, called the *Domus Transitoria*. These works, however, while yet unfinished, were interrupted by the great fire of Rome, the most important event in the history of the city, in the year 64 of our era. The conflagration commenced in the region of the Porta Capena, near the south-east angle of the Palatine, and was carried by the wind in two directions, following the course of the valleys between the Palatine and Cælian on the one hand, and the Palatine and Aventine on the other. It was not arrested till these two streams of fire had met again in the Forum or the Velabrum. Thus they completely encircled the Palatine, and swept at the same time the base of most of the other hills. They were not yet entirely extinguished when a second conflagration burst out in the Via Lata, N.W. of the Capitoline, and the wind having veered to the opposite direction, some portions of the city which had hitherto escaped fell now a sacrifice to its fury. Of the fourteen regions, four, it is said, were wholly consumed, and seven others more or less injured: three only escaped unhurt. Generally the lower parts of the city, the old plebeian quarters, suffered more than the elevations. The buildings on the Capitoline were uninjured; those on the Palatine only partially damaged; but the old monuments of the republic in the Suburra, the Forum, the Velabrum, were swept entirely away. Space and opportunity were now presented for the re-construction of the city in the fashionable style of Greece, and the very

eagerness with which Nero improved the occasion in the taste of the day, lent a colour to the imputation current against him, of having actually kindled the flames, or at least of having forbidden them to be extinguished.

With the aid of his architects, Severus and Celer, Nero undertook to rebuild Rome after the manner of the great oriental capitals. Antioch, indeed, and Alexandria, as well as the chief cities of European Greece proper, occupied areas for the most part level, and it was impossible to carry out on the varied surface of the seven hills the uniform plan of rectangular streets and places which characterised the architecture of the East. But the avenues of the restored city were now widened and straightened as far as was practicable; the great blocks of houses were generally surrounded by colonnades; the height of the private buildings was diminished; and the basements at least, even of the plebeian cabins, were constructed of stone. The old inhabitants complained, we are told, of the loss of their lofty houses and narrow alleys, which at least afforded shade from the sun and shelter against the winds. They were right perhaps in alleging that the architecture of Egypt and Syria was not suited to the variable climate of Rome. The restoration of the city was carried on with great vigour, and seems to have been nearly completed during the four remaining years of Nero's reign. The emperor repaired and completed his palace also, which occupied the heights of the Palatine, Esquiline, and Cælian, connected together by a vast series of colonnades. The principal entrance seems to have been placed near the site of the Colosseum, erected, as we shall see, a few years later, and named from the colossal statue of Nero in the atrium of the palace. This enormous edifice was not less remarkable for its decorations within and without than for its size, and received from thence the designation of the Golden House. Another of Nero's architectural works was the circus he constructed for his private amusement on the slope of the Vatican, the scene of the cruel martyrdom of the Christians, and possibly the spot on which the church of St Peter's now partly stands.

The civil wars which followed on the death of this tyrant are memorable in the history of the city, from the burning of the Capitol, the narrative of which clearly shows that the Arx had become wholly untenable, and was held of no account for the defence of the hill. Vespasian undertook the restoration of the temple, and was allowed to raise its elevation, but not to enlarge its foundations. The restoration was hardly finished when the temple was again destroyed or damaged by an accidental fire, and the repairs of Domitian seem to have been still more magnificent. The gilding of the roof is said alone to have cost the incredible sum of 12,000 talents, or nearly three millions sterling. The embellishment of the city by the Flavian emperors and their next successors was conducted on a more magnificent scale than ever. Vespasian destroyed the greater part of the Golden House, restricting the imperial palace once more to the Palatine Hill, and transferring to public uses the areas thus recovered from it. One part of the site he devoted to a temple of Claudius on the Cælian, some remains of which are supposed now to exist, from which we may estimate the extent of ground it occupied at not less than one of the squares of London. He constructed a new forum at the foot of the Esquiline, which received its name from the temple of Peace in its centre; above all, he converted the site of Nero's fish-ponds into an arena for his vast amphitheatre, which is known by the name of the Colosseum. Titus transformed a portion of the palace on the brow of the Esquiline into public baths of unprecedented extent and splendour. Domitian erected the triumphal arch, which still exists, in honour of his brother. This prince commenced also a new forum, to connect that of Peace with the older constructions of Julius and Augustus,

History.
The culminating period of the city, A.D. 64-271.

History. and adorned it with a temple of Minerva, but the work was completed by Nerva. The equestrian statue of Domitian in the Roman Forum has been described by Statius in lines interesting to the topographer, from the aid they give him in determining the sites of various buildings in that quarter,—of the basilicas, for instance, of Julius and Æmilius, of the temples of Vespasian and of Concord under the Capitol, of Castor and Pollux and of Vesta at the foot of the Palatine.

The long period of peace and prosperity which followed was signalized by the erection of a series of magnificent buildings. Trajan completed the imperial forums by opening a new area beyond the Julian and Augustan, cutting through the low ridge which joined the Capitoline and Quirinal, to get a level space for his extensive works. This Place also was decorated with a temple, and its site is defined for us by the column still standing in its centre, which was surmounted by a statue of the emperor. The principal works of Hadrian, besides the completion of Trajan's forum and temple, were the temple of Venus and Rome, with two cells back to back, the largest of all the sacred edifices of the city, on the eastern slope of the Velia, and the colossal mausoleum erected for his own sepulchre, now known as the castle of St Angelo, on the other side of the Tiber. The Mole of Hadrian, as this building was popularly designated, was connected with the Campus Martius, now almost wholly occupied with buildings, by the Pons Ælius, still existing.

The fashion of erecting commemorative columns, first set, at least on a large scale, by Trajan, was followed by both the Antonines. The column of Pius was indeed of much smaller dimensions. It was found in fragments lying on the ground early in the last century, and an unsuccessful attempt was made to raise it. The base has been since removed to the garden of the Vatican. The column of Aurelius still stands, and forms one of the most conspicuous objects in the centre of the modern city. Under Commodus the city suffered again from fire, but the particulars of the disaster are not known. Severus built the Septizonium, a large edifice raised on seven ranges of columns, in imitation perhaps of the mausoleums of Augustus and Hadrian. This building is frequently mentioned in the history of Rome in the middle ages, but its site has not been satisfactorily determined. The triumphal arch of Severus, still standing at the foot of the Capitoline, is the noblest of the ancient monuments of its kind now existing. The Antonine baths, which exceeded in extent those already mentioned of Titus, filled a large space beyond the Porta Capena, and seem to show that the population was not densely located at this time in that quarter. The erection of this work is ascribed to Caracalla: probably it was finished by Alexander Severus. The series of aqueducts introduced into the city, already eight in number, was completed by the Aqua Alexandrina of this latter emperor, by which these baths are supposed to have been supplied. Alexander constructed also a new circus in the Campus Martius, the limits of which are precisely defined by the existing Piazza Navona. The city had arrived at the height of its splendour, extent, and population, when it was finally encircled with a continuous line of fortification by the policy of the Emperor Aurelian.

History. The walls with which Aurelian surrounded Rome were meant as a defence against the attacks, now first apprehended, of the barbarians, and were so drawn as to embrace all the continuous buildings pertaining to the city. They comprehended pretty exactly the whole of the fourteen regions of Augustus, with the addition of the camp of the prætorians, which had lain originally beyond their limits. On the left bank of the river they corresponded very closely with the line of walls now existing; on the right they included the Janiculan Hill, but did not extend to the Vatican. No certain vestiges, however, of this fortification can now be discovered. A space, indeed, of about 40 feet at the slope of the Pincian Hill, remarkable for the inclination of the wall from the perpendicular, presents a specimen of *opus reticulatum*, a species of brick-work belonging, it is said, to the period of the early Cæsars. It would seem, therefore, that at this point at least Aurelian connected his work with some building already in existence. We have, however, no other traces of construction which can be referred with confidence to any very ancient date. Even in the time of Honorius these walls had fallen into decay, and required considerable repairs; an operation which was repeated, as we shall see, by Belisarius, and again by Narses.

The actual circuit of the walls of Rome has been very variously stated. Some of the ancient authorities on the subject have been misunderstood, but others are manifestly in error. The best measurements have been made by the simple process of walking round them. The Servian *enceinte*, as far as it can be traced, has thus been found to extend to about 8 miles, that of Aurelian to 12½.¹ This agrees very nearly with the statement of Pliny, that the *mœnia* of Rome had a circuit of 13 m. p. The word *mœnia* has been taken for the walls; and as the walls of Pliny's time were the so-called Servian, it has been thought that for xiii. we should read viii.² *Mœnia*, however, properly implies not walls, but continuous edifices, and was used no doubt by the author to indicate the extent of the regions of Augustus, comprehending the actual city of his day.

This conclusion is important, as it furnishes us with the best data we possess for determining the population of Rome. There are, indeed, a variety of proofs that the suburbs of the city were never either extensive or populous, derived from the paucity of remains beyond the walls, from the practice of lining the roads for miles with sepulchral monuments, from the absence of bridges across the Tiber either above or below the walls, and from the frequent mention of country villages, lanes, and retired woods at but a short distance from the gates. We may conclude, then, that the mass of the population was strictly confined to the limits comprised within the walls of Aurelian.

Although, however, these walls are above 12 miles in circuit, about the same as the outer boulevards of Paris, it must be observed that they do not inclose a regular figure, and the area they embrace is far less than it would be if the circumference, as at Paris or ancient Athens, approached a circle or ellipse.³ We have seen that, in the time of Augustus, a large proportion of the area was very thinly inhabited; and even in later times indications are not

¹ Lord Broughton's *Italy*, i., p. 308, note. The author adds, however, that in trying the distance with a pedometer, he found it "considerably less."

² This is the solution adopted by Dureau de la Malle in his *Econ. Pol. des Romains*, i. 345, after D'Anville.

³ The area of Rome has been accurately measured at 3263 acres. We may compare this with the areas of some modern cities, as given in the *Quarterly Review*, vol. xcix., p. 445:—

	Acres.	Population.	Average Density.
1. West London.....	2547	199,885	75
2. Central London.....	1938	393,256	203
3. Liverpool (Central).....	1830	255,055	131
4. Calcutta (excluding the suburbs).....	4796	413,182	86
5. Florence.....	1297	95,927	74
6. Frankfort-on-Main.....	1312	66,244	50
7. Paris.....	8026	1,050,000	130

History. wanting that great spaces within the city were still occupied by gardens and pleasure-grounds, while the extent of the public buildings seems to have constantly increased.¹ The emperors appear to have experienced no difficulty in clearing the ground for their enormous constructions. On the whole, Rome in the Augustan age cannot have stood on more ground than the city of the present day, nor in the time of Aurelian did it occupy a greater space than Naples; and these Italian cities present in many respects the fittest objects to compare with it. When we add that, while repeated fires were thinning the density of habitation, new regulations were introduced for reducing the height of houses; that Trajan fixed the limit at 60 feet, while in London they rise very generally to 70 or 80, and in modern Rome and Naples still higher;—we shall be content perhaps with a very moderate estimate of the population of the ancient city. Into other data, at best uncertain, for fixing it, we cannot here enter; but, judging from the extent of the area, and the character and density of the buildings, we shall hardly believe that it ever approached to the number of one million.

Desertion of the emperors, and attacks of the barbarians. From the time of M. Aurelius, the Roman world was visited by a succession of pestilences, which, it may be supposed, would fall most heavily on the areas of densest population. It seems probable, however, that whatever loss Rome sustained from this cause during the century which followed would be compensated by the crowding into it of the distressed and impoverished people from the towns and country round. We cannot infer that the numbers of the urban population actually diminished along with the undoubted decline of the empire generally in the third century.

The first great blow that was struck at the numbers of the city was the building of Constantinople. Several of the noblest and wealthiest families then quitted the Tiber for the Bosphorus, and, carried with them their troops of clients and families of slaves. The servile population had now ceased to draw recruits from successful frontier wars, and the decay of general affluence must have rendered the breeding and maintenance of this class unprofitable. The construction, however, of splendid edifices still continued after the age of the Severi, though we may guess, from the example of the arch of Constantine, that older buildings were often pillaged to decorate the new. Aurelian erected the temple of the Sun on the Quirinal, the substructions of which are still seen in the gardens of the Colonna palace; the arches of Gallienus and Constantine exist at the present day; the baths of Diocletian were equal in extent and splendour to those of Titus or Caracalla; Maxentius and Constantine erected the great Basilican, the remains of which are among the most conspicuous monuments of Roman antiquity. The walls, it is said, were completed by Probus.

But with these works the additions to the splendour of the ancient city terminate. When Constantius visited Rome he was struck with admiration at its architectural magnificence, and despairing of leaving any monument of himself which should vie with those of his predecessors, was satisfied with offering, as his humble tribute, an obelisk erected in the Circus Maximus. Two centuries later, a noble column, still standing, was raised to the Emperor

History. Phocas in the Forum; but this, it is supposed, was taken from some earlier edifice. Honorius is extolled by the poet Claudian for breathing new life into the ancient city, but his merits seem to have been really confined to some partial repairs of the walls, which we cannot suppose to have fallen into general decay in little more than a hundred years. His minister, Stilicho, set the first example of pillage, in carrying off the gilded plates on the doors of the Capitoline temple. The first assault of the barbarians quickly followed. Alaric entered Rome in 410 by the Salarian Gate, and gave the nearest parts of the city to the flames. Procopius, writing a century and half later, ascribes the destruction of the house of Sallust, such as he witnessed it in his own day, to this disaster. The extent indeed of the damage may not have been great. The Goths remained only six days in Rome, and could not, had they been inclined, have demolished or injured many of the buildings in that short time.

The second sack of Rome was that by Genseric and the Vandals in 455. The Gothic historian Jornandes, who had denied the imputation of barbaric violence applied to his own countrymen, speaks of the *desolation* inflicted by the rival conqueror. The Vandals occupied the city fourteen days; but they employed themselves too diligently in collecting its treasures to spend time in destroying its massive edifices. The golden candlesticks and table of the Holy of Holies, taken from Jerusalem by Titus, are specified among the spoils of Genseric. When these objects were recovered by Belisarius, they were sent as precious trophies to the Christian capital of the empire. The Vandals carried off one-half of the gilt tiles on the roof of the Capitol; and a vessel laden with gold and silver statues was lost on its way to Africa. In 472 Rome was sacked a third time by Ricimer; but the object of this adventurer was a political revolution, and he was animated by no hostility to the people or city. It is not probable that he inflicted any great amount of damage, and indeed he too died within forty days.

Thus far we cannot suppose that Rome had suffered any material damage in her external appearance, nor such as might not have been speedily effaced had she retained spirit and resources for repairing the loss. To some extent, indeed, both of these were supplied by Theodoric, who succeeded to the supreme power in Rome in the year 493. Cassiodorus mentions by name several of the chief monuments of the city as existing at this epoch in their ancient splendour, and considerable sums were now set apart for the repair of those which time or violence had injured. For this purpose also, marble was imported from Greece by the successors of Theodoric, Amalasuntha and Deodatus. At this period the public games might still be witnessed in the Circus Maximus, and the Claudian aqueduct was in play. Such indeed was the case with the aqueducts generally, which were first broken down, as we are expressly told, in the attack of Vitiges (A.D. 537), when the country round Rome was devastated by the Goths. To resist this attack, Belisarius, who then held the city for the Greek emperor, repaired the walls, and fortified the Mole of Hadrian. In the course of the siege the defenders hurled many statues from the walls of this edifice upon the heads of the assailants. But the sack of Totila, which followed in 546, was

It will be seen that, computing the area of Rome at 3263 acres, it would contain, if peopled on the scale

Of No. 1, a population of 274,224	Of No. 4, a population of 280,618
" 2, " 662,389	" 5, " 259,536
" 3, " 379,487	" 6, " 169,150
Of No. 7, a population of 424,190	

The population of modern Rome, it may be added, is now about 180,000; that of Naples 450,000.

¹ Besides the numerous large edifices, theatres, circuses, &c., already specified, we are informed that Rome possessed 424 temples, most of them with external areas and sacred groves attached; 265 squares or open places, and that Agrippa alone erected 170 baths for the use of the people. See these and many other details in *Dureau de la Malle*, i. 350, &c.

History.

marked by the burning of some portions of the city, especially that beyond the Tiber. This conqueror overthrew also a third part of the walls. The city is said to have been deserted by its inhabitants, and the barbarian threatened to turn its site into pasture ground. It is still affirmed, however, that he was diverted from the execution of his threats against the buildings and monuments of Rome by the remonstrances of Belisarius, who, on the retreat of the Goths, once more repaired the walls, and repulsed another attack. The city, indeed, was subsequently surrendered to Totila by treachery; but the invader now established himself there, not as an enemy, but a sovereign, and caused no further injury. After his death it reverted once more to the rulers of Constantinople, after having been taken and retaken five times in the course of twenty years, but with more loss perhaps to the harassed population than to the buildings themselves. With Totila the damage inflicted by the barbarians may be said to terminate. The Lombards devastated the Campagna in 578 and 593, but did no injury to the city. As late as 754 the walls were assaulted by the German Astolphus, and the buildings which lay near them may have suffered from his violence; and we thus reach the era of Charlemagne, and the general recognition of Papal Rome as the centre of mediæval civilization.

Effects of the establishment of Christianity.

During the period of five centuries, at which we have glanced in the last section, while Rome was subjected to the effects of imperial neglect on the one hand, and of barbarian crime on the other, a third cause of decay was also in operation, which contributed no doubt more than either of these to change the face of the city, and obliterate its ancient topography. This was the establishment of Christianity, or, to speak more precisely, the transition from the old religion to the new.

Constantine first allowed the Christians to make use of some public halls for their worship. We cannot indeed specify any such case with certainty; but the application of the term *basilica* to five of the larger and eight smaller churches in Rome, and the evident derivation of the style of Roman ecclesiastical architecture, sufficiently attest the fact. Though the internal decorations, especially the statues, of these pagan edifices, would be destroyed on their application to the religious service of the Christians, we may believe that the practice of conversion was on the whole favourable to the preservation of this class of structures externally. But with the temples the case was different. It is impossible but that, in the decline of paganism, these sacred buildings must have suffered from neglect, even before the churches of Christianity rose to supplant them. Neither Constantine nor his immediate successor ventured to close them. Theodosius, who destroyed the temples at Alexandria, still spared those of the pagan metropolis. But the violence of the Christians grew with their strength. In 399 the edict of Honorius suspended all the temple services; and the clause which forbade any outrages to be committed on the buildings themselves seems to show, not only that such were to be apprehended, but that they had been already offered. Augustine boasts in one place that all the statues in the Roman temples had been demolished, but he speaks elsewhere of temples and sacred groves being appropriated to Christian worship and sanctified thereby; and we must suspect Jerome of his usual exaggeration where he exults in the general ruin which, as he asserts, had fallen upon the sacred places of the heathens. At all events, there is no more brilliant description of the pagan shrines of Rome than that of Claudian, himself a pagan, at the very epoch to which we are now referring. At last, in 426, the younger Theodosius issued an edict for their destruction, and this edict is generally supposed to have been carried out pretty completely. It is said that from this era we meet with no reference to the temples in the imperial legislation; but this

History.

indeed was hardly to have been expected when the temples had ceased to be public property or objects of public interest. It is not strictly true that from henceforth there is no mention of them in the narrative of political events. Procopius in the sixth century alludes to the temple of Peace as then existing, with other similar monuments, and particularly describes the form, the dimensions, and the material of the temple of Janus. The populace, he says, Christians though they nominally were, attempted to open the gates of this temple as a protection against an advancing enemy; a trait of superstition which shows that they still retained a lurking respect for the ideas of antiquity; and would have revolted against any indiscriminate attack upon their monuments and emblems. If, however, these venerable edifices escaped a general proscription and demolition, they fell for the most part by a more lingering process, being despoiled from time to time by the cupidity or caprice of the private owners into whose hands they came. Thus in the reign of Justinian, a Roman matron, the proprietor of a ruined temple on the Quirinal, presented eight of its columns to the emperor for the decoration of S. Sophia. Vast numbers of columns, friezes, and entablatures, were thus transferred to Christian churches. The application of the temples themselves to ecclesiastical uses was more rare, and is believed to have begun rather later. The Pantheon had escaped destruction or serious mutilation down to the seventh century; it was converted into a church in the year 604, in which year the gilded tiles of the temple of Venus and Roma were also transferred to the roof of St Peter's basilica. We know, however, of four or five only of the ancient temples which were equally fortunate with the Pantheon,—those, namely, which were dedicated to SS. Cosmas and Damianus; to St Stephen, St Hadrian, and that of Vesta or Romulus, which has assumed the name of St Theodore. On the other hand, we read of not less than fifty-six churches erected on the sites of temples either previously destroyed or actually pulled down for the purpose. The destruction of the theatres, baths, and circuses, together with other places of public resort, in which the magnificence of the ancient city had most conspicuously displayed itself, must be ascribed more directly than even that of the temples to the change of religion, sentiments, and manners. Against the social institutions to which these buildings were devoted the early Christian preachers had most sedulously inveighed; the converts were instructed to shun them, as the strongholds of the idolatry, cruelty, and sensuality which disgraced the heathen world. It was long indeed before the Roman populace, even when Christian in name, could be effectually weaned from their fascinations: the games of the circus did not, it is said, finally cease till 496, and the baths were not perhaps wholly deserted till the overthrow of the aqueducts which supplied them. But as early as the tenth century there were three churches standing within the area of the baths of Alexander, which must have been previously deserted and in ruins. The immediate causes of the destruction of these monuments must be looked for in those natural agencies to which we shall next refer, and which we shall find to have been really far more effectual in their operation than either the fury of the barbarians or the fanaticism of the Christians.

The popular charges against Pope Gregory the Great, of having urged the destruction of temples, the demolition of statues, and the burning of libraries, have been chiefly derived from the declamatory assertions of John of Salisbury, a writer of the twelfth century. Gregory himself, we may believe, would have disclaimed the praises of his fanatical panegyrist. He has left us in memorable words his own mournful impression of the decay and ruin of the great city around him, which he ascribes to the operation of tempests, earthquakes, and inundations. Such agencies,

Decay of the city from natural causes.

History. as we learn, had been always more or less in activity on the spot, but in better times the injury they inflicted was speedily repaired by the energy of a vigorous and increasing population: at this period there was neither strength nor spirit to retrieve the accumulating disasters. Pestilence and famine had repeatedly succeeded to the calamities of war; the remnant of the citizens had been driven more than once in terror from their dwellings, and many no doubt had abandoned them for ever. At the second siege of Totila there was so much vacant soil within the city as would have sufficed to maintain both the inhabitants and the garrison. Sufferings and apprehensions had blunted every sentiment of national pride or interest. The Romans had become ignorant of their own history, or at least indifferent to its monuments; they were wholly insensible to the grandeur and beauty of their works of art; they left their noblest statues to be buried in the gradual accretion of soil, as in the baths of Antoninus and Titus; while the names and uses of their most illustrious edifices sank into oblivion around them.

Against the agencies above enumerated a people so listless could not contend. The rains swept the soil from the hills into the valleys; the inundations undermined the buildings; the earthquakes overthrew them. A rank vegetation grew up among the ruins, and embedded them in its accumulating debris. There is evidence, from certain appearances in the walls, that even when Honorius repaired them the soil had already risen in some places to several feet above the original level. In modern times excavations on the hills, but still more in the lower parts of the city, and especially in the Forum, have exhibited a rise of level of 10, 15, or even 20 feet. The process of accretion is thus described by Lord Broughton:—"Such open spots as were decorated by single monuments were likely to be first overwhelmed by the deposit left by the water and collected round those monuments. On this account the forums, and even the Palatine, though on an eminence, being crowded with structures, appear to have been buried deeper than the other quarters under the deposit of the river and the materials of the crumbling edifices. The latter accumulation must be taken into account when it is recollected that the broken pottery of the old city has at some unknown period been sufficient to form a mount of 150 paces high and 500 paces in length. The population was too languid to dig away the obstruction, and employed their remaining strength in transporting the smaller materials to the more modern and secure quarter of the town."¹ The failure of the supply of water from the aqueducts would help to drive the dwindling population to the banks of the river; and in the eighth and ninth centuries, when the number of inhabitants had fallen perhaps to its lowest point, a large proportion of the area within the walls was occupied with fields and vineyards, the people crowded together under the western slope of the Capitoline, and in the nearest portions of the Campus Martius, where the oldest parts of the modern city are at this day to be found.

History of the city in the middle ages.

The city of the Cæsars had sunk to its lowest degradation about the end of the eighth century; its old habitations had been destroyed, even the course of most of its streets obliterated; the remains of antiquity were confined to the bare walls of palaces and temples, and a few other monuments of unusual strength and solidity. Of these remains a list is given by a topographer of the next age, according to the division, still it seems remembered, of the fourteen

History. regions. It includes the baths of Alexander, Commodus, Trajan, Sallust, Diocletian, and Constantine; temples of Jupiter and Minerva; the Roman Forum and that of Trajan; the three circuses; the arches of Severus, Titus, Gratian, Theodosius, and Valentinian; the Flavian and prætorian amphitheatres; the Capitol, the Septizonium, the palace of Nero, and another, pretending to be that of Pontius Pilate; the theatres of Pompey and Marcellus; the Trajan and Antonine columns; a Nymphæum; an obelisk; several remains of aqueducts and porticoes; together with various specimens of ancient sculpture.² These monuments, it will be observed, still for the most part exist; their continued preservation will be presently accounted for; but the demolition of the ancient city had already advanced at this period almost to the point at which it has now arrived, a thousand years later. A change, however, now occurs in the history of Rome. The spiritual importance which begins to attach to her as the centre of Christendom, and the spot from whence the chief of the revived empire is content to derive his authority, inspires her government with a renewed sense of dignity. The Popes, now the acknowledged masters of the venerable city, attempted in every interval of domestic tranquillity to repair the most vital injuries she had suffered. The Aqua Virgo was made again to convey water to the dwellings about the Pantheon, and the Claudia to those which encircled the Lateran. A new town was rising under the protection of St Peter's, which Pope Leo VI. fortified in 846, and gave it the name of the Civitas Leonina, now the Borgo. Rome had become a cluster of little towns, one of which grew up around each of her principal sanctuaries; and from this time her records teem with notices of the building of new churches, and even the restoration of old ones. The Papal city had itself become an antiquity.

The exemption, however, which Rome now enjoyed from foreign assault encouraged the citizens to dissensions among themselves. The strongest monuments of the old city still standing were seized by the barons and converted into fortresses. Even the monasteries sought to protect themselves by similar means. Thus the convent of S. Gregory on the Cælian had its outposts in the Septizonium and the arch of Constantine; while other religious houses made use of the columns of Trajan and Antonine for bell-fries. In the twelfth century the noble family of the Frangipani had possession of many ancient buildings, such as the Colosseum, the Circus Maximus, the Septizonium, the arches of Titus and Janus; the Orsini occupied about the same time the mole of Hadrian and the theatre of Pompeius; the Colonna the mausoleum of Augustus and the baths of Constantine; the Savelli maintained themselves in the theatre of Marcellus and the tomb of Cæcilia Metella; the Corsi had fortified the Capitol, and were in possession of the basilica of S. Paul. The Pantheon was defended as a fortress for the Pope.³ We may suppose that the defiant attitude assumed by the holders of these places of strength provoked mutual hostilities; but they were preserved at least from natural decay by the pains taken to fortify them. We can trace, however, some of the damage inflicted upon them in the struggle between the Popes and Emperors, and we may guess at more. Rome was attacked more than once by the emperor Henry IV. In the siege of 1082 the portico of St Peter's suffered injury; in the following year that of Hadrian's mole, or castle of S. Angelo, was destroyed.⁴ The assaults were generally directed

¹ Lord Broughton's *Italy*, i. 373.

² Bunsen's *Rom.* i. 246; Lord Broughton's *Italy*, i. 387.

³ The modern name of this monument is derived from a chapel once erected on its summit by Pope Gregory the Great at the close of the sixth century, and dedicated to the archangel Michael, who was said to have appeared on the spot and protected the city from a pestilence. The name of S. Angelo, however, does not seem to have been applied till several centuries later. The mole was first fortified by John XII. about 960, again in 1378, and finally in 1644. It is now used as a state prison. All the upper part is modern.

⁴ *Ibid.*, i. 382, from Bianchini, *Vit. Pontif.*

History. against the Transtiberine portion of the city, and in 1084 the Borgo was overthrown. At the same time the long colonnade which connected St Paul's-beyond-the-walls with the city was demolished. Thus far the injury inflicted had lighted chiefly on objects comparatively modern; but the emperor now penetrated the walls, and made a furious attack on the Capitol, which caused the ruin of many ancient remains. The outrages of the imperialists, however, were far exceeded by those of the Normans and Saracens, who recovered the city for Pope Gregory VII. under Robert Guiscard. These savage allies burnt their way from the Flaminian Gate to the Antonine column, and they assaulted with barbarian violence both the Capitol and the Colosseum, and laid waste the area of the city from thence to the Lateran. The greater part indeed of this space was at this time uninhabited, and even uncultivated. The remains of the several borgos were thus separated by desert tracts; and William of Malmesbury, in writing of this lamentable period, could describe Rome as "quite a small city." At the end of this century, under Innocent III., it is said to have contained only 35,000 inhabitants.

In the thirteenth century the violence of the nobles was brought in some degree under the control of the municipal government, and the senator Brancalcione caused the demolition of 140 baronial "towers." These were perhaps for the most part turrets of brick erected on the summit of the ancient monuments, but their destruction extended in many cases, as we are specially assured, to the monuments themselves; the extent, however, of the demolition was probably been exaggerated,—at least the check it inflicted was incomplete and transient. We continue to hear, again and again, of the feudal castles in Rome: as many as forty-four existed, it is said, at a much later period in a single borgo.

The removal of the Popes to Avignon in the fourteenth century tended on the whole to the preservation of the ancient remains. It was a period of stagnation, with less of violence on the one hand, and less of improvement and embellishment on the other, which were almost equally fatal to monuments of merely antiquarian interest. The lamentations of Petrarch over the desolation of Rome are generally taken as a sign of its advancing ruin. Perhaps they should rather be regarded as a favourable symptom. They exhibit the first indication of an interest in antiquity, and an anxiety to preserve what was perishing. The abortive attempts of Rienzi were not ineffectual for the great end he had in view, to revive among his countrymen the love of their city and pride in their historic recollections. But in the middle of the century the venerated spot was visited with an inundation and an earthquake of more than usual violence, in which some of the ancient as well as more modern monuments were overthrown. The continued absence of the Popes, as Lord Broughton remarks, might have been fatal to the city, and reduced it to a solitude; "but such a solitude," he adds, "would have protected many a fragment, and preserved the ruins at least for the eyes of a more inquisitive generation." The return of the Popes, and the new population which followed in their train, introduced a new series of injuries, in the conversion of the old materials to other objects. "The Colonna and the Orsini, the people and the church, fought again for the Capitol and the towers; the fortress of the Popes, the refitted mole of Hadrian, repeatedly bombarded the town;" but the injuries thus inflicted on the imperial remains were less serious than the pillage to which they were to be again subjected by the Papal re-constructors and beautifiers.

The return of the Popes from Avignon was soon succeeded by the great western schism, which suspended the restoration of the city for forty years; but the era of its re-construction in the general form it now presents may be

History. dated from the pontificate of Martin V. (1417). This was the most flourishing period of the Papal power, when its revenues were most abundant, and its authority throughout Europe uncontested. The last revolt of the Romans was suppressed in 1434 by Eugenius IV., and the work of building and restoring was now carried on rapidly and without interruption for many years. A great many of the churches of Rome date their origin from this century, and perhaps a still larger proportion of its palaces, erected for the most part by the Popes themselves, or by the families they founded. The monuments of imperial Rome still existing, and especially the enormous Colosseum, supplied inexhaustible quarries of travertine to the builders. Nicolas V. has been called the Augustus of modern Rome; but he stripped the ancient edifices of their marble to burn into lime, and left only the brick. So rapidly did the work of demolition proceed that Pius II. was obliged to interfere with a bull in 1462 to arrest it. But the interdict seems to have been little regarded, and this Pope is himself accused of building the palace of St Mark with materials taken from the Colosseum. In 1474 Sixtus IV. destroyed what remained of the stone piers of the supposed Sublician bridge to make cannon balls. Alexander VI. constructed his gallery from the Vatican to the castle of St Angelo with the fragments of a pyramid destroyed for the purpose. Pius III. plundered the temple of Antoninus and Faustina, the arch of Titus, the forum of Trajan, and the theatre of Marcellus; and built the Farnese palace with stone from the Colosseum. Sixtus V. removed some works of art from the Septizonium to decorate St Peter's. "The stupendous vaults of the Diocletian thermæ were converted into churches; the walls of those of Constantine were adjusted into the Rospigliosi palace; the Alexandrine thermæ supplied with columns the repairs of the Pantheon; a circus was gradually cleared away for the opening of the Piazza Navona; the marble of a temple on the Quirinal was cut into the 124 steps which ascend to the church of Araceli."¹ The fountain of Trevi and the Barberini palace were constructed by Urban VIII. with materials taken from the Colosseum; he also stripped the porch of the Pantheon of some sheets of bronze, which, strange to say, had so long escaped the spoilers of the city. These last and other acts of barbarism were perpetrated in the middle of the seventeenth century; and finally, Alexander VII. destroyed the arch of M. Aurelius about 1660, as an obstruction to the street called the Corso. "Those who peruse the topographers from Blondus to Nardini will assign to the latter half of the fifteenth century, and the succeeding 150 years, a greater activity of destruction than to those immediately preceding ages in which we have no authentic writers to tell us what was left or what was lost."²

The laying out of the plan of the city as it now exists dates from the pontificate of Sixtus IV. (1471-1484). A peculiar feature of modern Rome, as distinguished from other cities, is the combination it presents of long and straight avenues with clusters of the narrowest and most tortuous alleys. We see before us in this respect a repetition of Rome as it was rebuilt after the fire of Nero. From the Capitoline (Campidoglio), the Quirinal, and the centre of the old Campus Martius respectively, three streets, the Corso, the Babuino, and the Scrofa, converge upon the Porta del Popolo, near to the site of the old Flaminian Gate. The first of these runs partly, possibly indeed altogether, in the line of the Flaminian Way, and it is evident that they must have all been driven through the habitations, long deserted perhaps, of an earlier generation, and that many ancient remains must have been sacrificed to them. In the same manner, we are informed, the remnant of Nerva's forum was removed

History. The rise of the modern city to the middle of the 17th century.

¹ Lord Broughton, *Italy*, i. 421.

² *Ibid.*, i. 423.

History. to make way for the Via Alessandrina; and other antiquities were demolished to effect a communication between the forum of Trajan and St Maria Maggiore. During almost the whole of the period now before us, the modern church of St Peter's was rising in its incomparable grandeur (1450-1626). Before the secession to Avignon, the Popes had inhabited the Lateran. On their return, they took up their residence in the Vatican, chiefly on account of its proximity to the friendly shelter of St Angelo. From that time they continued to enlarge and beautify this palace, till its length has extended to 1151 and its breadth to 767 feet, and it contains by exact computation 4422 rooms.¹ The square of palaces which occupies the centre of the Campidoglio was built by Paul III. (1534-1549), from the designs of Michael Angelo, and is ascended by a stair on the northern slope of the hill, the side which in ancient times was regarded as inaccessible. The Popes have another residence on the Quirinal, in a palace commenced by Gregory XIII. in 1574, and enlarged by several succeeding pontiffs down to Urban VIII.

By the middle of the seventeenth century Papal Rome had reached perhaps its full extent, and enjoyed a splendour which it has hardly since maintained. Though not free from the ravages of fire and inundation, once only during the period of its restoration it suffered a great disaster from martial violence. In 1527 it was stormed by the constable Bourbon, and surrendered to a lawless soldiery for the space of nine months. Churches and palaces were pillaged, and the paintings and frescoes which had begun to decorate their walls were subjected to considerable damage. Nevertheless, the outcry of the sufferers, who declared that the troops of Charles V. inflicted more devastation than the Goths, is no doubt exaggerated. They plundered, but they do not seem to have destroyed. At all events, the condition of Rome was now very different from what it had been in the fifth or sixth century. The spirit of the people and their rulers was vigorous and elastic; their resources were overflowing; and whatever injury they might occasionally suffer from the hands of man or from natural causes they easily retrieved and obliterated. Had Charles V., says Donatus, returned to Rome in the pontificate of Urban VIII. (1623-1644), he would not have recognised the city he had seen from the top of the Pantheon.²

Revived interest in Roman antiquities. Petrarch and Rienzi in the fourteenth, and Poggio in the next century, pleaded for the ruins of ancient Rome, and raised at least a momentary enthusiasm in their behalf. The revival of classical learning gave force and permanence to the feeling they had awakened. The sixteenth century witnessed first its development in the classical and almost pagan tastes of Leo X. and other chiefs of the Papacy, by whom the first steps were taken in collecting statues and works of art, and uncovering the foundations of imperial Rome. About 1520, Raphael, who had witnessed the discovery of the remains on the Esquiline, and had himself copied the arabesques in the chambers of the palace of Nero, could venture to draw a plan of ancient Rome from his own investigations and conjectures; but the great painter's zeal as an antiquarian met with little encouragement. Some of Leo's successors affected to condemn the devotion of the classicists to the monuments of a godless superstition; and though Paul III. (1534) is favourably known for his enforcement of the edict against their destruction, as well as for the erection of the noble Piazza del Campidoglio from the designs of Michael Angelo, Sixtus V. (1585) distinguished himself on the other side by removing "the heathen statues on the towers of the

Capitol," by which we may understand perhaps the marbles there collected by the taste of his predecessors.³

This Pope deserves honourable mention, however, for his repairs of the Trajan and Antonine columns, and for the species of consecration he bestowed on them by crowning them with statues of St Peter and St Paul respectively. He sought perhaps to preserve the Colosseum from further spoliation by establishing a manufactory in it, an experiment which was repeated by Clement XI. a century later; but in both cases the scheme proved abortive. It was not till 1750 that the building was consecrated by Benedict XIV. to the memory of the Christian martyrs who had perished in the arena. The arch of Constantine had been restored by Clement XII. in 1733, on the ground of its connection with the triumph of the Christian faith. It would seem that some excuse of this kind was necessary to plead the cause of heathen antiquity against the interest or fanaticism of the populace. In 1817 Lord Broughton might remark, perhaps with bitter truth, that "the frequent repairs of the Pantheon, those of the Antonine and Trajan columns, the erection of the obelisks, the restoration of the Cestian pyramid, and the late protection of the Flavian amphitheatre, with that of the arch of Constantine, seem to compose the sum of all the merits of all the Popes, as far as respects the stable fabrics of antiquity." "The taste and magnificence of the Popes must be sought and will be found," he adds, "in the museum of the Capitol and the Vatican,"—the first commenced by Clement XII. (1730), the latter designed and executed by Clement XIV. and Pius VI., from whom it derives the name of Museo Pio-Clementino. "It was reserved," he continues, "for the conquerors who plundered those noble repositories to recompense Rome for her losses by clearing away the offals and dirt which had accumulated for ages round the buried temples at the foot of the Capitol and under the windows of the Senate-house, by cleansing the base and propping the porches of the Colosseum, by removing the soil in front of the temple of Peace [the basilica of Maxentius], by re-opening the baths of Titus, and, finally, by excavating the forum of Trajan." In 1858 the same author has added in a note—"There is no doubt that in that short period (1810-1814) more was planned and executed by the French administration than by all the Popes and other successive masters of the Eternal City from the fall of the empire to the beginning of the present century. But it would be unjust not to acknowledge that recent Popes have not forgotten their duties in this respect. Gregory XVI. in particular, whose political policy has been denounced as cruel and unjust, cannot be said to have neglected the arts of peace." Of late years the greatest pains have been taken to strengthen and preserve the Colosseum and other antiquities. The bases of several temples, arches, and columns, especially in the Forum, have been laid open, and the original pavement of the Sacred Way uncovered through a portion of its course. Pius VII. established the Museo Chiaramonti and Braccio Nuovo for ancient sculptures in the Vatican; and Gregory XVI. the Etruscan museum in the Vatican, as well as a museum of Christian antiquities in the Lateran. Under Pius IX. the rows of tombs on both sides of the Appian and other ancient roads have been uncovered, and a new class of objects of the highest antiquarian interest brought to light. The same pontiff, now reigning, has evinced a laudable zeal in promoting the exploration of the catacombs; and the promised work of the Cavaliere di Rossi, in which the subject will be critically discussed after the investigation is

¹ Murray's *Hand-Book of Rome*, p. 173.

² Lord Broughton's *Italy*, i. 420.

³ Bargeus, "De Obeliscis," in *Græv. Thes.* iv. 1931. Bunsen, in *Rom.* i. 257, misquotes his authority. In this section of his work we notice several inaccuracies; among others, the substitution of Sixtus V. (1585) as the constructor of modern Rome, for Sixtus IV. (1471).

Statistics. completed, may be expected to settle at last the questions so long debated about their use and origin. (C. M.)

Statistics. theon; diameter of the dome in the interior, 139 feet, or 3 feet less than that of the Pantheon; height from the pavement to the base of the lantern, 405 feet; to the summit of the cross outside, 448 feet. Thus the whole of St Paul's cathedral in London might stand within the shell of St Peter's, and yet leave 46½ feet at either end, 25 feet all round the cupola, and 64 feet above the dome. The semi-circular colonnades on each side of the piazza in front of the church, form, along with the covered galleries that extend from them to the portico, a magnificent approach to St Peter's.

STATISTICS OF ROME.

Basilicas.

It has been said that perhaps no city in the world abounds with such a number of churches as Rome, or with fewer handsome ones as respects their architecture. Seven of the earliest churches of Rome are still called Basilicas, and enjoy a metropolitan rank. Four of them are within the walls,—St Peter's, St John Lateran, Santa Maria Maggiore, Santa Croce in Gierusalemme; and three outside the walls,—S. Paolo, S. Sebastiano, and S. Lorenzo.

St Peter's.

Foremost among them all is St Peter's, which Gibbon styles "the most glorious structure that has ever been applied to the use of religion." It occupies the site of a Basilica built by Constantine in 306; but has nothing except the name in common with the ancient style of buildings. Of the present church the foundation was laid by Julius II. in 1506, and the building was dedicated by Urban VIII. in 1626; its erection having been spread over the reigns of twenty Popes, and carried on by twelve different architects, the most celebrated of whom were Bramante, who planned the building in the form of a Greek cross with a hexastyle portico, and a cupola in the centre, and erected the piers and arches that support the dome; Raphael, who changed the plan from a Greek to a Latin cross; Michael Angelo, who returned to the former, and designed the dome; Giacomo della Porta, who completed the dome; and Maderno, who returned to the Latin cross plan, and added the *façade*. Of all the parts of the building, the work of the last architect is the most open to criticism; for the front, as seen from the piazza, is so prominent as almost to hide the dome; whereas, had Bramante and Michael Angelo's plan of a Greek cross, and a *façade* like that of the Pantheon, been followed, the whole dome would have been seen from the piazza. The situation, too, of the building is singularly unfortunate, in a hollow surrounded on three sides with hills; so that the exterior view does not show the church to advantage. But the interior is unrivalled for grandeur and beauty; its immense size is not perceived on account of the exquisite proportions of the whole, and the colossal dimensions of the statues in the niches and the mosaics on the dome.

The stupendous dome, viewed in its design, its altitude, or even its decoration, is altogether unrivalled, and has justly been pronounced the triumph of modern architecture. The ascent to the top of the church is so gradual as to be accessible to persons on horseback; from thence the dome is reached by a succession of ingeniously-contrived staircases. From the top an extensive prospect may be obtained of the beautiful amphitheatre of hills which incloses the Campagna on all but the western side; the summits of the loftier Apennines behind, wreathed with snow; the Tiber in its sinuous windings through the district; in the distance the blue waters of the Mediterranean gleaming in the sunbeams; and, far beneath, Rome, with her churches, her palaces, her dark and distant ruins, the rich verdure, and golden fruit of the orange gardens of her convents, contrasting with the deep shade of their mournful cypresses. Beneath the dome stands the high altar, under a canopy of solid bronze, covered with the richest ornaments. The monuments are for the most part unworthy of the church; but to an English visitor there is a singular interest in Canova's monument of the last of the infatuated and unfortunate race of Stuart. The principal dimensions of St Peter's are as follows:—Length in the interior, 613 feet; breadth of the nave and aisles, including the pilasters that divide them, 197½ feet; height of the nave, 152 feet; length of the transepts, 446½ feet; diameter of the dome, including the walls, 195 feet, or nearly 2 feet more than that of the Pan-

Statistics. The basilica of St John Lateran is another most interesting church, and as it is considered the "mother of all churches in the city and the world," its chapter takes precedence even of that of St Peter's. It stands at the east of the Cælian Hill, on the site of the house of Plautius Lateranus, a senator put to death by Nero, but has been so frequently restored and altered as to retain little of its original form. In a portico to the north of this church stands the Scala Santa, twenty-eight marble steps, said to have belonged to the palace of Pontius Pilate, and protected by planks of wood from the attrition caused by the knees of the devout who ascend. This church was the place where the five general councils, known in history under the name of Lateran councils, were held in 1123, 1139, 1179, 1215, and 1512.

The basilica of Santa Maria Maggiore, more than any other in Rome, preserves the simple character of the ancient buildings, and has one of the finest interiors in this style. Santa Maria Maggiore.

The old basilica of St Paul *fuori le mura*, founded by Constantine, and rebuilt by Theodosius and Honorius, contained 138 pillars of the rarest marble and granite, the spoils of some of the noblest edifices of antiquity. In 1823 this church was destroyed by fire, but it has since been rebuilt in a style of even greater magnificence than before, and open to public worship, and dedicated by Pius IX., in 1854. St Paul's.

The church of St Clement, on the slope of the Esquiline, has the reputation of occupying the site of the house of Clement, the companion of Paul. The churches of the Jesuits and of St Ignatius are distinguished for their riches, and the immense number of ornaments which they contain. The church of Santa Maria sopra Minerva, built on the site of Pompey's temple of Minerva, contains the celebrated "Christ" of Michael Angelo, and in the church of St Pietro in Vincoli is the famous statue of Moses by the same artist. Many of the churches of Rome are adorned with fine paintings by the greatest masters, but their beauty and colouring has generally suffered much from time, neglect, dirt, and damp. In the church of Santa Maria della Pace are the four "Sybils" of Raphael, and the church of St Augustine contains his inimitable fresco of "Isaiah." A number of admirable paintings in fresco by Domenichino adorn a chapel in the church of San Luigi de Francesi. The church of the Capuchins possesses Guido's celebrated painting of the "Archangel Michael trampling upon Satan." Domenichino's "Ecstasy of St Francis," and a cartoon by Francesco Beretta representing St Peter walking upon the waves also adorn this church. Daniel da Volterra's "Deposition from the Cross," which Poussin pronounced to be the third picture in the world, enriches the church of the SS. Trinità de Monti. The house of Claud Lorraine stood beside this church; on the opposite side of the way was that of Nicholas Poussin, and close by it a house once inhabited by Salvator Rosa. The church of San Andrea della Valle is built upon the spot where the curia of Pompey once stood, in which Cæsar fell. It contains some fine paintings in fresco by Domenichino, representing the Four Evangelists. In the church of San' Onofrio the remains of Tasso repose.

There are in Rome 54 parishes and 364 churches, 186 convents, and numerous benevolent institutions.

Nothing strikes a stranger with more admiration on his arrival in Rome than the immense number of fountains

Statistics. which pour forth on every side an inexhaustible supply of the finest water. They exhibit great variety in their composition. Some of them are beautiful; one or two grand; but they are all, generally speaking, deficient in simplicity, and several of them, such as the renowned fountain of Trevi, are completely overloaded with mythological sculpture.

Palaces.

Rome has more palaces, or noblemen's houses, than any other city in the world. Of these, no fewer than seventy-five are of a superior kind, uniting in their external appearance something of the fortress, the prison, and the palace. Many of the families to which these buildings once belonged have sunk into poverty, and their residences are now turned into ecclesiastical colleges or hotels, or let to foreign ambassadors or consuls. In the others which have escaped this fate the lower storey is sometimes let for shops, sometimes retained for stables, coach-houses, and servants' rooms. The second storey is generally a picture gallery, consisting of a suite of rooms opening into one another, and richly adorned with marble columns and painted ceilings. The owner of the building and of these precious works of art often lives in the third or highest storey, and generously throws open the gallery to artists and to all who choose to give two or three paoli to the servants. The exterior of these palaces is in general grand and magnificent in architecture; but in the interior, notwithstanding the magnitude of the apartments and the magnificence of the decorations, they are, generally speaking, uncomfortable dwellings, and most of them are deficient in cleanliness and order. The immense palaces of the Doria, the Colonna, and the Borghese, are still occupied only by their own families and dependants. The Doria palace contains the largest collection of paintings in Rome, among which are found some of the finest specimens of the ancient masters. The gallery of the Colonna palace, which is by far the grandest hall in the city, once contained a number of celebrated paintings, but the finest have been sold. The palace garden, which hangs on the steep side of the Quirinal Hill, contains the picturesque remains of a magnificent ancient edifice, the name of which is unknown. The palace of the Barberini family formerly contained that celebrated museum of ancient sculpture, vases, gems, medals, &c., which was so long the wonder and admiration of Europe, but it is now sold and dispersed. The famous Portland vase was brought from this museum. There are still some interesting pictures, among which the famous "Cenci" by Guido Reni. The palace of the Borghese once contained a fine museum of sculpture, and it still possesses one of the best collections of paintings in Rome. In the Palazzo Massimi is the famous "Discobolus," found in the grounds of the Villa Palombari on the Esquiline Hill. The Palazzo Spada contains the celebrated statue of Pompey, at the foot of which Cæsar fell. In the palace of the Braschi once stood the beautiful colossal statue of Antinous, which was dug up on the site of the ancient Gabii, and has been removed to the Lateran museum. The Palazzo Nuovo di Torlonia, the residence of Torlonia the Roman banker, who has purchased the title and estate of the Duca di Bracciano, is fitted up with all the magnificence that wealth can command. The gallery is adorned with Canova's colossal group of "Hercules and Lycas." The Farnese palace contains the far-famed gallery painted in fresco by Annibal Caracci. In the gallery of the Sciarra palace are Raphael's "Player on the Fiddle," Lionardo da Vinci's "Vanity and Modesty," and other masterpieces.

The Vatican has long been celebrated for its unrivalled splendour and magnificence. Its ceilings richly painted in fresco; its pictured pavements of ancient mosaic; its magnificent gates of bronze; its polished columns of ancient porphyry, the splendid spoils of the ruins of imperial Rome; its endless accumulation of Grecian marble, Egyptian gra-

nites, and oriental alabasters; its bewildering extent and prodigality of magnificence; but, above all, its amazing treasures of sculpture, far surpass even the gorgeous dreams of eastern magnificence. In common with all the other collections of the fine arts in Rome, the Vatican suffered materially from the rapacity of the French, but on the downfall of Bonaparte the stolen treasures were restored to their rightful owners. The Vatican contains a museum filled with the most splendid specimens of ancient sculpture: the tapestry chambers hung with tapestry woven in the looms of Flanders, and copied from the cartoons of Raphael; a picture gallery, filled with the masterpieces of painting; "the Camere" and "Loggie" of Raphael, painted in fresco by himself and his pupils; the Sistina and Paolina chapels, painted in fresco by Michael Angelo; and the library, the halls and galleries of which alone are more than 1300 feet in length. The view from the balcony in front of the windows gave the name of *Belvedere* to an octagon court of this museum, surrounded by porticos and cabinets, in which is the matchless statue of Apollo Belvedere, pronounced by universal consent to be the finest statue in the world. It was found near Antium, in the ruins of a Roman villa, supposed to have originally belonged to Nero. The name of its artist is unknown. Here, also, are the Belvedere "Antinous," "Perseus," and the "Two Boxers," by Canova, and the celebrated group of the "Laocoon," which Pliny states to have been executed by Agesander the Rhodian, and Athenodorus and Polydorus, who are believed to have been his sons. This wonderful masterpiece was found in the palace of Titus, on the very spot where it is described by Pliny to have stood; and every successive generation that has passed since it was found has gazed with admiration on its matchless sublimity. The Vatican also contains the two finest paintings in the world,—the "Transfiguration" by Raphael, and Domenichino's "Communion of St Jerome." The library contains a splendid collection of books, and is peculiarly rich in rare and valuable manuscripts. But a minute account of the immense treasures of art accumulated in this magnificent building would occupy too much of our space. Another of the Pope's palaces, the Lateran, was converted into an hospital in 1693, and into a museum in 1843.

The museum of the Capitol contains a very extensive collection of specimens of ancient sculpture. The finest works in it are the famous statue called the "Dying Gladiator," found at Antium in the same spot with the "Apollo Belvedere," and the "Fighting Gladiator;" the two *Furietti* "Centaur's;" the group of "Cupid and Psyche;" the noble seated statue of Agrippina, the wife of Germanicus; the "Camillus;" the bronze urn which bears the name of *Mithridates*; the four doves, a mosaic, which must be either the original or a copy of the famous mosaic of *Sosus*, in the temple of Pergamus, described by Pliny; the "Venus" of the Capitol; and the celebrated bronze wolf, with the Roman twins, supposed to be that alluded to by Cicero as having been struck by lightning. The Capitol contains also a museum of painting, but it is of comparatively inferior interest. The academy of St Luke, in the Forum, contains Raphael's famous picture of "St Luke painting the Virgin's portrait." Rome contains eleven public libraries, some of which are excellent. In the Augustine convent there is one, called the *Angelica*, containing upwards of 90,000 vols. and 3000 MSS.; and the *Minerva*, adjoining the Dominican convent of Sta. Maria sopra Minerva, contains 120,000 vols. and 4500 MSS. They are open daily to the public.

There are a great many villas in the immediate vicinity of Rome, and even within its walls. The gardens of the Villa Borghese, which were by far the most beautiful pleasure-grounds at Rome, were almost wholly ruined during the revolution of 1848. The villa, with its works of art, however, was preserved. The Villa Ludovisi, within the walls of the city, is nearly two miles in circuit. It contains

Statistics.

Museum of the Capitol.

Villas.

The Vatican.

Romford
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Romilly.

an invaluable collection of celebrated pieces of ancient statuary, of which no copies are known to exist. The magnificent Villa Medici, on the Pincian Hill, is now converted into the French academy, where a number of young artists of promise are supported at the charge of the French government, with the view of enabling them to enjoy the advantages of a few years' study at Rome. The Villa Albani is enriched with the most precious collection of ancient sculpture that any private cabinet ever contained. The finest specimens of this collection are the famous "Apollo *Sauroctonos*," the most beautiful bronze statue now left in the world, and which, in the judgment of Winckelmann, is the original of Praxiteles, described by Pliny; the statue of Minerva, which is pronounced by Winckelmann to be the only monument now existing at Rome of the sublime age of art that lasted from the age of Phidias to that of Praxiteles; and the far-famed relievo of Antinous, which, says the same critic, "after the 'Apollo' and 'Laocoon,' is perhaps the most beautiful monument of antiquity which time has transmitted to us."

Castle of
St Angelo.

The castle of St Angelo, "the mole which Hadrian rear'd on high," was originally called "Moles Hadriani," from the name of its founder, who destined it to hold his remains for ever. It is a circular building, and was formerly reckoned very strong; it has stood many sieges, but as a fortress it is wholly untenable against modern tactics. It has been so often taken and retaken, repaired and altered, that but little of the original structure now remains, except the walls. It communicates with the Vatican by a long covered gallery, made by Pope Alexander VI. to afford him a way of escape from the just fury of his subjects. The castle of St Angelo is now used as a place of confinement for prisoners sentenced to the galleys. The upper part of it also serves as a state prison for criminals of rank, and those who fall under the suspicion and displeasure of the Pope.

ROMFORD, a market-town of England, in the county of Essex, on the left bank of the Bourne or Rom, which is crossed by a bridge, 12 miles E.N.E. of London. It is generally well built, and consists of one principal street, long and wide, having a market-house and town-hall near its centre. The old parish church, which was a beautiful specimen of the early English and Norman architecture, has been replaced by a modern building, to which many of its ancient monuments have been transferred. There are also Wesleyan, Independent, and Baptist churches; national, infant, and other schools; a literary institution, work-house, and savings-bank. Agricultural tools are manufactured here, and many of the inhabitants are employed in farming and market-gardening. There is a considerable trade; and the place is noted for its markets for corn and cattle, as well as for its ale. Romford is a place of great antiquity, and stands at or near the site of the ancient Roman *Durolitum*. Pop. (1851) 3791.

ROMILLY, SIR SAMUEL, one of the most enlightened and virtuous public men whom England has ever possessed, was, as his family-name indicates, the descendant of a French family. He was the son of a jeweller in London, and was born there on the 1st of March 1757. The education of this child, destined in time to occupy so distinguished a place, was conducted for some time with even less care than might have been expected from the station held by his family. But heartily disliking his father's business, he was at length allowed to change it for professional employments, though as yet in an inferior department. At the age of sixteen he was articled to one of the six clerks in Chancery; and in the easy mechanical duties of his master's chambers, relieved by the zealous prosecution of his studies both in English and Latin, passed several years of his life. He then resolved on coming to the bar, a step which, he informs us, all his friends, with one exception, considered as highly imprudent. One circumstance which helped to

The city of Rome is divided into fourteen quarters or *rioni*, twelve on the left and two on the right bank of the river. These accidentally correspond in number, but not at all in size or situation, with the regions of Augustus. The municipal government is in the hands of a senator appointed by the Pope, and eight conservators and forty councillors, elected by their own body, along with two delegates from each of the *rioni*. All hold office for six years, with the privilege of re-election; and one-half of the conservators and councillors go out every three years. One-half of the body is taken from the nobility and landowners, the other from the middle classes. The police of the city, however, is not under their jurisdiction, but under that of the director-general of police, who is a member of the ministry, subordinate to the minister of the interior and secretary of state. There are no important manufactures in the city. Catgut, perfumes, artificial flowers, silk, leather, cloth, and other articles, are indeed made; but Rome is more celebrated for its mosaics and cameos. There are many artists, engravers, and copyists of ancient works of art in the city.

The population, which at its greatest height, in the second or third century, we have not been able to estimate so high as a million, amounted, according to the census of 1858, to 179,950. "It has been nearly stationary," adds the author of Murray's *Hand-Book*, "for the last ten years; the highest point it ever reached in modern times being 180,200 in 1846. It was 153,000 in 1800, from which it decreased gradually until 1813, when it was only 117,900." Gibbon estimated it in his own time, but we know not from what precise data, at 170,000. It may be remarked that the buildings of the modern city seem to occupy fully one-half of the Aurelian area, and are probably more closely packed, as well as loftier, than those of the empire.

determine Romilly was very interesting; the purchase of a seat in the office in which he had been articled would have cost a sum which he knew it would be inconvenient for his father to advance. He had completed his twenty-first year when he entered himself at Gray's Inn, becoming at the same time a pupil of an able equity-draftsman. General reading both in English and Latin, translation habitually practised from the latter language into the former, the composition of a few political essays for newspapers, and occasional attendance on the houses of Parliament, now alternated with a closeness of application to legal study which, after a time, injured his health, and compelled him to retire, first to Bath, and afterwards to the Continent. At Geneva he became acquainted with some of the men who were then beginning to attract notice in that city; and among acquaintances thus made the most valuable was that of Dumont. After visiting some of the nearest scenery of the Lemman Lake, and of Savoy, Romilly proceeded to Paris, where he met D'Alembert, Diderot, and other eminent men. On the last day of Easter term 1783 he was called to the bar. For some years afterwards he obtained an increasing employment in the drawing of chancery pleadings; but during this time, as he says himself, he had hardly once occasion to open his lips in court. In the spring of 1784 he went upon the midland circuit, which he continued to frequent until, even as admitted in his own modest Memoir, he was decidedly its leader. Long before he left the circuit, he had attained a distinguished position in the eyes of those who were qualified to appreciate him, not merely as a lawyer, but as a statesman. In 1784 he became acquainted with Mirabeau, who was then in London, and of whose character he appears to have formed an exceedingly just estimate. Mirabeau was the medium through which Romilly became known to Lord Lansdowne, and thus to the leaders of that political party of which he had throughout been an honest and warm

Romilly.

Romilly. adherent. To that nobleman he was recommended both by the hearty praises of Mirabeau and by a pamphlet he had written, called *A Fragment on the Constitutional Power and Duties of Juries*. Lord Lansdowne, directing Romilly's attention to a recent sanguinary tract on Criminal Punishments, induced him to write an answer, which was published anonymously under the title of *Observations on a late Publication entitled 'Thoughts on Executive Justice.'* In the meantime he continued vigorously to prosecute in private the inquiries into the reform of the laws, especially the criminal laws, of which he had thus begun to announce publicly the parts.

In the vacation of 1788 he paid a third visit to Paris. Introductions from England, and other circumstances, brought Romilly and his fellow-traveller Dumont into intercourse, upon this occasion, with many men distinguished then, and with others still more celebrated in the bloody struggle that was about to ensue. Mirabeau at this time translated into French, and published, observations made by Romilly on the hospital and prison of Bicêtre. This pamphlet had the honour to be suppressed by the police of Paris, but in the original English was afterwards printed by the author himself in an obscure London periodical. In July 1789 Romilly wrote a pamphlet which was afterwards published, *Thoughts on the Probable Influence of the French Revolution on Great Britain*. But the lively interest he took in the events which emerged in Paris, while he was engaged in composing these remarks, led him back to that city in August of that year; and he now saw, both in public and private, many of the persons who had become most distinguished in the National Assembly. Dumont's observations upon the eventful summer of 1789 in France were translated into English by Romilly, and, with the addition of some observations by himself on England, were published in 1792, receiving the title of *Groenvelt's Letters*. Many of Romilly's opinions on the progress of the French revolution are contained in his published correspondence with Dumont, Madame Gautier, Dugald Stewart, and others, and in a diary which he kept during a journey to Paris in the autumn of 1802. While Romilly was thus advancing to the highest rank in his profession, and had gained the confidence and admiration of some of the best statesmen in England, his domestic position underwent a most beneficial change, the immediate cause of which was a visit paid to Lord Lansdowne. His marriage with the eldest daughter of Mr Garbett of Knill Court in Herefordshire took place in January 1798, when he had nearly completed his forty-first year.

He continued to be chiefly occupied in the discharge of his duties as a leader of the Chancery bar for several years, after which he united with these the other avocations that have given to his name so distinguished a place in the list of British satesmen. In the autumn of 1805 he had received from the Prince of Wales the offer of a seat in Parliament, which he declined upon grounds strongly marking his sturdy independence of character.

In February 1806 he was appointed solicitor-general under the government of Mr Fox and Lord Grenville, with neither of whom had he previously any connection. He was obliged, much against his will, to accept the honour of knighthood, and was elected to represent the borough of Queenborough, accepting this seat, without scruple, from the government. In March 1807 the Whigs were overthrown, and Parliament was dissolved. In the new Parliament he was returned for Horsham, on the Duke of Norfolk's interest, and he subsequently purchased the representation of Wareham. Defeated in an attempt to represent Bristol in 1812, he was returned for the borough of Arundel by the Duke of Norfolk. This seat Romilly held till the dissolution in 1818, when he accepted a requisition from the electors of Westminster, upon which he had the satis-

faction of a triumph after a severe contest. The results to which this great victory was expected to have led were unfortunately never realized. Lady Romilly, to whom he was very greatly attached, died on the 29th October 1818, and the shock occasioned by that event so preyed upon his health that he put an end to his life on the 2d of November 1818, in his sixty-second year.

The public character of Sir Samuel Romilly would be best drawn by a few warm and vigorous strokes, all of which, with no exception worth noticing, would convey images of distinguished excellence. These traits would exhibit his manly and ratiocinative oratory, lighted up into eloquence by the fervour of his moral sense, that antique spirit of mental independence which bowed to the demands of no man and of no party, not even his own, unless his conscience told him that those demands were just. And these virtues of the statesman and the juriconsult, which, by their stern majesty, commanded from those that viewed them at a distance an awe not altogether unmingled with fear, were tempered in private life by the warmest and kindest feeling, by the most felicitous union of public labours with personal accomplishments. His second son, the Right Hon. Sir John Romilly, was made Master of the Rolls, in March 1851. (See *Memoirs of Sir Samuel Romilly*, written by himself, 3 vols., London, 1840.)

ROMNEY, GEORGE, an eminent English artist, was the son of a cabinetmaker, and was born near Dalton in Lancashire in 1734. Although placed at the age of eleven in his father's shop, he soon began most vigorously to develop his genius for painting. His fellow-workmen were his models; the deals which he planed were his canvases; the living world around him was his school. In course of time his progress became so marked that his father was induced to apprentice him to a portrait-painter of the name of Steele at Kendal. There he applied himself sedulously to discover the secrets of colouring. A marriage which he contracted at the age of twenty-one only gave a stimulus to his ardour. He laboured for six years in painting the likenesses of the country squires of Westmoreland. Then, villainously deserting his wife and two children, he set out in 1762 to seek his fortune in London, and took up his abode in Dove Court, near the Mansion-House. It was not long before the manliness and poetic dignity of Romney's style began to ensure success. The Society of Arts awarded him a prize for his "Death of King Edmund." Other historical pictures followed, which were said by his admirers to rival the old Italian masters. He was also in the meantime receiving numerous commissions for portraits. His emoluments from that branch of his vocation became so considerable that he was enabled to spend about two years at Rome in studying Raphael and Michael Angelo. Nor did he fail, on his return to London in 1775, to take a higher place in his profession. He set up his studio in a spacious house in Cavendish Square. Many of the noble and the distinguished became his sitters. It even began to be said that he was dividing the rich province of portraiture with Sir Joshua. Scarcely less than thirteen hours a day sufficed to meet all his engagements; scarcely less than £3000 or £4000 was realized in a year. Romney, as he grew older, became more and more engrossed with ideal painting. His active imagination found its subjects in many fields of literature,—in Shakspeare, in Milton, in classical mythology, and in the sacred Scriptures. The greater part of those designs he left unfinished on the canvas, to litter his studio and every spare corner of his house. Romney's nerves became unstrung, and his mind became uninged. He imagined that the dwelling in Cavendish Square was too small for the execution of his great projected works. Nothing would satisfy him but to build a large whimsical pile on Hampstead Hill. The removal thither in 1797 only exasperated his disease. His

Romney.

Romney,
New
||
Ronda.

nervous uneasiness had become so great in 1799 that he suddenly left London by the coach, and hastened northward to Kendal to seek the sympathy and kindness of his faithful and much-enduring wife. There he gradually pined away until death put an end to his suffering in 1802.

The celebrated Flaxman gives the following account of some of Romney's best ideal pictures:—"Titania with her Indian Votaress" was arch and sprightly; "Milton dictating to his Daughters," solemn and interesting. Several pictures of wood-nymphs and bacchants charmed by their rural beauty, innocence, and simplicity." (See Cunningham's *Lives of British Painters*, &c.)

ROMNEY, NEW, a cinque port, market-town, and decayed borough of England, in the county of Kent, in the middle of Romney Marsh, a wide, level tract of pastureland, defended from the sea by an embankment, 31 miles S.E. by S. of Maidstone. There is a magnificent Norman church of the twelfth century, with a lofty and handsome square tower; also Wesleyan and Baptist places of worship, a market-house, town-hall, hospital, and assembly-room. Though now a mile and a half from the sea, it was once a considerable seaport. The borough was disfranchised by the Reform Act of 1832. Pop. (1851) 1053.

ROMORANTIN, a town of France, capital of an arrondissement, in the department of Loire-et-Cher, on the right bank of the Sauldre, an affluent of the Loire, 24 miles S.E. of Blois. It was once a very ill-built place, but has recently been much improved: the streets have been widened and straightened, and many new houses built. There are here an old castle, prison, courts of law, and a theatre. Cloth, leather, parchment, and other articles are made, and form the staple of an active trade. Romorantin was besieged in 1356; and cannons were used then, some say for the first time. Pop. (1856) 7863.

ROMSEY, or RUMSEY, a market-town and municipal borough of England, Hampshire, on the left bank of the Anton or Test, here crossed by a bridge, 10 miles S.W. of Winchester, and 73 S.W. of London. It consists principally of a broad street, crossed by another at right angles; and its most notable building is the parish church, which, from its cruciform plan, has something of a cathedral appearance. It is said to be a part of the abbey founded by the Saxon king Edward the Elder in the tenth century, and is interesting to the antiquary for its architecture and monuments. The other places of worship belong to Methodists, Independents, Baptists, and Sandemanians. There are several schools, a town-hall, audit-house, jail, alms-houses, &c. The manufactories include saw-mills, corn and paper mills, tanneries, breweries, &c.; and there is some trade in corn, timber, and coal. Pop. of the town (1851) 2080.

ROMULUS. See ROMAN HISTORY.

RONALDSHAY. See ORKNEY.

RONCIGLIONE, a town of the Papal States, in the delegation and 12 miles S.S.E. of Viterbo, occupies a romantic position on a rocky precipice overhanging a deep, wooded ravine, on the edge of the Campagna di Roma. Many of the streets and buildings are handsome; and there is a ruined Gothic castle and several ancient palaces, which are deserted and falling into decay. There are, however, flourishing iron-works and paper-mills. Pop. 4600.

RONDA, a town of Spain, Andalucia, in the province and 40 miles W. of Granada, and 48 N.N.E. of Gibraltar. It stands on a rock nearly surrounded by the Guadalvin, which flows through a deep chasm, separating the old from the new town, and spanned by two bridges, an old and a new, the latter 300 feet in length, crossing the chasm 600 feet above the water. Several cascades are formed by the stream, dashing out of the dark cleft through which it flowed, and sparkling with foam in the light of the sun. At the foot of the cliffs is a curious grotto, hewn out of the rock for the Moors by Christian slaves in 1342. At the

edge of the precipice is a rose-garnished *alameda*, or public walk, commanding a wide and beautiful prospect. The old part of the town has a Moorish aspect, with narrow, steep, and crooked lanes, and several old Moorish towers and other buildings; but the new town contains many broad, handsome streets and squares. The fine stone bull arena (Plaza de Torros) is one of the largest in Spain, and can contain 10,000 spectators. Besides churches and convents, there are among the public buildings a town-hall, an ill-arranged prison, and a large, old castle that protects the whole town. The last, however, is not now of any importance, and it was much injured by the French in 1812, when they occupied the town. Ronda is the seat of much traffic in leather, saddlery, and horses. It is a very gay place: an annual fair is held, and much smuggling is carried on. The climate is salubrious and favourable to longevity. Pop. 15,943.

RÖNNE, a town of Denmark, capital of the island of Bornholm, stands on its west coast, and has a fortified harbour, active trade, manufactures of clocks, and numerous potteries. Here are also a grammar school and an hospital. Many of the inhabitants are sailors or fishermen. Pop. 4000.

RONNEBURG, a town of Saxe-Altenburg, in the circle and 14 miles S.W. of Altenburg, stands on a height, and is walled and defended by two forts. It has a palace, Latin school, woollen factories, dye-works, and some trade in corn and wool. In the vicinity there are mineral baths. Pop. 5978.

RONSARD, PIERRE DE, a French poet, was born at the castle of Poissonnière in Vendômois in 1524. He was descended of a noble family, and was educated at Paris in the college of Navarre. Academical pursuits not suiting his genius, he left college, and became page to the Duke of Orleans, who resigned him to James Stuart, King of Scots. Ronsard continued in Scotland with the Scottish king upwards of two years, and afterwards went to France, where he was employed by the Duke of Orleans in several negotiations. He accompanied Lazare Baïf to the Diet of Spire. Having from the conversation of this learned man imbibed a passion for the belles-lettres, he studied the Greek language with Baïf's son under Daurat. It is reported of Ronsard that his practice was to study till two o'clock in the morning, and when he went to bed, to awaken Baïf, who resumed his place. The Muses possessed in his eyes an infinity of charms; and he cultivated them with such success that he acquired the appellation of the "Prince of Poets" of his time. Henry II., Francis II., Charles IX., and Henry III. loaded him with favours. Having gained the first prize of the Jeux Floraux, they thought the reward promised below the merit of the work and the reputation of the poet. The city of Toulouse caused a Minerva of massy silver of considerable value to be made and sent to him. This present was accompanied with a decree, declaring him "The French Poet," by way of distinction. Ronsard afterwards made a present of his Minerva to Henry II., and this monarch appeared as much elated with this mark of the poet's esteem for him as the poet himself could have been had he received the present from his sovereign. Mary, the beautiful and unfortunate Queen of Scots, who was equally sensible of his merit with the Toulonese, gave him a rich set of table-plate.

He wrote hymns, odes, a poem called the *Franciade*, eclogues, epigrams, sonnets, &c. In his odes he takes bombast for poetic raptures. He wishes to imitate Pindar; and by labouring too much for lofty expressions, he loses himself in a cloud of words. He is obscure and harsh to the last degree; faults which he might easily have avoided by studying the works of Marot. But what could be expected from a man who had so little taste that he called Marot's works, "a dunghill, from which rich grains of gold, by industrious working, might be picked." He has, however, some pieces not destitute of real merit; and there

Rönnne
||
Ronsard.

Roof.

are perhaps few effusions of the French muse more truly poetical than his *Four Seasons of the Year*, where a most fertile imagination displays all its riches. Ronsard, though it is doubtful whether he ever was in orders, held several benefices. He died at Saint-Cosme-les-Tours, December 27, 1585, aged sixty-one years. He appeared more ridiculous as a man than as a poet; he was particularly vain, and his immoderate indulgence in pleasure served to hasten his old age. In his fiftieth year he was weak and valetudinary, and subject to attacks of the gout. He retained his wit, his vivacity, and his readiness at poetic composition to the

last. Ronsard's poems have been published in folio, in quarto, and in 10 volumes duodecimo, in 1567. The *Œuvres Choies de Ronsard* were published at Paris in 1840.

RONSDORF, a town of Prussia, in the province of the Rhine, and government of Düsseldorf, on the slope of a hill on the Morsbach, 17 miles E. of Düsseldorf. It has manufactories of cutlery, silk, linen, cotton, and woollen fabrics, ribands, &c. The town owes its origin to a religious sect in the eighteenth century. Pop. 7302.

ROOD, a piece of land equal to 40 square perches, or the fourth part of an acre.

Ronsdorf
||
Roof.

R O O F.

Definition.

ROOF, the covering of any building by which its inhabitants and contents are protected from the injuries and inclemencies of the weather. So essential is it, that the word is frequently used for the house itself. To "come under the roof" is a Hebrew phrase; and the word "tectum" had the same meaning among the Romans. It is derived from the Anglo-Saxon *hrof*, who thought so much of its importance, that they called the carpenter *hrof-wyrhta*, or the "roof-worker."

Varieties
of cover-
ing.

Roofs may be considered as to their covering, and the framing which carries such covering. The former is either of metal, as lead, copper, zinc, corrugated or galvanized iron, &c.; or of tile, either Italian, pan or Flemish tile, plain tile, &c.; or of slate, and sometimes of stone. The Greek temples were covered with long thin pieces of marble sunk or worked hollow by the mason, so that the wet could not run back under the next, and consequently these roofs shot off the water easily, and were very flat. Both in ancient and modern times, in all countries, the poorer classes of roofs are covered or thatched with straw, reed, heather, or some similar material. In most hot climates, and also in many parts of Italy, the roofs are flat, and covered with a sort of concrete or cement, which is carried on joists like a floor; the object being to form a sort of terrace to walk on early in the morning or late in the evening, to enjoy the cool air, which can only be felt in elevated situations.

Pitch.

The elevation of a roof, which governs the angle its rafters make with the horizon, is called its pitch. On this subject there has been a great deal of controversy. Some have considered, as they find the farther we go south the flatter the roofs are, that the pitch must be governed by climate; and most elaborate calculations have been made of certain angles at which it is proposed that roofs should be constructed in various latitudes. But it should be remembered that in hot climates the rains come all at once; in such floods our roofs could not resist; and it would be poor economy, because for months together there were no rain, if, when it does come, the house should be daily drenched. Others have considered the whole a mere matter of taste, and the pitch is chosen as we wish more or less of a roof to be seen. The Greeks made their roofs very flat, and placed large antefixes along the eaves, so that the roof could not be seen from below except from a great distance. (See the restored view of the Parthenon, ARCHITECTURE, Plate L.) The angle is about 16°, the pitch or height at the apex being about a seventh of the width. Roman roofs average about 22°, or a fifth pitch. That the mediæval builders had no rule, is shown from the extreme variety of the height of roofs in their different edifices. In the Lombardic cathedral of Pisa, erected 1063 (ARCHITECTURE, Plate LXX.), the roof is about 27°, or nearly quarter pitch. The Norman roofs are seldom more than 40°, or less than half pitch; while in the early English period they suddenly sprung up to whole pitch,—i.e., the height equal to the entire width (see Beverley Minster, ARCHITECTURE, Plate LXVIII, fig. 1), being an angle of about 64°. They then

gradually were less in height till the perpendicular period, when many roofs were nearly flat; that of Henry the Seventh chapel, for example, being but about 16°, or as flat as a Greek roof. Now, that this variety was matter of taste,—we had almost said caprice,—is evidenced by this fact: these examples are all covered with lead (which might have been laid quite flat, and yet have been perfectly sound), and all have a stone groined roof below them, which has nothing whatever to do with the upper covering, and which, after all, is the real roof or cover which protects the building from the weather. Much has been said of the propriety of always showing the roof of a building, and the Gothic architects have been eulogised for so doing. The facts stated above, however, prove this was not always the case. We cannot, however, justify the going out of the way to conceal a roof by false attics, stilted balustrades, &c.; and the screen wall at St Paul's at London must always be considered a defect in that fine building. Still, a wide expanse of plain roof is as ugly in itself as a bare wall; and we cannot approve of such roofs as some of the modern imitations of early English work are, where the wall is so low that we could touch the eaves with a walking-stick, and there is three or four times as much roof as wall. The roof of a house has not inaptly been likened to a man's hat. There is no need to try and hide or disguise it if you are obliged to wear it; and if the weather is warm, and you do not require it, it would be folly to wear one without a crown. If on board ship, you would wear as low a hat as possible to avoid striking it against the beams; but, above all, it should bear some reasonable proportion to the height of a man, as the roof should to the wall. It would be absurd to wear a hat as tall as the man himself.

After all, although much latitude must be given to taste, it is probable the pitch of a roof mainly depends on the material with which it is covered. The largest number of buildings are erected with a view to utility and strict economy, and without any regard to æsthetics. Everybody knows that if slates or tiles are laid at too flat a pitch, the wind will drive the rain up under them, and the roof will leak; and everybody also knows that if the same covering be taken off and re-laid to a steeper pitch, the roof will be sound. Practice teaches what is the safe minimum pitch. Let us suppose it to be quarter pitch, and for considerations of taste we make it three-quarter pitch. Now, it is quite clear we waste not only the rafters and covering, but our whole roof must be constructed of stronger timbers, and our walls also must be thicker and stronger, inasmuch as they have more weight to bear. We therefore pay dear in more ways than one for our liking for high-pitched roofs.

Although it happens that both Greek, Roman, and Italian roofs are flatter than ours, and the climate is warmer, the same material used in our climates would answer perfectly well. An inspection of the elaborate plate 97, in the *Architettura Antica Greca* of the celebrated Canina will show this; and the frequent failure in our climate of Italian

Pitch dependent on materials used.

Pitch not due to climate.

Roof.

tiles (which are exactly like the ancient Roman) arises from the fact, that the tegole and imbrici only have been used, our builders being ignorant of the use of the mattoni, which in Italy are a very essential part of the soundness of those roofs. In one respect climate must be considered, and that is, where there are long winters, and the snow is likely to lie on them; in this case they should be sharper in pitch, and stronger in framing.

Pitch required for different materials.

If covered with lead or other metals, roofs may be made nearly flat, with only so much fall, in fact, as to prevent the water flowing back under the drips. (See BUILDING, PLUMBERS' WORK, &c.) Italian tiles, to be sound, should have a fifth pitch, or 22°. Slates with extra lap may be laid at quarter pitch, about 27°, if it be necessary the roof should be flat; a third pitch (34°) is rather too much: the mean between a third and fourth (31°) is a good rule. Pantiles should be laid rather sharper still, and plain tiles from about 35° to 40°; but of course very much will depend on the gauge they are laid to, or the length of the part of the slate or tile which overlaps the other, as the larger this lap is, the less likely the rain is to drive under. Thatched roofs should be somewhat sharper in pitch than plain tiles.

Qualities of various roof coverings.

Lead or copper, in an economical point of view, are the best materials for roofs. They may be laid nearly flat, and so save all the framing and roof timbers; and the metal, should it be worn into holes, is nearly as valuable as when first laid down; the only objection is, that the first expense is so great. Zinc, though very cheap and light, and though it can be laid flat, is apt to go into holes with the action of acids. Slating is both light and very cheap, and will lie at a flat pitch; and consequently requires much lighter walls and timbers than tiles. It will not decay with the weather. It is apt to break under the feet; and if not very well done will lift with heavy winds. Each slate should be nailed with two copper nails, as iron rusts and breaks them. (See BUILDING, SLATING, &c.) Pan-tiles are dearer than slates, but not much heavier; they also break if trodden on, and the snow will drift under if the pointing comes out. Plain tiles are very durable, but they require a steep pitch, and are very heavy: thus in two ways distressing the walls and the roof timbers.

Weight of different roof coverings.

This also depends on the gauge; but the following may be taken as the ordinary average:—

A square (100 feet superficial, or 11 yards superficial nearly) of zinc will weigh about...	1 cwt.
A square of lead, according to thickness, from...	5 to 7 "
A square of slating from.....	5½ to 7½ "
A square of pan-tiling.....	7½ "
A square of plain tiling.....	14 to 16 "

All roofs, till very lately, except some which have been arched or domed, were framed with timber; no other material being known at that time which possessed such lengths with such qualities of tension. Later years, however, and more extended requirements, have developed the advantages of the use of iron. As everything must depend on the soundness of both design and execution of framing, whether in wood or iron, it is proposed to divide this subject, one of the most important in architecture, into the following sections:—

I. *Theory of Roof* will comprehend the whole of the scientific part of the celebrated essay of Professor Robison, which was originally written for this work, and which is acknowledged to be the best yet given to the public.

II. *Causes of Failure of Roofs*, given in terms that are intelligible to those unacquainted with the higher branches of mathematical analysis.

III. *Medieval Roofs*.

IV. *Account of Roofs of great span (à grande portée).*

—1. Those trussed with straight timbers (*en bois plat*).

2. Those trussed with curved timbers—*a*, With timbers side by side, breaking joint (*système en planches*

de champ); *b*, Those bent in thickness (*courbes sur leur plat*). Roof.

V. *Roofs constructed of Iron*

The late Professor Robison's Theory of Roof.

We shall attempt in this article to give an account of the Purpose of leading principles of this art, in a manner so familiar and palpable, that any person who knows the common properties of the lever, and the composition of motion, shall so far understand them as to be able, on every occasion, so to dispose his materials, with respect to the strains to which they are to be exposed, that he shall always know the effective strain on every piece, and shall, in most cases, be able to make the disposition such as to derive the greatest possible advantage from the materials which he employs.

It is evident that the whole must depend on the principles which regulate the strength of the materials, relative to the manner in which this strength is exerted, and the manner in which the strain is laid on the piece of matter. With respect to the first, this is not the proper place for considering it, and we must refer the reader to the article **STRENGTH OF MATERIALS IN MECHANICS**. We shall just borrow from that article two or three propositions suited to our purpose.

The force with which the materials of our edifices, roofs, floors, machines, and framings of every kind, resist being broken or crushed, or pulled asunder, is immediately or ultimately the cohesion of their particles. When a weight hangs by a rope, it tends either immediately to break all the fibres, overcoming the cohesion amongst the particles of each, or it tends to pull one parcel of them from amongst the rest, with which they are joined. This union of the fibres is brought about by some kind of gluten, or by twisting, which causes them to bind each other so hard that any one will break rather than come out, so much is it withheld by friction. The ultimate resistance is therefore the cohesion of the fibre; and the force or strength of all fibrous materials, such as timber, is exerted in much the same manner. The fibres are either broken or pulled out from among the rest. Metals, stone, glass, and the like, resist being pulled asunder by the simple cohesion of their parts.

The force which is necessary for breaking a rope or wire is a proper measure of its strength. In like manner, the force necessary for tearing directly asunder any rod of wood or metal, breaking all its fibres, or tearing them from amongst each other, is a proper measure of the united strength of all these fibres; and it is the simplest strain to which they can be exposed, being just equal to the sum of the forces necessary for breaking or disengaging each fibre. And, if the body is not of a fibrous structure, which is the case with metals, stones, glass, and many other substances, this force is still equal to the simple sum of the cohesive forces of each particle which is separated by the fracture. Let us distinguish this mode of exertion of the cohesion of the body by the name of its *absolute strength*.

When solid bodies are, on the contrary, exposed to great compression, they can resist only a certain degree. A piece of clay or lead will be squeezed out; a piece of freestone will be crushed to powder; a beam of wood will be crippled, swelling out in the middle, and its fibres lose their mutual cohesion, after which it is easily crushed by the load. A notion may be formed of the manner in which these strains are resisted, by conceiving a cylindrical pipe filled with small shot, well shaken together, so that each sphericle is lying in the closest manner possible, that is, in contact with six others in the same vertical plane, this being the position in which the shot will take the least room. Thus each touches the rest in six points. Now suppose them all united, in these six points only, by some cement. This assemblage will stick together and form a

Roof. cylindrical pillar, which may be taken out of its mould. Now suppose this pillar standing upright, and loaded above. The supports arising from the cement act obliquely, and the load tends either to force them asunder laterally, or to make them slide on each other: either of these things happening, the whole is crushed to pieces. The resistance of fibrous materials to such a strain is a little more intricate, but may be explained in a way very similar.

A piece of matter of any kind may also be destroyed by wrenching or twisting it. We can easily form a notion of its resistance to this kind of strain by considering what would happen to the cylinder of small shot if treated in this way.

Their weakness in relation to transverse strains.

And, lastly, a beam, or a bar of metal, or piece of stone or other matter, may be broken transversely. This will happen to a rafter or joist supported at the ends when overloaded, or to a beam having one end stuck fast in a wall and a load laid on its projecting part. This is the strain to which materials are most commonly exposed in roofs; and, unfortunately, it is the strain which they are the least able to bear; or rather it is the manner of application which causes an external force to excite the greatest possible immediate strain on the particles. It is against this that the carpenter must chiefly guard, avoiding it when in his power, and in every case diminishing it as much as possible. It is necessary to give the reader a clear notion of the great weakness of materials in relation to this transverse strain. But we shall do nothing more, referring him to the articles STRAIN, and STRESS, and STRENGTH.

Let ABCD (fig. 1) represent the side of a beam projecting horizontally from a wall in which it is firmly fixed, and let it be loaded with a weight W appended to its extremity. This tends to break it; and the least reflection will convince any person, that if the beam is equally strong throughout, it will break in the line CD, even with the surface of the wall. It will open at D, while C will serve as a sort of joint, round which it will turn. The cross section through the line CD is for this reason called the *section of fracture*; and the horizontal line drawn through C on its under surface is called the *axis of fracture*. The fracture is made by tearing asunder the fibres, such as DE or FG. Let us suppose a real joint at C, and that the beam is really sawed through along CD, and that in place of its natural fibres, threads are substituted all over the section of fracture. The weight now tends to break these threads, and it is our business to find the force necessary for this purpose.

It is evident that DCA may be considered as a bended lever, of which C is the fulcrum. If f be the force which will just balance the cohesion of a thread when hung on it so that the smallest addition will break it, we may find the weight which will be sufficient for this purpose when hung on at A, by saying, $AC : CD :: f : \phi$, and ϕ will be the weight which will just break the thread, by hanging ϕ by

the point A. This gives us $\phi = f \times \frac{CD}{CA}$. If the weight

be hung on at a , the force just sufficient for breaking the same thread will be $= f \times \frac{CD}{Ca}$. In like manner, the force ϕ ,

which must be hung on at A in order to break an equally

strong or an equally resisting fibre at F, must be $= f \times \frac{CF}{CA}$.

Roof.

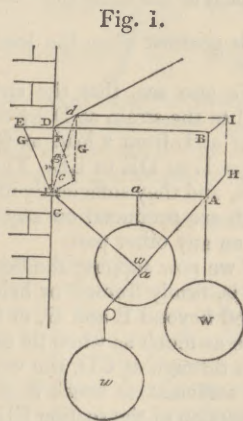
And so on of all the rest.

If we suppose all the fibres to exert equal resistances at the instant of fracture, we know, from the simplest elements of mechanics, that the resistance of all the particles in the line CD, each acting equally in its own place, is the same as if all the individual resistances were united in the middle point g . Now this total resistance is the resistance or strength f of each particle, multiplied by the number of particles. This number may be expressed by the line CD, because we have no reason to suppose that they are at unequal distances. Therefore, in comparing different sections together, the number of particles in each are as the sections themselves. Therefore DC may represent the number of particles in the line DC. Let us call this line the depth of the beam, and express it by the symbol d . And since we are at present treating of roofs whose rafters and other parts are commonly of uniform breadth, let us call AH or BI the breadth of the beam, and express it by b , and let CA be called its length l . We may now express the strength of the whole line CD by $f \times d$, and we may suppose it all concentrated in the middle point g . Its mechanical energy, therefore, by which it resists the energy of the weight w , applied at the distance l , is $f \times CD \times Cg$, whilst the momentum of w is $w \times CA$. We must therefore have $f \times CD \times Cg = w \times CA$, or $fd \times \frac{1}{2}d = wl$, and $fd : w :: l : \frac{1}{2}d$, or $fd : w :: 2l : d$. That is, twice the length of the beam is to its depth as the absolute strength of one of its vertical planes to its relative strength, or its power of resisting this transverse fracture.

It is evident, that what has been now demonstrated of the resistance exerted in the line CD, is equally true of every line parallel to CD in the thickness or breadth of the beam. The absolute strength of the whole section of fracture is represented by fdb , and we still have $2l : d :: fdb : w$; or twice the length of the beam is to its depth as the absolute strength to the relative strength. Suppose the beam twelve feet long and one foot deep; then whatever be its absolute strength, the twenty-fourth part of this will break it if hung at its extremity.

But even this is too favourable a statement. All the fibres are supposed to act alike in the instant of fracture. But this is not true. At the instant that the fibre at D breaks, it is stretched to the utmost, and is exerting its whole force. But at this instant the fibre at g is not so much stretched, and it is not then exerting its utmost force. If we suppose the extension of the fibres to be as their distance from C, and the actual exertion of each to be as their extensions, it may easily be shown (see STRENGTH and STRAIN), that the whole resistance is the same as if the full force of all the fibres were united at a point r distant from C by one third of CD. In this case we must say, that the absolute strength is to the relative strength as three times the length to the depth; so that the beam is weaker than by the former statement in the proportion of two to three.

Even this is more strength than experiment justifies, and we can see an evident reason for it. When the beam is strained, not only are the upper fibres stretched, but the lower fibres are compressed. This is very distinctly seen, if we attempt to break a piece of cork cut into the shape of a beam. This being the case, C is not the centre of fracture. There is some point e which lies between the fibres which are stretched and those that are compressed. This fibre is neither stretched nor squeezed, and this point is the real centre of fracture; and the lever by which a fibre D resists, is not DC, but a shorter one Dc, and the energy of the whole resistances must be less than by the second statement. Till we know the proportion between the dilatability and compressibility of the parts, and the relation



Roof.

between the dilatations of the fibres and the resistances which they exert in this state of dilatation, we cannot positively say where the point *c* is situated, nor what is the sum of the actual resistances, or the point where their action may be supposed concentrated. The firmer woods, such as oak and chestnut, may be supposed to be but slightly compressible; we know that willow and other soft woods are very compressible. These last must therefore be weaker; for it is evident, that the fibres which are in a state of compression do not resist the fracture. It is well known, that a beam of willow may be cut through from *C* to *g* without weakening it in the least, if the cut be filled up by a wedge of hard wood stuck in.

We can only say, that very sound oak and red fir have the centre of effort so situated, that the absolute strength is to the relative strength in a proportion of not less than that of three and a half times the length of the beam to its depth. A square inch of sound oak will carry about 8000 pounds. If this bar be firmly fixed in a wall, and project twelve inches, and be loaded at the extremity with 200 pounds, it will be broken. It will just bear 190, its relative strength being $\frac{1}{12}$ of its absolute strength; and this is the case only with the finest pieces, so placed that their annual plates or layers are in a vertical position. A larger log is not so strong transversely, because its plates lie in various directions round the heart.

Practical inferences.

These observations are enough to give us a distinct notion of the vast diminution of the strength of timber when the strain is across it; and we see the justice of the maxim which we inculcated, that the carpenter, in framing roofs, should avoid as much as possible the exposing his timbers to transverse strains. But this cannot be avoided in all cases. Nay, the ultimate strain arising from the very nature of a roof is transverse. The rafters must carry their own weight, and this tends to break them across. An oak beam a foot deep will not carry its own weight if it project more than sixty feet. Besides this, the rafters must carry the lead, tiling, or slates. We must therefore consider this transverse strain a little more particularly, so as to know what strain will be laid on any part by an unavoidable load, imposed either at that part or at any other.

Effect when beams are supported at the ends and loaded in the middle.

We have hitherto supposed, that the beam had one of its ends fixed in a wall, and that it was loaded at the other end. This is not an usual arrangement, and was taken merely as affording a simple application of the mechanical principles. It is much more usual to have the beam supported at the ends, and loaded in the middle. Let the beam *FEGH* (fig. 2) rest on the props *E* and *G*, and be loaded at its middle point *C* with a weight *W*. It is required to determine the strain at the section *CD*. It is plain that the beam will receive the same support, and suffer the same strain, if, instead of the blocks *E* and *G*, we substitute the ropes *Ffe*, *Hhg*, going over the pulleys *f* and *g*, and loaded with proper weights *e* and *g*. The weight *e* is equal to the support given by the block *E*; and *g* is equal to the support given by *G*. The sum of *e* and *g* is equal to *W*; and on whatever point *W* is hung, the weights *e* and *g* are to *W* in the proportion of *DG* and *DE* to *GE*. Now, in this state of things, it appears that the strain on the section *CD* arises immediately from the upward action of the ropes *Ff* and *Hh*, or the upward pressures of the blocks *E* and *G*; and that the office of the weight *W* is to oblige the beam to oppose this strain. Things are in the same state in respect of strain as if a block were substituted at *D* for the weight *W*, and the weights *e* and *g* were

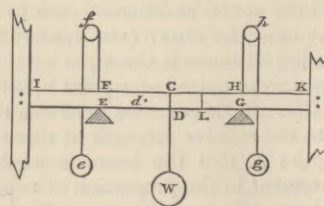


Fig. 2.

hung on at *E* and *G*, only the directions will be opposite. The beam tends to break in the section *CD*, because the ropes pull it upwards at *E* and *G*, whilst a weight *W* holds it down at *C*. It tends to open at *D*, and *C* becomes the centre of fracture. The strain therefore is the same as if the half *ED* were fixed in the wall, and a weight equal to *g*, that is, to the half of *W*, were hung on at *G*.

Hence we conclude, that a beam supported at both ends, but not fixed there, and loaded in the middle, will carry four times as much weight as it can carry at its extremity, when the other extremity is fast in a wall.

The strain occasioned at any point *L* by a weight *W*, hung on at any other point *D*, is $= W \times \frac{DE}{EG} \times LG$. For

EG is to *ED* as *W* to the pressure occasioned at *G*. This would be balanced by some weight *g* acting over the pulley *h*; and this tends to break the beam at *L*, by acting

on the lever *GL*. The pressure at *G* is $W \times \frac{DE}{EG}$, and therefore the strain at *L* is $W \times \frac{DE}{EG} \times LG$.

In like manner, the strain occasioned at the point *D* by the weight *W* hung on there, is $W \times \frac{DE}{EG} \times DG$; which is therefore equal to $\frac{1}{2} W$ when *D* is the middle point.

Hence we see that the general strain on the beam arising from one weight, is proportional to the rectangle of the parts of the beam (for $\frac{W \times DE \times DG}{EG}$ is as *DE* $\times$ *DG*), and is greatest when the load is laid on the middle of the beam.

We also see, that the strain at *I*, by a load at *D*, is equal to the strain at *D* by the same load at *L*. And the strain at *L* from a load at *D* is to the strain by the same load at *L* as *DE* to *LE*. These are all very obvious corollaries, and they sufficiently inform us concerning the strains which are produced on any part of the timber by a load laid on any other part.

If we now suppose the beam to be fixed at the two ends, that is, firmly framed or held down by blocks at *I* and *K*, placed beyond *E* and *G*, or framed into posts, it will carry twice as much as when its ends were free. For suppose it sawn through at *CD*, the weight *W* hung on there will be just sufficient to break it at *E* and *G*. Now restore the connection of the section *CD*, it will require another weight *W* to break it there at the same time.

Therefore, when a rafter, or any piece of timber, is firmly connected with three fixed points, *G*, *E*, *I*, it will bear a greater load between any two of them than if its connection with the remote point were removed; and if it be fastened in four points, *G*, *E*, *I*, *K*, it will be twice as strong in the middle part as without the two remote connections.

One is apt to expect from this that the joist of a floor will be much strengthened by being firmly built in the wall. It is a little strengthened; but the hold which can thus be given to it is much too short to be of any sensible service, and it tends greatly to shatter the wall, because, when it is bent down by a load, it forces up the wall with a momentum of a long lever. Judicious builders therefore take care not to bind the joists tight in the wall. But when the joists of adjoining rooms lie in the same direction, it is a great advantage to make them of one piece. They are then twice as strong as when made in two lengths.

It is easy to deduce from these premises the strain on any point which arises from the weight of the beam itself, or from any load which is uniformly diffused over the whole or any part. We may always consider the whole of the

Roof.

Roof. weight which is thus uniformly diffused over any part as united in the middle point of that part; and if the load is not uniformly diffused, we may still suppose it united at its centre of gravity. Thus, to know the strain at D arising from the weight of the whole beam, we may suppose the whole weight accumulated in its middle point D. Also the strain at L, arising from the weight of the part ED, is the same as if this weight were accumulated in the middle point d of ED; and it is the same as if half the weight of ED were hung on at D. For the real strain at L is the upward pressure at G, acting by the lever GL. Now, calling the weight of the part DE e , this upward pressure will be $\frac{e \times dE}{EG}$, or $\frac{\frac{1}{2}e \times DE}{EG}$.

Therefore the strain on the middle of a beam, arising from its own weight, or from any uniform load, is the weight of the beam or its load $\times \frac{ED}{EG} \times DG$; that is, half the weight of the beam or load multiplied or acting by the lever DG; for $\frac{ED}{EG}$ is $\frac{1}{2}$.

Also the strain at L, arising from the weight of the beam, or the uniform load, is $\frac{1}{2}$ the weight of the beam or load acting by the lever LG. It is therefore proportional to LG, and is greatest of all at D. Therefore a beam of uniform strength throughout, uniformly loaded, will break in the middle.

Relation between the weight or strains and the relative strength. It is of importance to know the relation between the strains arising from the weights of the beams, or from any uniformly diffused load, and the relative strength. We have already seen, that the relative strength is $\int \frac{dbd}{ml}$, where m

is a number to be discovered by experiment for every different species of materials. Leaving out every circumstance but what depends on the dimensions of the beam, viz. d , b , and l , we see that the relative strength is in the proportion of $\frac{d^2b}{l}$, that is, as the breadth and the square of the depth directly, and the length inversely.

Now, to consider, first, the strain arising from the weight of the beam itself, it is evident that this weight increases in the same proportion with the depth, the breadth, and the length of the beam. Therefore its power of resisting this strain must be as its depth directly, and the square of its length inversely. To consider this in a more popular manner, it is plain that the increase of breadth makes no change in the power of resisting the actual strain, because the load and the absolute strength increase in the same proportion with the breadth. But, by increasing the depth, we increase the resisting section in the same proportion, and therefore the number of resisting fibres and the absolute strength; but we also increase the weight in the same proportion. This makes a compensation, and the relative strength is yet the same. But, by increasing the depth, we have not only increased the absolute strength, but also its mechanical energy. For the resistance to fracture is the same as if the full strength of each fibre was exerted at the point which we called the centre of effort; and we showed that the distance of this from the under side of the beam was a certain portion (a half, a third, a fourth, &c.) of the whole depth of the beam. This distance is the arm of the lever, by which the cohesion of the wood may be supposed to act. Therefore this arm of the lever, and consequently the energy of the resistance, increases in the proportion of the depth of the beam, and this remains uncompensated by any increase of the strain. On the whole, therefore, the power of the beam to sustain its own weight increases in the proportion of its depth. But, on the other

hand, the power of withstanding a given strain applied at its extremity, or to any aliquot part of its length, is diminished as the length increases, or is inversely as the length; and the strain arising from the weight of the beam also increases as the length. Therefore the power of resisting the strain actually exerted on it by the weight of the beam is inversely as the square of the length. On the whole, therefore, the power of a beam to carry its own weight varies in the proportion of its depth directly and the square of its length inversely.

As this strain is frequently a considerable part of the whole, it is proper to consider it apart, and then to reckon only on what remains for the support of any extraneous load.

In the next place, the power of a beam to carry any load which is uniformly diffused over its length, must be inversely as the square of the length; for the power of withstanding any strain applied to an aliquot part of the length (which is the case here, because the load may be conceived as accumulated at its centre of gravity, the middle point of the beam) is inversely as the length; and the actual strain is as the length, and therefore its momentum is as the square of the length. Therefore the power of a beam to carry a weight uniformly diffused over it, is inversely as the square of the length.

It is here understood, that the uniform load is of some determined quantity for every foot of the length, so that a beam of double length carries a double load.

We have hitherto supposed that the forces which tend to break a beam transversely are acting in a direction perpendicular to the beam. This is always the case in level floors loaded in any manner; but in roofs, the action of the load tending to break the rafters is oblique, because gravity always acts in vertical lines. It may also frequently happen, that a beam is strained by a force acting obliquely. This modification of the strain is easily discussed. Suppose that the external force, which is measured by the weight W in fig. 1, acts in the direction Aw' instead of AW . Draw Ca' perpendicular to Aw' . Then the momentum of this external force is not to be measured by $W \times AC$, but by $W \times a'C$. The strain therefore by which the fibres in the section of fracture DC are torn asunder, is diminished in the proportion of CA to Ca' , that is, in the proportion of radius to the sine of the angle CAa' , which the beam makes with the direction of the external force.

To apply this to our purpose in the most familiar manner, let AB (fig. 3) be an oblique rafter of a building, loaded with a weight W suspended to any point C, and thereby occasioning a strain in some part D. We have already seen, that the immediate cause of the strain on D is the re-action of the support which is given to the point B. The rafter may at present be considered as a lever, supported at A, and pulled down by the line CW. This occasions a pressure on B, and the support acts in the opposite direction to the action of the lever, that is, in the direction Bb , perpendicular to BA. This tends to break the beam in every part. The pressure exerted at B is $\frac{W \times AE}{AB}$, AE being a horizontal line. There-

fore the strain at D will be $\frac{W \times AE}{AB} \times BD$. Had the beam been lying horizontally, the strain at D, from the weight W suspended at C, would have been $\frac{W \times AC}{AB} \times BD$.

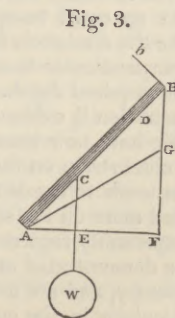


Fig. 3.

Roof. It is therefore diminished in the proportion of AC to AE, that is, in the proportion of radius to the cosine of the elevation, or in the proportion of the secant of elevation to the radius.

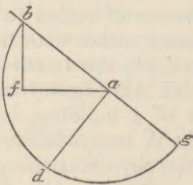
It is evident, that this law of diminution of the strain is the same whether the strain arises from a load on any part of the rafter, or from the weight of the rafter itself, or from any load uniformly diffused over its length, provided only that these loads act in vertical lines.

Strength of roofs having different elevations compared.

We can now compare the strength of roofs which have different elevations. Supposing the width of the building to be given, and that the weight of a square yard of covering is also given. Then, because the load on the rafter will increase in the same proportion with its length, the load on the slant-side BA of the roof will be to the load of a similar covering on the half AF of the flat roof, of the same width, as AB to AF. But the transverse action of any load on AB, by which it tends to break it, is to that of the same load on AF as AF to AB. The transverse strain therefore is the same on both, the increase of real load on AB being compensated by the obliquity of its action. But the strengths of beams to resist equal strains, applied to similar points, or uniformly diffused over them, are inversely as their lengths, because the momentum or energy of the strain is proportional to the length. Therefore the power of AB to withstand the strain to which it is really exposed, is to the power of AF to resist its strain as AF to AB. If, therefore, a rafter AG of a certain scantling is just able to carry the roofing laid on it, a rafter AB of the same scantling, but more elevated, will be too weak in the proportion of AG to AB. Therefore steeper roofs require stouter rafters, in order that they may be equally able to carry a roofing of equal weight per square yard. To be equally strong, they must be made broader, or placed nearer to each other, in the proportion of their greater length, or they must be made deeper in the subduplicate proportion of their length. The following easy construction will enable the artist not familiar with computation to proportion the depth of the rafter to the slope of the roof.

Let the horizontal line af (fig. 4) be the proper depth of a beam whose length is half the width of the building; that is, such as would make it fit for carrying the intended tiling laid on a flat roof. Draw the vertical line fb , and the line ab having the elevation of the rafter; make ag equal to af , and describe the semicircle bdg ; draw ad perpendicular to ab , then ad is the required depth. The demonstration is evident.

Fig. 4.



We have now treated in sufficient detail what relates to the chief strain on the component parts of a roof, namely, what tends to break them transversely; and we have enlarged more on the subject than what the present occasion indispensably required, because the propositions which we have demonstrated are equally applicable to all framings of carpentry, and are even of greater moment in many cases, particularly in the construction of machines. These consist of levers in various forms, which are strained transversely; and similar strains frequently occur in many of the supporting and connecting parts. We shall give, in another article, an account of the experiments which have been made by different naturalists, in order to ascertain the absolute strength of some of the materials which are most generally framed together in buildings and engines. The house-carpenter will derive from them absolute numbers, which he can apply to his particular purposes by means of the propositions which we have now established.

We proceed, in the next place, to consider the other

strains to which the parts of roofs are exposed, in consequence of the support which they mutually give each other, and the pressures, or *thrusts*, as they are called in the language of the house-carpenter, which they exert on each other, and on the walls or piers of the building.

Let a beam or piece of timber AB (fig. 5) be suspended by two lines AC, BD; or let it be supported by two props AE, BF, which are perfectly moveable round their remote extremities E, F, or let it rest on the two polished planes KAH, LBM. Moreover, let G be the centre of gravity of the beam, and let GN be a line through the centre of gravity perpendicular to the horizon. The beam will not be in equilibrium unless the vertical line GN either passes through P, the point in which the directions of the

Effect of other strains, &c.

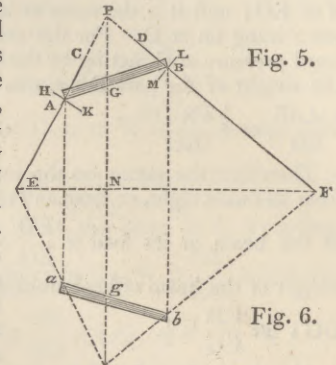


Fig. 5.

Fig. 6.

two lines AC, BD, or the directions of the two props EA, FB, or the perpendiculars to the two planes KAH, LBM intersect each other, or is parallel to these directions. For the supports given by the lines or props are unquestionably exerted in the direction of their lengths, and it is well known in mechanics that the supports given by planes are exerted in a direction perpendicular to those planes in the points of contact; and we know that the weight of the beam acts in the same manner as if it were all accumulated in its centre of gravity G, and that it acts in the direction GN perpendicular to the horizon. Moreover, when a body is in equilibrium between three forces, they are acting in one plane, and their directions are either parallel or they pass through one point.

The support given to the beam is therefore the same as if it were suspended by two lines which are attached to the single point P. We may also infer, that the points of suspension C, D, the points of support E, F, the points of contact A, B, and the centre of gravity G, are all in one vertical plane.

When this position of the beam is disturbed by any external force, there must either be a motion of the points A and B round the centres of suspension C and D, or of the props round these points of support E and F, or a sliding of the ends of the beam along the polished planes KAH and LBM; and in consequence of these motions the centre of gravity G will go out of its place, and the vertical line GN will no longer pass through the point where the directions of the supports intersect each other. If the centre of gravity rises by this motion, the body will have a tendency to recover its former position, and it will require force to keep it away from it. In this case the equilibrium may be said to be *stable*, or the body to have *stability*. But if the centre of gravity descends when the body is moved from the position of equilibrium, it will tend to move still farther; and so far will it be from recovering its former position, that it will now fall. This equilibrium may be called a *tottering equilibrium*. These accidents depend on the situations of the points A, B, C, D, E, F; and they may be determined by considering the subject geometrically. It does not much interest us at present; it is rarely that the equilibrium of suspension is tottering, or that of props is stable. It is evident, that if the beam were suspended by lines from the point P, it would have stability, for it would swing like a pendulum round P, and therefore would always tend towards the position of equilibrium. The intersection of the lines of support would still be at P, and the vertical line

Roof. drawn through the centre of gravity, when in any other situation, would be on that side of P towards which this centre has been moved. Therefore, by the rules of pendulous bodies, it tends to come back. This would be more remarkably the case if the points of suspension C and D were on the same side of the point P with the points of attachment A and B; for in this case the new point of intersection of the lines of support would shift to the opposite side, and be still further from the vertical line through the new position of the centre of gravity. But if the points of suspension and of attachment are on opposite sides of P, the new point of intersection may shift to the same side with the centre of gravity, and lie beyond the vertical line. In this case the equilibrium is tottering. It is easy to perceive, too, that if the equilibrium of suspension from the points C and D be stable, the equilibrium on the props AE and BF must be tottering. It is not necessary for our present purpose to engage more particularly in this discussion.

It is plain that, with respect to the mere momentary equilibrium, there is no difference in the support by threads, props, or planes, and we may substitute the one for the other. We shall find this substitution extremely useful, because we easily conceive distinct notions of the support of a body by strings.

Observe farther, that if the whole figure be inverted, and strings be substituted for props, and props for strings, the equilibrium will still obtain. For by comparing fig. 5 with fig. 6, we see that the vertical line through the centre of gravity will pass through the intersection of the two strings or props; and this is all that is necessary for the equilibrium; only it must be observed in the substitution of props for threads, and of threads for props, that if it be done without inverting the whole figure, a stable equilibrium becomes a tottering one, and *vice versa*.

Examples. This is a most useful proposition, especially to the unlettered artisan, and enables him to make a practical use of problems which the greatest mechanical geniuses have found it no easy task to solve. An instance will show the extent and utility of it. Suppose it were required to make a mansard or kirb roof whose width is AB (fig. 7), and consisting of the four equal rafters AC, CD, DE, EB. There can be no doubt but that its best form is that which will put all the parts in equilibrio, so that no ties or stays may be necessary for opposing the unbalanced thrust of any part of it. Make a chain *acdeb* (fig. 8) of four equal pieces, loosely connected by pin-joints, round which the parts are perfectly moveable. Suspend this from two pins *a*, *b*, fixed in a horizontal line. This chain or festoon will arrange itself in such a form that its parts are in equilibrio. Then we know that if the figure be inverted, it will compose the frame or truss of a kirb-roof *aγδεβ*, which is also in equilibrio, the thrusts of the pieces balancing each other in the same manner that the mutual pulls of the hanging festoon *acdeb* did. If the proportion of the height *df* to the width *ab* is not such as pleases, let the pins *a*, *b* be placed nearer or more distant, till a proportion between the width and height is obtained which pleases, and then make

the figure ACDEB, fig. 7, similar to it. It is evident that this proposition will apply in the same manner to the determination of the form of an arch of a bridge; but this is not a proper place for a further discussion.

We are now enabled to compute all the thrusts and other pressures which are exerted by the parts of a roof on each other and on the walls. Let AB (fig. 9) be a beam standing anyhow obliquely, and G its centre of gravity. Let us suppose that the ends of it are supported in any directions AC, BD, by strings, props, or planes. Let these directions meet in the point P of the vertical line PG passing through its centre of gravity. Through G draw lines *Ga*, *Gb* parallel to PB, PA. Then

The weight of the beam
The pressure or thrust at A
And the pressure at B

is proportional to $\begin{cases} PG \\ Pa \\ Pb. \end{cases}$

For when a body is in equilibrio between three forces, these forces are proportional to the sides of a triangle which have their directions.

In like manner, if *Ag* be drawn parallel to *Pb*, we shall have

Weight of the beam
Thrust on A
And thrust on B

proportional to $\begin{cases} Pg \\ PA \\ Ag \end{cases}$

Or, drawing *Bγ* parallel to *Pa*,

Weight of the beam
Thrust at A
And thrust at B

proportional to $\begin{cases} Pγ \\ Bγ \\ PB. \end{cases}$

It cannot be disputed that, if strength alone be considered, the proper form of a roof is that which puts the whole in equilibrio, so that it would remain in that shape although all the joints were perfectly loose or flexible. If it has any other shape, additional ties or braces are necessary for preserving it, and the parts are unnecessarily strained. When this equilibrium is obtained, the rafters which compose the roof are all acting on each other in the direction of their lengths; and by this action, combined with their weights, they sustain no strain but that of compression, the strain of all others that they are the most able to resist. We may consider them as so many inflexible lines having their weights accumulated in their centres of gravity. But it will allow an easier investigation of the subject, if we suppose the weights to be at the joints, equal to the real vertical pressures which are exerted on these points. These are very easily computed; for it is plain, that the weight of the beam AB (fig. 9) is to the part of this weight that is supported at B as AB to AG. Therefore, if W represent the weight of the beam, the vertical pressure at

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B will be $W \times \frac{AG}{AB}$, and the vertical pressure at A will be

$W \times \frac{BG}{AB}$. In like manner, the prop BF being considered

as another beam, and *f* as its centre of gravity and *w* as its weight, a part of this weight, equal to $w \times \frac{fF}{BF}$, is supported

at B, and the whole vertical pressure at B is $W \times \frac{AG}{AB}$

$+ w \times \frac{fF}{BF}$. And thus we greatly simplify the consideration of the mutual thrusts of roof frames. We need hard-

Fig. 9.

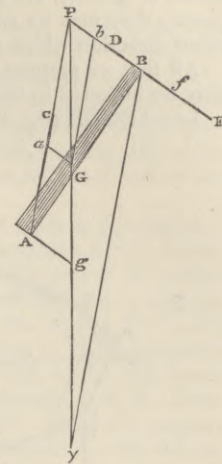


Fig. 7.

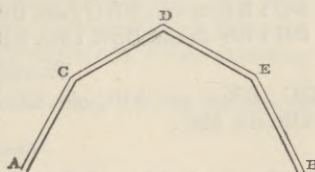
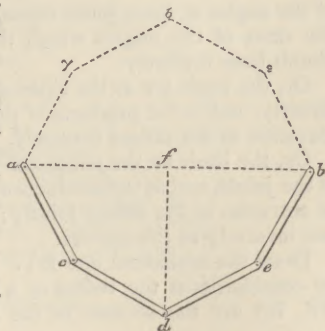


Fig. 8.

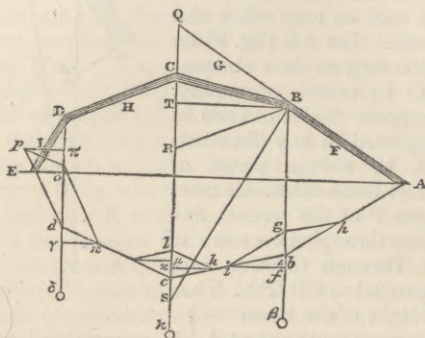


Roof. ly observe, that although these pressures by which the parts of a frame support each other in opposition to the vertical action of gravity, are always exerted in the direction of the pieces, they may be resolved into pressures acting in any other direction which may engage our attention.

All that we propose to deliver on this subject at present may be included in the following proposition.

Let ABCDE (fig. 10) be an assemblage of rafters in a

Fig. 10.



vertical plane, resting on two fixed points A and E in a horizontal line, and perfectly moveable round all the joints A, B, C, D, E; let it be further supposed to be in equilibrio, and let us investigate what adjustment of the different circumstances of weight and inclination of its different parts is necessary for producing this equilibrium.

Let F, G, H, I, be the centres of gravity of the different rafters, and let these letters express the weights of each. Then, by what has been said above, the weight which presses B directly downwards is $F \times \frac{AF}{AB} + G \times \frac{CG}{BC}$.

The weight on C is in like manner $G \times \frac{BG}{BC} + D \times \frac{DH}{CD}$,

and that on D is $H \times \frac{CH}{CD} + I \times \frac{EI}{DE}$.

Let *AbcdE* be the figure ABCDE inverted, in the manner already described. It may be conceived as a thread fastened at A and E, and loaded at *b*, *c*, and *d* with the weights which are really pressing on B, C, and D. It will arrange itself into such a form that all will be in equilibrio. We may discover this form by means of this single consideration, that any part *bc* of the thread is equally stretched throughout in the direction of its length. Let us therefore investigate the proportion between the weight β , which we suppose to be pulling the point *b* in the vertical direction *b β* , to the weight δ , which is pulling down the point *d* in a similar manner. It is evident, that since AE is a horizontal line, and the figures *AbcdE* and ABCDE equal and similar, the lines *Bb*, *Cc*, *Dd*, are vertical. Take *bf* to represent the weight hanging at *b*. By stretching the threads *bA* and *bc* it is set in opposition to the contractile powers of the threads, acting in the directions *bA* and *bc*, and it is in immediate equilibrio with the equivalent of these two contractile forces. Therefore make *bg* equal to *bf*, and make it the diagonal of a parallelogram *hbig*. It is evident that *bh*, *bi*, are the forces exerted by the threads *bA*, *bc*. Then, seeing that the thread *bc* is equally stretched in both directions, make *ck* equal to *bi*; *ck* is the contractile force which is excited at *c* by the weight which is hanging there. Draw *kl* parallel to *cd*, and *lm* parallel to *bc*. The

force *lc* is the equivalent of the contractile forces *ck*, *cm*, and is therefore equal and opposite to the force of gravity acting at C. In like manner, make *dn* = *cm*, and complete the parallelogram *ndpo*, having the vertical line *od* for its diagonal. Then *dn* and *dp* are the contractile forces excited at *d*, and the weight hanging there must be equal to *od*.

Therefore, the load at *b* is to the load at *d* as *bg* to *do*. But we have seen that the compressing forces at B, C, D may be substituted for the extending forces at *b*, *c*, *d*. Therefore the weights at B, C, D which produce the compressions, are equal to the weights at *b*, *c*, *d* which produce the extensions. Therefore

$$bg : do = F \times \frac{AF}{AB} + G \times \frac{CG}{BC} : H \times \frac{CH}{CD} + I \times \frac{EI}{DE}.$$

Let us inquire what relation there is between this proportion of the loads upon the joints at B and D, and the angles which the rafters make at these joints with each other, and with the horizon or the plumb-lines. Produce AB till it cut the vertical Cc in Q; then draw BR parallel to CD, and BS parallel to DE. The similarity of the figures ABCDE and *AbcdE*, and the similarity of their position with respect to the horizontal and plumb lines, show, without any further demonstration, that the triangles QCB and *gbi* are similar, and that QB : BC = *gi* : *ib* = *hb* : *ib*. Therefore QB is to BC as the contractile force exerted by the thread *Ab* to that exerted by *bc*; and therefore QB is to BC as the compression on BA to the compression on BC.¹ Then, because *bi* is equal to *ck*, and the triangles CBR and *ckl* are similar, CB : BR = *ck* : *kl* = *ck* : *cm*, and CB is to BR as the compression on CB to the compression on CD. And, in like manner, because *cm* = *dn*, we have BR to BS as the compression on DC to the compression on DE. Also BR : RS = *nd* : *do*, that is, as the compression on DC to the load on D. Finally, combining all these ratios,

$$\begin{aligned} QC : CB &= gb : bi = gb : kc, \\ CB : BR &= kc : kl = kc : dn, \\ BR : BS &= nd : no = dn : no, \\ BS : RS &= no : do = no : do, \text{ we have finally} \\ QC : RS &= gb : od = \text{load at B} : \text{load at D}. \end{aligned}$$

Now

$$\begin{aligned} QC : BC &= \sin. QBC : \sin. BQC = \sin. ABC : \sin. ABb, \\ BC : BR &= \sin. BRC : \sin. BCR = \sin. CDd : \sin. bBC, \\ BR : RS &= \sin. BSR : \sin. RBS = \sin. dDE : \sin. CDE. \end{aligned}$$

Therefore

$$QC : RS = \sin. ABC \sin. CDd \sin. dDE : \sin. CDE \sin. ABb \sin. bBC.$$

Or

$$QC : RS = \frac{\sin. ABC}{\sin. ABb \sin. CBb} : \frac{\sin. CDE}{\sin. dDC \sin. dDE}.$$

That is, the loads on the different joints are as the sines of the angles at these joints directly, and as the products of the sines of the angles which the rafters make with the plumb-lines inversely.

Or, the loads are as the sines of the angles of the joints directly, and as the products of the cosines of the angles of elevation of the rafters inversely.

Or, the loads at the joints are as the sines of the angles at the joints, and as the products of the secants of the angles of elevation of the rafters jointly; for the secants of angles are inversely as the cosines.

Draw the horizontal line BT. It is evident, that if this be considered as the radius of a circle, the lines BQ, BC, BR, BS are the secants of the angles which these lines

¹ This proportion might have been shown directly without any use of the inverted figure, or consideration of contractile forces; but the substitution gives distinct notions of the mode of acting, even to persons not much conversant in such disquisitions; and we wish to make it familiar to the mind, because it gives an easy solution of the most complicated problems, and furnishes the practical carpenter, who has little science, with solutions of the most difficult cases by experiment. A festoon, as we called it, may easily be made; and we are certain that the forms into which it will arrange itself are models of perfect frames.

Roof. make with the horizon; and they are also as the thrusts of those rafters to which they are parallel. Therefore, the thrust which any rafter makes in its own direction is as the secant of its elevation.

The horizontal thrust is the same at all the angles. For $iu = kx = m\mu = nv = p\pi$. Therefore both walls are equally pressed out by the weight of the roof. We can find its quantity by comparing it with the load on one of the joints. Thus, $QC : CB = \sin. ABC : \sin. ABb$

$$BC : BT = \text{rad.} : \sin. BCT = \text{rad.} : \sin. CBb.$$

Therefore, $QC : BT = \text{rad.} \times \sin. ABC : \sin. bBA \times \sin. bBC$.

The length of the beams depends on the weights at the angles. It deserves remark, that the lengths of the beams do not affect either the proportion of the load at the different joints, or the position of the rafters. This depends merely on the weights at the angles. If a change of length affects the weight, it indeed affects the form also; and this is generally the case. For it seldom happens, indeed it never should happen, that the weight on rafters of longer bearing is not greater. The covering alone increases nearly in the proportion of the length of the rafter.

If the proportion of the weights at B, C, and D is given, as also the position of any two of the lines, the position of all the rest is determined. If the horizontal distances between the angles are all equal, the forces on the different angles are proportional to the verticals drawn on the lines through these angles from the adjoining angle, and the thrusts from the adjoining angles are as the lines which connect them. If the rafters themselves are of equal lengths, the weights at the different angles are as these verticals and as the secants of the angles of elevation of the rafters jointly.

Practical inferences. This proposition is very fruitful in its practical consequences. It is easy to perceive that it contains the whole theory of the construction of arches; for each stone of an arch may be considered as one of the rafters of this piece of carpentry, since all is kept up by its mere equilibrium. We may have an opportunity in a future article of exhibiting some very elegant and simple solutions of the most difficult cases of this important problem; and we now proceed to make use of the knowledge we have acquired for the construction of roofs.

To determine the best form of a kirb-roof. We mentioned by the by a problem which is not unfrequent in practice, to determine the best form of a kirb-roof. M. Couplet of the Royal Academy of Paris has given a solution of it in an elaborate memoir in 1726, occupying several lemmas and theorems.

Let AE (fig. 11) be the width, and CF the height; it

is required to construct a roof ABCDE, whose rafters AB, BC, CD, DE, are all equal, and which shall be in equilibrio.

Roof.

Draw CE, and bisect it perpendicularly in H by the line DHG, cutting the horizontal line AE in G. About the centre G, with the distance GE, describe the circle EKC. It must pass through C, because CH is equal to HE and the angles at H are equal. Draw HK parallel to FE, cutting the circumference in K; draw CK, cutting GH in D; and join CD, ED. These lines are the rafters of half of the roof required.

We prove this by showing that the loads at the angles C and D are equal; for this is the proportion which results from the equality of the rafters, and the extent of surface of the uniform roofing which they are supposed to support. Therefore produce ED till it meet the vertical FC in N; and having made the side CBA similar to CDE, complete the parallelogram BCDP, and draw DB, which will bisect CP in R, as the horizontal line KH bisects CF in Q. Draw KF, which is evidently parallel to DP. Make CS perpendicular to CF, and equal to FG; and about S, with the radius SF, describe the circle FKW. It must pass through K, because SF is equal to CG, and CQ = QF. Draw WK, WS, and produce BC, cutting ND in O.

The angle WKF at the circumference is one half of the angle WSF at the centre, and is therefore equal to WSC or CGF. It is therefore double of the angle CEF or ECS. But ECS is equal to ECD and DCS, and ECD is one half of NDC, and DCS is one half of DCO or CDP. Therefore the angle WKF is equal to NDP, and WK is parallel to ND, and CF is to CW as CP to CN; and CN is equal to CP. But it has been shown above that CN and CP are as the loads upon D and C. These are therefore equal, and the frame ABCDE is in equilibrio.

A comparison of this solution with that of M. Couplet will show its great advantage in respect of simplicity and perspicuity; and the intelligent reader can easily adapt the construction to any proportion between the rafters AB and BC, which other circumstances, such as garret-rooms, &c. may render convenient. The construction must be such that NC may be to CP as CD to $\frac{CD + DE}{2}$. What-

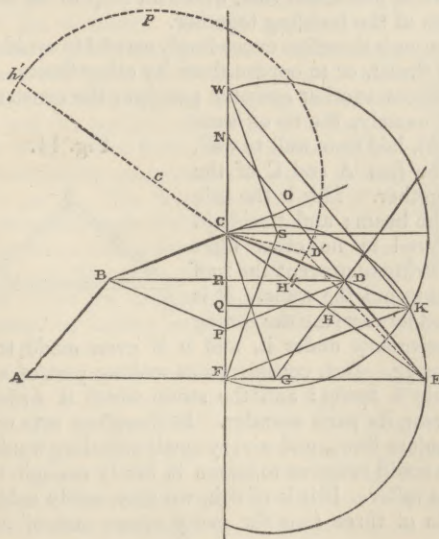
ever proportion of AB to BC is assumed, the point D' will be found in the circumference of a semicircle H'D'h, whose centre is in the line CE, and having AB : BC = CH' : HE = ch' : h'E. The rest of the construction is simple.

In buildings which are roofed with slate, tile, or shingles, the circumstance which is most likely to limit the construction is the slope of the upper rafters CB, CD. This must be sufficient to prevent the penetration of rain, and the stripping by the winds. The only circumstance left in our choice in this case is the proportion of the rafters AB and BC. Nothing is easier than making NC to CP in any desired proportion when the angle BCD is given.

We need not repeat that it is always a desirable thing to form a truss for a roof in such a manner that it shall be in equilibrio. When this is done, the whole force of the struts and braces which are added to it is employed in preserving this form, and no part is expended in unnecessary strains. For we must now observe, that the equilibrium of which we have been treating is always of that kind which we call the tottering, and the roof requires stays, braces, or hanging timbers, to give it stiffness, or keep it in shape. We have also said enough to enable any reader acquainted with the most elementary geometry and mechanics, to compute the transverse strains and the thrusts to which the component parts of all roofs are exposed.

It only remains now to show the general maxims by which all roofs must be constructed, and the circumstances maxims for which determine their excellence. In doing this we shall all roofs be exceedingly brief, and almost content ourselves with ex-

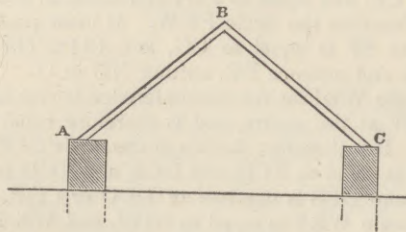
Fig. 11.



Roof. libiting the principal forms, of which the endless variety of roofs are only slight modifications. We shall not trouble the reader with any account of such roofs as receive part of their support from the interior walls, but confine ourselves to the more difficult problem of throwing a roof over a wide building, without any intermediate support; because when such roofs are constructed in the best manner, that is, deriving the greatest possible strength from the materials employed, the best construction of the others is necessarily included. For all such roofs as rest upon the middle walls are roofs of smaller bearing. The only exception deserving notice is the roofs of churches, which have aisles separated from the nave by columns. The roof must rise on these. But if it is of an arched form internally, the horizontal thrusts must be nicely balanced, that they may not push the columns aside.

Simplest notion of a roof. The simplest notion of a roof-frame is, that it consists of two rafters AB and BC (fig. 12), meeting in the ridge.

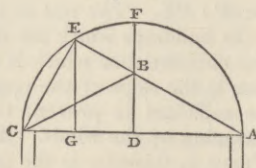
Fig. 12.



But even this simple form is susceptible of better and worse. We have already seen, that when the weight of a square yard of covering is given, a steeper roof requires stronger rafters, and that when the scantling of the timbers is also given, the relative strength of a rafter is inversely as its length.

Best form of rafters. But there is now another circumstance to be taken into the account, viz. the support which one rafter leg gives to the other. The best form of a rafter will therefore be that in which the relative strength of the legs, and their mutual support, give the greatest product. Mr Muller, in his Military Engineer, gives a determination of the best pitch of a roof, which has considerable ingenuity, and has been copied into many books of military education both in this island and on the continent. Describe on the width AC (fig. 13) the semicircle AFC, and bisect it by the radius FD. Produce the rafter AB to the circumference in E, join EC, and draw the perpendicular EG. Now $AB : AD = AC : AE$, and $AE = \frac{AD \times AC}{AB}$, and AE is inversely

Fig. 13.



as AB, and may therefore represent its strength in relation to the weight actually lying on it. Also the support which CB gives to AB is as CE, because CE is perpendicular to AB. Therefore the form which renders $AE \times EC$ a maximum seems to be that which has the greatest strength.

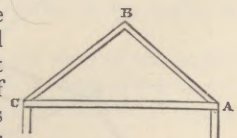
But $AC : AE = EC : EG$, and $EG = \frac{AE \times EC}{AC}$, and is therefore proportional to $AE \times EC$. Now EG is a maximum when B is in F, and a square pitch is in this respect the strongest. But it is very doubtful whether this construction is deduced from just principles. There is another strain to which the leg AB is exposed, which is not taken into the account. This arises from the curvature which it unavoidably acquires by the transverse pressure of its load. In this state it is pressed in its own direction by the abutment and load of the other leg. The relation between this strain and the resistance of the piece is not very distinctly known. Euler has given a dissertation on this subject, which is of great importance, because it affects posts and pillars of all kinds; and it is very well known that a post of ten feet long and six inches square will bear with great safety a weight which would crush a post of the same scantling and twenty feet long in a minute; but his determination has not been acquiesced in by the first mathematicians. Now it is in relation to these two strains that the strength of the rafter should be adjusted. The firmness of the support given by the other leg is of no consequence, if its own strength is inferior to the strain. The force which tends to crush the leg AB, by compressing it in its curved state, is to its weight as AB to BD, as is easily seen by the composition of forces; and its incurvation by this force has a relation to it, which is of intricate determination. It is contained in the properties demonstrated by Bernoulli of the elastic curve. This determination also includes the relation between the curvature and the length of the piece. But the whole of this seemingly simple problem is of much more difficult investigation than Mr Muller was aware of; and his rules for the pitch of a roof, and for the sally of a dock-gate, which depends on the same principles, are of no value. He is, however, the first author who attempted to solve either of these problems on mechanical principles susceptible of precise reasoning. Belidor's solutions, in his *Architecture Hydraulique*, are below notice.

Reasons of economy have made carpenters prefer a low pitch; and although this does diminish the support given by the opposite leg faster than it increases the relative strength of the other, it is not of material consequence, because the strength remaining in the opposite leg is still very great; for the supporting leg is acting against compression, in which case it is vastly stronger than the supported leg acting against a transverse strain.

But a roof of this simplicity will not do in most cases. There is no notice taken, in its construction, of the thrust which it exerts on the walls. Now this is the strain which is the most hazardous of all. Our ordinary walls, instead of being able to resist any considerable strain pressing them outwards, require, in general, some ties to keep them on foot. When a person thinks of the thinness and height of the walls of even a strong house, he will be surprised that they are not blown down by any strong puff of wind. A wall three feet thick, and sixty feet high, could not withstand a wind blowing at the rate of thirty feet per second (in which case it acts with a force considerably exceeding two pounds on every square foot), if it were not stiffened by cross walls, joists, and roof, which all help to tie the different parts of the building together.

A carpenter is therefore exceedingly careful to avoid every horizontal thrust, or to oppose them by other forces. And this introduces another essential part into the construction of a roof, namely, the tie or beam AC (fig. 14), laid from wall to wall, binding the feet A and C of the rafters together. This is the sole office of the beam; and it should be considered in no other light than as a string to prevent the roof from pushing out the walls. It is indeed used for carrying the ceiling of the apartments under it, and it is even made to support a flooring. But, considered as making part of a roof, it is merely a string; and the strain which it withstands tends to tear its parts asunder. It therefore acts with its whole absolute force, and a very small scantling would suffice if we could contrive to fasten it firmly enough to the foot of the rafter. If it is of oak, we may safely subject it to a strain of three tons for every square inch of its sec-

Fig. 14.

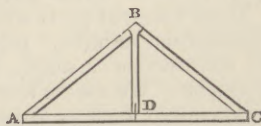


Roof.

tion. And fir will safely bear a strain of two tons for every square inch. But we are obliged to give the tie-beam much larger dimensions, that we may be able to connect it with the foot of the rafter by a mortise and tenon. Iron straps are also frequently added. By attending to this office of the tie-beam, the judicious carpenter is directed to the proper form of the mortise and tenon, and of the strap. We shall consider both of these in a proper place, after we become acquainted with the various strains at the joints of a roof.

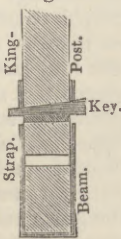
These large dimensions of the tie-beam allow us to load it with the ceilings without any risk, and even to lay floors on it with moderation and caution. But when it has a great bearing or span, it is very apt to bend downwards in the middle, or, as the workmen term it, to sway or swag; and it requires a support. The question is, where to find this support. What fixed points can we find with which to connect the middle of the tie-beam? Some ingenious carpenter thought of suspending it from the ridge by a piece of timber BD (fig. 15), called by our carpenters the *king-post*.

Fig. 15.



It must be acknowledged, that there was very great ingenuity in this thought. It was also perfectly just. For the weight of the rafters BA, BC tends to make them fly out at the foot. This is prevented by the tie-beam, and this excites a pressure, by which they tend to compress each other. Suppose them without weight, and that a great weight is laid on the ridge B. This can be supported only by the abutting of the rafters in their own directions AB and CB, and the weight tends to compress them in the opposite directions, and, through their intervention, to stretch the tie-beam. If neither the rafters can be compressed, nor the tie-beam stretched, it is plain that the triangle ABC must retain its shape, and that B becomes a fixed point very proper to be used as a point of suspension. To this point, therefore, is the tie-beam suspended by means of the king-post. A common spectator unacquainted with carpentry views it very differently, and the tie-beam appears to him to carry the roof. The king-post appears a pillar resting on the beam, whereas it is really a string; and an iron rod of one sixteenth of the size would have done just as well. The king-post is sometimes mortised into the tie-beam, and pins put through the joint, which gives it more the look of a pillar with the roof resting on it. This does well enough in many cases. But the best method is to connect them by an iron strap like a stirrup, which is bolted at its upper ends into the king-post, and passes round the tie-beam. In this way a space is commonly left between the end of the king-post and the upper side of the tie-beam. Here the beam plainly appears hanging in the stirrup; and this method allows us to restore the beam to an exact level, when it has sunk by the unavoidable compression or other yielding of the parts. The holes in the sides of the iron strap are made oblong instead of round; and the bolt which is drawn through all is made to taper on the under side; so that driving it farther draws the tie-beam upwards. A notion of this may be formed by looking at fig. 16, which is a section of that post and beam.

Fig. 16.



It requires considerable attention, however, to make this suspension of the tie-beam sufficiently firm. The top of the king-post is cut into the form of the arch-stone of a bridge, and the heads of the rafters are firmly mortised into this projecting part. These projections are called joggles, and are formed by working the king-post out of a much larger piece of timber, and cutting off the unnecessary wood from

the two sides; and, lest all this should not be sufficient, it is usual in great works to add an iron plate or strap of three branches, which are bolted into the heads of the king-post and rafters.

The rafters, though not so long as the beam, seem to stand as much in need of something to prevent their bending, for they carry the weight of the covering. This cannot be done by suspension, for we have no fixed points above them. But we have now got a very firm point of support at the foot of the king-post. Braces, or rather struts, ED, FD (fig. 17), are put under the middle of the rafters, where they are slightly mortised, and their lower ends are firmly mortised into joggles formed on the foot of the king-post.

As these braces are very powerful in their resistance to compression, and the king-post equally so to resist extension, the points E and F may be considered as fixed; and the rafters being thus reduced to half their former length, have now four times their former relative strength.

Roofs do not always consist of two sloping sides meeting in a ridge. They have sometimes a flat on the top, with two sloping sides. They are sometimes formed with a double slope, and are called *kirb* or *mansarde roofs*. They sometimes have a valley in the middle, and are then called *M roofs*. Such roofs require another piece, which may be called the *truss-beam*, because all such frames are called *trusses*; probably from the French word *trousse*, because such roofs are like portions of plain roofs *troussés* or shortened.

A flat-topped roof is thus constructed. Suppose the three rafters AB, BC, CD (fig. 18), of which AB and CD are equal, and BC horizontal. It is plain that they will be in equilibrio, and the roof have no tendency to go on either side. The tie-beam AD withstands the horizontal thrusts of the whole frame, and the two rafters AB and CD are each pressed in their own directions in consequence of their abutting with the middle rafter or truss-beam BC. It lies between them like the key-stone of an arch. They lean towards it, and it rests on them. The pressure which the truss-beam and its load excites on the two rafters is the very same as if the rafters were produced till they meet in G, and a weight were laid on these equal to that of BC and its load. If therefore the truss-beam is of a scantling sufficient for carrying its own load, and withstanding the compression from the two rafters, the roof will be equally strong, whilst it keeps its shape, as the plain roof AGD, furnished with the king-post and braces. We may conceive this another way. Suppose a plain roof AGD, without braces to support the middle B and C of the rafters. Then let a beam BC be put in between the rafters, abutting upon little notches cut in the rafters. It is evident that this must prevent the rafters from bending downwards, because the points B and C cannot descend, moving round the centres A and D, without shortening the distance BC between them. This cannot be without compressing the beam BC. It is plain that BC may be wedged in, or wedges driven in between its ends B and C and the notches in which it is lodged. These wedges may be driven in till they even force out the rafters GA and GD. Whenever this happens, all the mutual pressure of the heads of these rafters at G is taken away, and the parts GB and GC may be cut away, and the

Fig. 17.

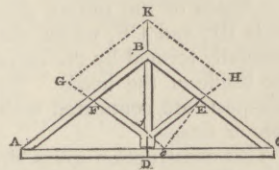
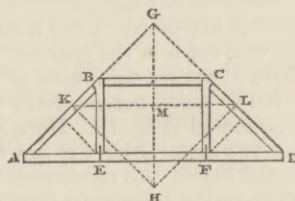


Fig. 18.



Roof.

Roof.

roof ABCD will be as strong as the roof AGD furnished with the king-post and braces, because the truss-beam gives a support of the same kind at B and C as the brace would have done.

But this roof ABCD would have no firmness of shape. Any addition of weight on one side would destroy the equilibrium at the angle, would depress that angle, and would cause the opposite one to rise. To give it stiffness, it must either have ties or braces, or something partaking of the nature of both. The usual method of framing is to make the heads of the rafters abut on the joggles of two side-posts BE and CF, whilst the truss-beam, or strut as it is generally termed by the carpenters, is mortised square into the inside of the heads. The lower ends E and F of the side-posts are connected with the tie-beam either by mortises or straps.

This construction gives firmness to the frame; for the angle B cannot descend in consequence of any inequality of pressure, without forcing the other angle C to rise. This it cannot do, being held down by the post CF. And the same construction fortifies the tie-beam, which is now suspended at the points E and F from the points B and C, whose firmness we have just now shown.

They are not so strong as the plain roofs.

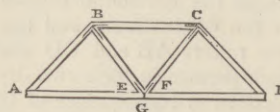
But although this roof may be made abundantly strong, it is not quite so strong as the plain roof AGD of the same scantling. The compression which BC must sustain in order to give the same support to the rafters at B and C that was given by braces properly placed, is considerably greater than the compression of the braces. And this strain is an addition to the transverse strain which BC gets from its own load. This form also necessarily exposes the tie-beam to cross strains. If BE is mortised into the tie-beam, then the strain which tends to depress the angle ABC presses on the tie-beam at E transversely, whilst a contrary strain acts on F, pulling it upwards. These strains, however, are small; and this construction is frequently used, being susceptible of sufficient strength, without much increase of the dimensions of the timbers; and it has the great advantage of giving free room in the garrets. Were it not for this, there is a much more perfect form represented in fig. 19. Here the two posts BE, CF are united below. All transverse action on the tie-beam is now entirely removed. We are almost disposed to say that this is the strongest roof of the same width and slope. For if the iron strap which connects the pieces BE, CF with the tie-beam have a large bolt G through it, confining it to one point of the beam, there are five points, A, B, C, D, G, which cannot change their places, and there is no transverse strain in any of the connections.

When the dimensions of the building are very great, so that the pieces AB, BC, CD, would be thought too weak for withstanding the cross strains, braces may be added as is expressed in fig. 18 by the dotted lines. The reader will observe, that it is not meant to leave the top flat externally; it must be raised a little in the middle, to shoot off the rain. But this must not be done by incurvating the beam BC. This would soon be crushed, and spring upwards. The slopes must be given by pieces of timber added above the strutting-beam.

Members of which the frame of a roof consists.

And thus we have completed a frame of a roof. It consists of these principal members: the rafters, which are immediately loaded with the covering; the tie-beam, which withstands the horizontal thrust by which the roof tends to fly out below and push out the walls; the king-posts, which hang from fixed points and serve to uphold the tie-beam, and also to afford other fixed points on which we may rest the braces which support the middle of the rafters; and,

Fig. 19.



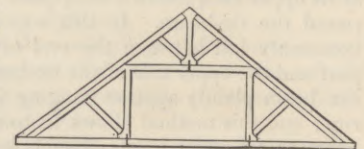
lastly, the truss or strutting-beam, which serves to give mutual abutment to the different parts which are at a distance from each other. The rafters, braces, and trusses are exposed to compression, and must therefore have not only cohesion, but stiffness. For if they bend, the prodigious compressions to which they are subjected would quickly crush them in this bended state. The tie-beams and king-posts, if performing no other office but supporting the roof, do not require stiffness; and their places might be supplied by ropes, or by rods of iron of one-tenth part of the section that even the smallest oak stretcher requires. These members require no greater dimensions than what is necessary for giving sufficient joints, and any more is a needless expense. All roofs, however complicated, consist of these essential parts; and if pieces of timber are to be seen which perform none of these offices, they must be pronounced useless, and they are frequently hurtful, by producing cross strains in some other piece. In a roof properly constructed there should be no such strains. All the timbers, excepting those which immediately carry the covering, should be either pushed or drawn in the direction of their length. And this is the rule by which a roof should always be examined.

These essential parts are susceptible of numberless combinations and varieties. But it is a prudent maxim to make the construction as simple, and consisting of as few parts, as possible. We are the less exposed to the imperfections of workmanship, such as loose joints, &c. Another essential harm arises from many pieces, by the compression and the shrinking of the timber in the cross direction of the fibres. The effect of this is equivalent to the shortening of the piece which abuts on the joint. This alters the proportions of the sides of the triangle on which the shape of the whole depends. Now, in a roof such as fig. 18, there is twice as much of this as in the plain pent-roof, because there are two posts. And when the direction of the abutting pieces is very oblique to the action of the load, a small shrinking permits a great change of shape. Thus, in a roof of what is called pediment pitch, where the rafters make an angle of thirty degrees with the horizon, half an inch compression of the king-post will produce a sagging of an inch, and occasion a great strain on the tie-beam, if the posts are mortised into it.

They are susceptible of numberless combinations and varieties.

This method of including a truss within the rafters of a pent-roof is a very considerable addition to the art of carpentry. But to insure its full effect, it should always be executed with abutting rafters under the principal ones, abutting on joggles in the heads of the posts. Without this the strut-beam is hardly of any service. We would therefore recommend fig. 20 as a proper construction of a trussed roof; and the king-post which is placed in it may be employed to support the upper part of the rafters, and also for preventing the strut-beam from bending in their direction in consequence of its great compression. It will also give a suspension for the great burdens which are sometimes necessary in a theatre. The machinery has no other firm points to which it can be attached; and the portions of the single rafters which carry this king-post are but short, and therefore may be considerably loaded with safety.

Fig. 20.



We observe in the drawings which we sometimes have of Chinese buildings, that the trussing of roofs is understood by them. Indeed they must be very experienced carpenters. We see wooden buildings run up to a great height, which can be supported only by such trussing. One of these is sketched in fig. 21. There are some very excellent specimens to be seen in the buildings at Deptford, be-

Roof.

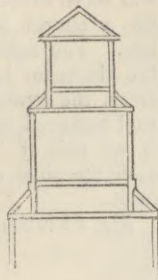
longing to the victualling-office, commonly called the *Red-house*, which were erected about the year 1788, and we believe are the performance of Mr James Arrow of the Board of Works, one of the most intelligent artists in this kingdom.

Remarks addressed to practical carpenters.

Thus have we given an elementary, but a rational or scientific, account of this important part of the art of carpentry. It is such, that any practitioner, with the trouble of a little reflection, may always proceed with confidence, and without resting any part of his practice on the vague notions which habit may have given him of the strength and supports of timbers, and of their manner of acting. That these frequently mislead, is proved by the mutual criticisms which are frequently published by the rivals in the profession. They have frequently sagacity enough, for it seldom can be called science, to point out glaring blunders; and any person who will look at some of the performances of Mr Price, Mr Wyatt, Mr Arrow, and others of acknowledged reputation, will readily see them distinguishable from the works of inferior artists by simplicity alone. A man without principles is apt to consider an intricate construction as ingenious and effectual; and such roofs sometimes fail merely by being ingeniously loaded with timber, but still more frequently by the wrong action of some useless pieces, which produces strains that are transverse to other pieces, or which, by rendering some points too firm, cause them to be deserted by the rest in the general subsiding of the whole. Instances of this kind are pointed out by Price in his *British Carpenter*. Nothing shows the skill of a carpenter more than the distinctness with which he can foresee the changes of shape which must take place in a short time in every roof. A knowledge of this will often correct a construction which the mere mathematician thinks unexceptionable, because he does not reckon on the actual compression which must obtain, and imagines that his triangles, which sustain no cross strains, invariably retain their shape till the pieces break. The sagacity of the experienced carpenter is not, however, enough without science for perfecting the art. But when he knows how much a particular piece will yield to compression in one case, science will then tell him, and nothing but science can do it, what will be the compression of the same piece in another very different case. Thus he learns how far it will now yield, and then he proportions the parts so to each other, that when all have yielded according to their strains, the whole is of the shape he wished to produce, and every joint is in a state of firmness. It is here that we observe the greatest number of improprieties. The iron straps are frequently in positions not suited to the actual strain on them; and they are in a state of violent twist, which both tends strongly to break the straps, and to cripple the pieces which they surround.

In like manner, we frequently see joints or mortises in a state of violent strain on the tenons, or on the heels and shoulders. The joints were perhaps properly shaped for the primitive form of the truss; but by its settling, the bearing of the push is changed. The brace, for example, in a very low-pitched roof, comes to press with the upper part of the shoulder, and, acting as a powerful lever on the tenon, breaks it. In like manner, the lower end of the brace, which at first abutted firmly and squarely on the joggle of the king-post, now presses with one corner in prodigious force, and seldom fails to splinter off on that side. We cannot help recommending a maxim of M. Perronet, the celebrated hydraulic architect of France, as a golden rule, viz. to make all the shoulders of abutting pieces in the form of an arch of a circle, having the opposite end of the piece for its centre. Thus, in fig. 18, if the joggle-point B be of

Fig. 21.



this form, having A for its centre, the sagging of the roof will make no partial bearing at the joint; for in the sagging of the roof the piece AB turns or bends round the centre A, and the counter-pressure of the joggle is still directed to A, as it ought to be. We have just now said *bends* round A. This is too frequently the case, and it is always very difficult to give the tenon and mortise in this place a true and invariable bearing. The rafter pushes in the direction BA, and the beam resists in the direction AD. The abutment should be perpendicular to neither of these, but in an intermediate direction, and it ought also to be of a curved shape. But the carpenters perhaps think that this would weaken the beam too much to give it this shape in the shoulder; they do not even aim at it in the heel of the tenon. The shoulder is commonly even with the surface of the beam. When the bearing therefore is on this shoulder, it causes the foot of the rafter to slide along the beam till the heel of the tenon bears against the outer end of the mortise (See Price's *British Carpenter*, plate C, fig. 1K). This abutment is perpendicular to the beam in Price's book; but it is more generally pointed a little outwards below, to make it more secure against starting. The consequence of this construction is, that when the roof settles, the shoulder comes to bear at the inner end of the mortise, and it rises at the outer, and the tenon, taking hold of the wood beyond it, either tears it out or is itself broken. This joint therefore is seldom trusted to the strength of the mortise and tenon, and is usually secured by an iron strap, which lies obliquely to the beam, to which it is bolted by a large bolt quite through, and then embraces the outside of the rafter foot. This strap is very frequently not made sufficiently oblique, and we have seen some made almost square with the beam. When this is the case, it not only keeps the foot of the rafter from flying out, but it binds it down. In this case, the rafter acts as a powerful lever, whose fulcrum is in the inner angle of the shoulder, and then the strap never fails to cripple the rafter at the point. All this can be prevented only by making the strap very long and very oblique, and by making its outer end (the stirrup part) square with its length, and making a notch in the rafter foot to receive it. It cannot now cripple the rafter, for it will rise along with it, turning round the bolt at its inner end. We have been thus particular on this joint, because it is here that the ultimate strain of the whole roof is exerted, and its situation will not allow the excavation necessary for making it a good mortise and tenon.

Similar attention must be paid to some other straps, such as those which embrace the middle of the rafter, and connect it with the post or truss below it. We must attend to the change of shape produced by the sagging of the roof, and place the strap in such a manner as to yield to it by turning round its bolt, but so as not to become loose, and far less to make a fulcrum for any thing acting as a lever. The strains arising from such actions, in framings of carpentry which change their shape by sagging, are enormous, and nothing can resist them.

We shall close this part of the subject with a simple method, by which any carpenter, without mathematical science, may calculate with sufficient precision the strains or thrusts which are produced on any point of his work, whatever be the obliquity of the pieces.

Let it be required to find the horizontal thrust acting on the tie-beam AD of fig. 18. This will be the same as if the weight of the whole roof were laid at G on the two rafters GA and GD. Draw the vertical line GH. Then, having calculated the weight of the whole roof that is supported by this single frame ABCD, including the weight of the pieces AB, BC, CD, BE, CF themselves, take the number of pounds, tons, &c. which expresses it from any scale of equal parts, and set it from G to H. Draw HK,

Mode of calculating strains or thrusts.

Roof. HL parallel to GD, GA, and draw the line KL, which will be horizontal when the two sides of the roof have the same slope. Then ML measured on the same scale will give the horizontal thrust, by which the strength of the tie-beam is to be regulated. GL will give the thrust which tends to crush the rafters, and LM will also give the force which tends to crush the strut-beam BC.

In like manner, to find the strain of the king-post BD of fig. 17, consider that each brace is pressed by half the weight of the roofing laid on BA or BC, and this pressure, or at least its hurtful effect, is diminished in the proportion of BA to DA, because the action of gravity is vertical, and the effect which we want to counteract by the braces is in a direction Ee perpendicular to BA or BC. But as this is to be resisted by the brace fE acting in the direction fE, we must draw fe perpendicular to Ee, and suppose the strain augmented in the proportion of Ee to Ef.

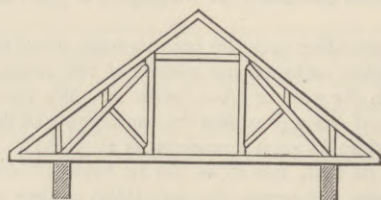
Having thus obtained in tons, pounds, or other measures, the strains which must be balanced at f by the cohesion of the king-post, take this measure from the scale of equal parts, and set it off in the directions of the braces to G and H, and complete the parallelogram GfHK; and fK measured on the same scale will be the strain on the king-post.

Strength of the truss. The artist may then examine the strength of his truss upon this principle, that every square inch of oak will bear at an average 7000 pounds compressing or stretching it, and may be safely loaded with 3500 for any length of time; and that a square inch of fir will in like manner securely bear 2500. And, because straps are used to resist some of these strains, a square inch of well-wrought tough iron may be safely strained by 50,000 pounds. But the artist will always recollect, that we cannot have the same confidence in iron as in timber. The faults of this last are much more easily perceived; and when the timber is too weak, it gives us warning of its failure by yielding sensibly before it breaks. This is not the case with iron; and much of its service depends on the honesty of the blacksmith.

Sketch of some trussed roofs, &c. In this way may any design of a roof be examined. We shall here give the reader a sketch of two or three trussed roofs, which have been executed in the chief varieties of circumstances which occur in common practice.

Fig. 22 is the roof of St Paul's Church, Covent Garden,

Fig. 22.



London, the work of Inigo Jones. Its construction is singular. The roof extends to a considerable distance beyond the building, and the ends of the tie-beams support the Tuscan cornice, appearing like the mutules of the Doric order. Such a roof could not rest on the tie-beam. Inigo Jones has therefore supported it by a truss below it; and the height has allowed him to make this extremely strong with very little timber. It is accounted the highest roof of its width in London. But this was not difficult, by reason of the great height which its extreme width allowed him to employ without hurting the beauty of it by too high a pitch. The supports, however, are disposed with judgment.¹

Roof. Fig. 23 is a kirk or mansarde roof by Price, and supposed to be of large dimensions, having braces to carry the middle of the rafters. It will serve exceedingly well for a church having pillars. The middle part of the tie-beam being taken away, the strains are very well balanced, so that there is no risk of its pushing aside the pillar on which it rests.

Fig. 23.

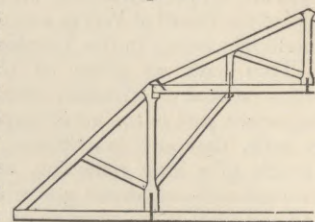
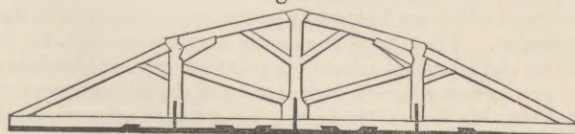


Fig. 24 is the celebrated roof of the Theatre of the Uni-

Fig. 24.



versity of Oxford, by Sir Christopher Wren. The span between the walls is 75 feet. This is accounted a very ingenious, and is a singular performance. The middle part of it is almost unchangeable in its form; but from this circumstance it does not distribute the horizontal thrust with the same regularity as the usual construction. The horizontal thrust on the tie-beam is about twice the weight of the roof, and is withstood by an iron strap below the beam, which stretches the whole width of the building in the form of a rope, making part of the ornament of the ceiling.

In all the roofs which we have considered hitherto, the thrust is discharged entirely from the walls by the tie-beam, which the Cases in thrust cannot be discharged from the walls by the tie-beam. But this cannot always be done. We frequently want great elevation within, and arched ceilings. In such cases, it is a much more difficult matter to keep the walls free of all pressure outwards, and there are few buildings where it is completely done. Yet this is the greatest fault of a roof, the tie-beam. We shall just point out the methods which may be most successfully adopted.

We have said that a tie-beam just performs the office of a string. We have said the same of the king-post. Now suppose two rafters AB, BC (fig. 25), moveable about the point B, and resting on the top of the walls. If the line BD be suspended from B, and the two lines DA, DC be fastened to the feet of the rafters, and if these lines be incapable of extension, it is plain that all thrust is removed from the walls as effectually as by a common tie-beam; and by shortening BD to Bd, we gain a greater inside height, and more room for an arched ceiling. Now if we substitute a king-post BD (fig. 26), and two stretchers or hammer-beams DA, DC for the other strings, and connect them firmly by means of iron straps, we obtain our purpose.

Fig. 25.

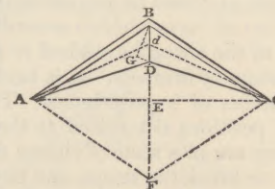
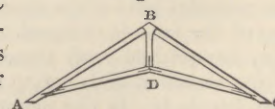


Fig. 26.



* Let us compare this roof with a tie-beam roof in point of strain and strength. Recur to fig. 25, and complete the parallelogram ABCF, and draw the diagonals AC, BF, crossing in E. Draw BG perpendicular to CD. We have

¹ This church was burnt down after the present article was written.

Roof. seen that the weight of the roof, which we may call W , is to the horizontal thrust at C as BF to EC ; and if we express this thrust by T , we have $T = \frac{W \times EC}{BF}$. We may

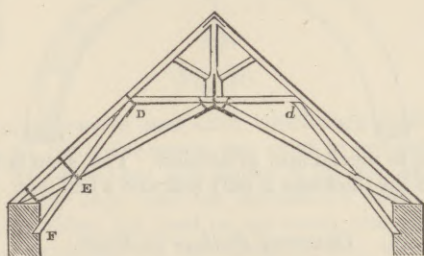
at present consider BC as a lever moveable round the joint B , and pulled at C in the direction EC by the horizontal thrust, and held back by the string pulling in the direction CD . Suppose that the forces in the directions EC and CD are in equilibrio, and let us find the force S by which the string CD is strained. These forces must, by the property of the lever, be inversely as the perpendiculars drawn from the centre of motion on the lines of their direction.

Therefore $BG : BE = T : S$, and $S = T \times \frac{BE}{BG} = W \times \frac{BE \cdot EC}{BF \cdot BG}$.

Therefore the strain upon each of the ties DA and DC is always greater than the horizontal thrust or the strain on a simple tie-beam. This would be no great inconvenience, because the smallest dimensions that we could give to these ties, so as to procure sufficient fixtures to the adjoining pieces, are always sufficient to withstand this strain. But although the same may be said of the iron straps which make the ultimate connections, there is always some hazard of imperfect work, cracks, or flaws, which are not perceived. We can judge with tolerable certainty of the soundness of a piece of timber, but cannot say so much of a piece of iron. Moreover, there is a prodigious strain excited on the king-post when BG is very short in comparison of BE , namely, the force compounded of the two strains S and S on the ties DA and DC .

But there is another defect from which the straight tie-beam is entirely free. All roofs settle a little. When this roof settles, and the points B and D descend, the legs BA , BC must spread further out, and thus a pressure outwards is excited on the walls. It is seldom therefore that this kind of roof can be executed in this simple form, and other contrivances are necessary for counteracting this supervening action on the walls. Fig. 27 is one of the best which

Fig. 27.



we have seen, and is executed with great success in the circus or equestrian theatre (now, 1809, a concert-room) in Edinburgh, the width being sixty feet. The pieces EF and ED help to take off some of the weight, and by their greater uprightness they exert a smaller thrust on the walls. The beam Dd is also a sort of truss-beam, having something of the same effect. Mr Price has given another very judicious one of this kind (British Carpenter, plate IK, fig. C), from which the tie-beam may be taken away, and there will remain very little thrust on the walls. Those which he has given in the following plate, K, are, in our opinion, very faulty. The whole strain in these last roofs tends to break the rafters and ties transversely, and the fixtures of the ties are also not well calculated to resist the strain to which the pieces are exposed. We hardly think that these roofs could be executed.

It is scarcely necessary to remind the reader, that in all that we have delivered on this subject, we have attended only to the construction of the principal rafters or trusses.

In small buildings all the rafters are of one kind; but in great buildings the whole weight of the covering is made to rest on a few principal rafters, which are connected by beams placed horizontally, and either mortised into them or scarfed on them. These are called *purlins*. Small rafters are laid from purlin to purlin; and on these the laths for tiles, or the skirting-boards for slates, are nailed. Thus the covering does not immediately rest on the principal frames. This allows some more liberty in their construction, because the garrets can be so divided that the principal rafters shall be in the partitions, and the rest left uncumbered. This construction is so far analogous to that of floors which are constructed with girders, binding, and bridging joists.

It may appear presuming in us to question the propriety of this practice. There are situations in which it is unavoidable, as in the roofs of churches, which can be allowed to rest on some pillars. In other situations, where partition-walls intervene at a distance not too great for a stout purlin, no principal rafters are necessary, and the whole may be roofed with short rafters of very slender scantling. But in a great uniform roof, which has no intermediate supports, it requires at least some reasons for preferring this method of carcass-roofing to the simple method of making all the rafters alike. The method of carcass-roofing requires the selection of the greatest logs of timber, which are seldom of equal strength and soundness with thinner rafters. In these the outside planks can be taken off, and the best part alone worked up. It also exposes to all the defects of workmanship in the mortising of purlins, and the weakening of the rafters by this very mortising; and it brings an additional load of purlins and short rafters. A roof thus constructed may surely be compared with a floor of similar construction. Here there is not a shadow of doubt, that if the girders were sawed into planks, and these planks laid as joists sufficiently near for carrying the flooring boards, they will have the same strength as before, except so much as is taken out of the timber by the saw. This will not amount to one-tenth part of the timber in the binding, bridging, and ceiling joists, which are an additional load, and all the mortises and other joinings are so many diminutions of the strength of the girders; and as no part of a carpenter's work requires more skill and accuracy of execution, we are exposed to many chances of imperfection. But, not to rest on these considerations, however reasonable they may appear, we shall relate an experiment made by one on whose judgment and exactness we can depend.

Two models of floors were made, eighteen inches square, of the finest uniform deal, which had been long seasoned. The one consisted of simple joists, and the other was framed with girders, binding, bridging, and ceiling joists. The plain joists of the one contained the same quantity of timber with the girders alone of the other, and both were made by a most accurate workman. They were placed in wooden trunks eighteen inches square within, and rested on a strong projection on the inside. Small shot was gradually poured in upon the floors, so as to spread uniformly over them. The plain joisted floor broke down with 487 pounds, and the carcass floor with 327. The first broke without giving any warning, and the other gave a violent crack when 294 pounds had been poured in. A trial had been made before, and the loads were 341 and 482; but the models having been made by a less accurate hand, it was not thought a fair specimen of the strength which might be given to a carcass floor.

The only argument of weight which we can recollect in favour of the compound construction of roofs is, that the plain method would prodigiously increase the quantity of work, would admit nothing but long timber, which would greatly add to the expense, and would make the garrets a mere thicket of planks. We admit this in its full force;

Roof.
Of the
roofs put
on round
buildings.

but we continue to be of the opinion that plain roofs are greatly superior in point of strength, and therefore should be adopted in cases where the main difficulty is to insure this necessary circumstance.

It would appear very neglectful to omit an account of the roofs put on round buildings, such as domes, cupolas, and the like. They appear to be the most difficult tasks in the carpenter's art. But the difficulty lies entirely in the mode of framing, or what the French call the *trait de charpenterie*. The view which we are taking of the subject, as a part of mechanical science, has little connection with this. It is plain, that whatever form of a truss is excellent in a square building, must be equally so as one of the frames of a round one; and the only difficulty is how to manage their mutual intersections at the top. Some of them must be discontinued before they reach that length, and common sense will teach us to cut them short alternately, and always leave as many, that they may stand equally thick as at their first springing from the base of the dome. Thus the length of the purlins, which reach from truss to truss, will never be too great.

The truth is, that a round building which gathers in at top, like a glass-house, a potter's kiln, or a spire steeple, instead of being the most difficult to erect with stability, is of all others the easiest. Nothing can show this more forcibly than daily practice, where they are run up without centres and without scaffoldings; and it requires gross blunders indeed in the choice of their outline to put them in much danger of falling from a want of equilibrium. In like manner, a dome of carpentry can hardly fall, give it what shape or what construction you will. It *cannot* fall, unless some part of it flies out at the bottom. An iron hoop round it, or straps at the joinings of the trusses and purlins, which make an equivalent to a hoop, will effectually secure it. And as beauty requires that a dome shall spring almost perpendicularly from the wall, it is evident that there is hardly any thrust to force out the walls. The only part where this is to be guarded against is where the tangent is inclined about forty or fifty degrees to the horizon. Here it will be proper to make a course of firm horizontal joinings.

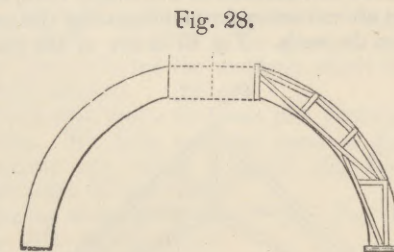
We doubt not but that domes of carpentry will now be raised of great extent. The Halle du Bled at Paris, of two hundred feet in diameter, was the invention of an intelligent carpenter, the Sieur Moulineau. He was not by any means a man of science, but had much more mechanical knowledge than artisans usually have, and was convinced that a very thin shell of timber might not only be so shaped as to be nearly in equilibrio, but that, if hooped or firmly connected horizontally, it would have all the stiffness that was necessary; and he presented his project to the magistracy of Paris. The grandeur of it pleased them, but they doubted of its possibility. Being a great public work, they prevailed on the Academy of Sciences to consider it. The members who were competent judges were instantly struck with the justness of M. Moulineau's principles, and astonished that a thing so plain had not been long familiar to every house-carpenter. It quickly became an universal topic of conversation, dispute, and cabal, in the polite circles of Paris. But the academy having given a very favourable report of their opinion, the project was immediately carried into execution, and soon completed; and now stands as one of the great exhibitions of Paris.

The construction of this dome is the simplest thing that can be imagined. The circular ribs which compose it consist of planks nine feet long, thirteen inches broad, and three inches thick; and each rib consists of three of these planks bolted together in such a manner that two points meet. A rib is begun, for instance, with a plank of three feet long standing between one of six feet and another of nine; and this is continued to the head of it. No machinery was necessary for carrying up such small pieces, and the

whole went up like a piece of bricklayer's work. At various distances these ribs were connected horizontally by purlins and iron straps, which made so many hoops to the whole. When the work had reached such a height that the distance of the ribs was two thirds of the original distance, every third rib was discontinued, and the space was left open and glazed. When carried so much higher that the distance of the ribs is one third of the original distance, every second rib, now consisting of two ribs very near each other, is in like manner discontinued, and the void is glazed. A little above this the heads of the ribs are framed into a circular ring of timber, which forms a wide opening in the middle; over which is a glazed canopy or umbrella, with an opening between it and the dome for allowing the heated air to get out. All who have seen this dome say that it is the most beautiful and magnificent object they have ever beheld.

The only difficulty which occurs in the construction of wooden domes is when they are unequally loaded, by carrying a heavy lantern or cupola in the middle. In such a case, if the dome were a mere shell, it would be crushed in at the top, or the action of the wind on the lantern might tear it out of its place. Such a dome must therefore consist of trussed frames. Mr Price has given a very good one in his plate OP, though much stronger in the trusses than there was any occasion for. This causes a great loss of room, and throws the lights of the lantern too far up. It is evidently copied from Sir Christopher Wren's dome of St Paul's Church in London; a model of propriety in its particular situation, but by no means a general model of a wooden dome. It rests on the brick cone within it; and Sir Christopher has very ingeniously made use of it for stiffening this cone, as any intelligent person will perceive by attending to its construction.

Fig. 28 presents a dome executed in the Register Office in Edinburgh by James and Robert Adam, and is very



agreeable to mechanical principles. The span is fifty feet clear, and the thickness is only four and a half feet. (J. R.)

Causes of Failure in Roofs.

It has been shown in the preceding treatise that the simplest form of a roof is that given in fig. 12. Let us now inquire the method in which such a roof would fail, as deduced from the former treatise, and given there in scientific language. Let the dotted lines (fig. 29) show the original line of roof. If an undue weight be put on this, it has been shown the point B will descend, and A and C will spread or open to the right and left, just as pressing on the top of a pair of compasses makes them open. The rafters must then either slip off the top of the walls, or, if properly secured to them, which we ought to suppose, must push the walls over; or if they be very strong, the rafters must bend or sag in the middle at D and E (fig. 30). Now, to prevent the walls being thrust over, an easy remedy, as our author shows, is fig. 14, to tie them together with either a piece of string or a rod of timber, or, as Mr Robert Stephenson (art. IRON BRIDGES, fig. 13) shows, by a chain. But whether the walls be kept upright by this tie or by their own size and strength, still the same bending

Roof.

at D and E will take place if the timbers be not strong enough to bear the weight. Now, in small roofs we have a ready

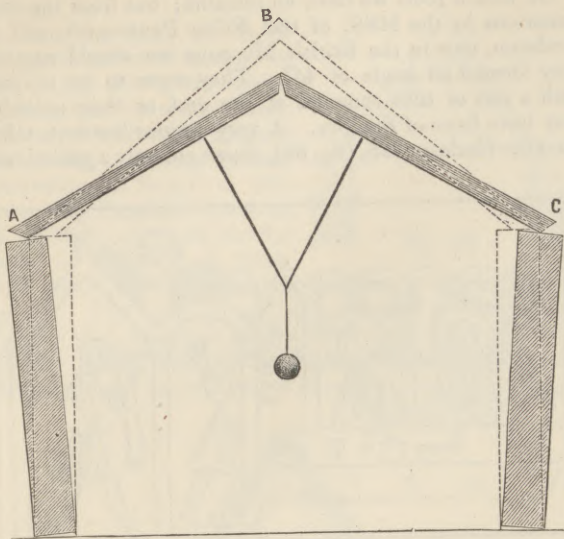


Fig. 29.

remedy; we put a collar beam DE (fig. 31) between them, which has a double effect,—it not only keeps these points

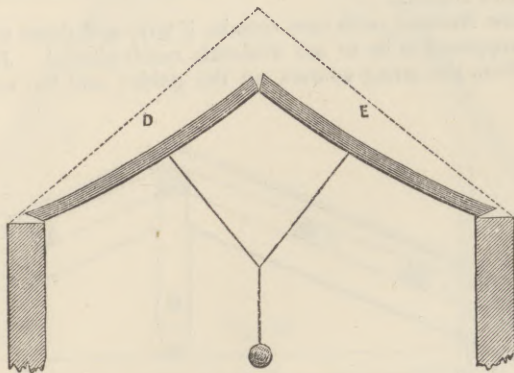


Fig. 30.

from coming towards each other, which they must do if the rafters bend, but it also assists very much to prevent the rafters AB, BC, going out, as is shown in fig. 29. If, however, the roof be too large and the timbers too weak, or, which is the same thing, the load be too heavy, the roof, though it cannot bend (fig. 31) between BD, BE, will yield be-

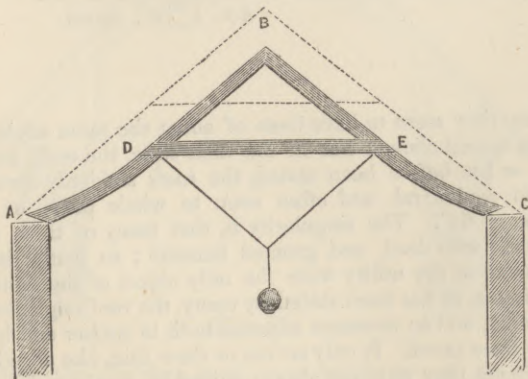


Fig. 31.

tween DA, EC; and either sag, as we have before said, or push out the walls if they are too weak. This is the great

cause of failure in the early mediæval roofs (see figs. 35, 38), where they are all weak between A and B. However trusses may be braced together at the apex of the triangle, it is clear nothing except excessive thickness of timber will prevent one of these results. We will now go back to fig. 14, and for the present lay aside the consideration of a collar-beam. We are here liable to fall into this contingency,—the beam AC must have considerable weight if strong enough to act as an efficient tie. Now wood is always weakest in horizontal position; it is therefore liable to sink or sag in the middle, and the effect of this will be to bring the points AC (fig. 32) closer together, and to

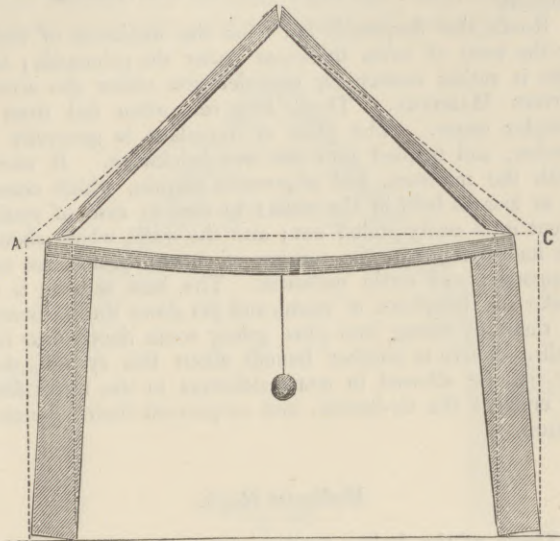


Fig. 32.

pull the walls in. It would interfere with our space to prop this beam up from below; but some ingenious carpenter at some time has thought of hanging it up to the ridge by another string or tie, BD (fig. 15), usually called a king-post, though it does not act as a post to prop up, as is shown above, but as a string or tie, to hang up the tie-beam and keep it straight. We will now suppose the rafters AB, BC (fig. 15) too weak for their weight. We must bear in mind, in all questions of carpentry, there are two difficulties to contend with. First, timber itself is limited in size; and next, if it be made too strong for its length, its own weight will cause it to bend. So we are between two difficulties. But we have several remedies: either we may resort to a collar-beam in addition to a tie-beam, as in fig. 31; or, what is better, we may employ two struts, DE, DF (fig. 17). An inspection of this diagram will show why, although a chain or rod would answer every purpose at BD, we prefer a post of wood. The struts FD, ED are supports and not ties, and require a good butment, which is best got by framing them into the king-post, as shown at D (fig. 17), and also in the various diagrams of the article CARPENTRY. Still referring to the same diagram (fig. 17), we will suppose the span still further increased; then the tie-beam may be too weak, and may sag between AD and DC. This must be remedied by again suspending the weak parts, which may be done by two rods or posts BE, CF (fig. 18), which are generally called queen-posts, as BD (figs. 15 and 17) is called a king. This system divides the tie into three parts instead of two, or if a king-post also be used, into four parts, each of which is suspended. Fig. 18, however, shows what is generally called a queen-post roof, and is framed with a collar BC, in the points of which the purlins are usually seated, and the common rafters run up, as AG, DG, unless, as in the figure, it is intended to make the roof flat between B and C. In the same manner, an inspection of

Roof. the diagram following will show (as well as those in CARPENTRY), and *infra* fig. 51, how the principle of using queen-posts and struts may be multiplied almost to any extent.

Roofs sometimes fail in consequence of the trusses being placed too far apart; the purlins are then unable to sustain the weight, and the surface undulates between truss and truss, bringing down the ridge, and producing the most unpleasant and sometimes pernicious effects. The mediæval architects braced the purlins upon the principles as shown in fig. 40. A better plan, however, has been devised at the Lambeth Baths, which will be hereafter described.

Roofs also frequently fail from the weakness of walls, or the want of extra thickness under the principals; but this is rather matter for consideration under the article STONE MASONRY. They, however, often fail from a simpler cause. The plate or template is generally of timber, and bedded into the wet brickwork. It swells with the moisture, and afterwards shrinks, which causes it to lose its hold in the walls; so that in case of settlement it is easily pulled out; and the walls, which should be kept upright by the tension of the tie-beams, are unsupported, and settle outwards. The best remedy is to make the templates of stone, and pin down the tie-beams to them by strong iron pins, going some depth into the walls. There is another benefit about this system, that air may be allowed to come sideways to the rafter feet, or ends of the tie-beams, and so prevent their becoming rotten.

Mediæval Roofs.

Those of the Italian basilicas, erected before the tenth century, are framed much according to the present methods: of the same pitch, and covered with tiles like those which have been in use from the Roman period down to the pre-

no doubt it was hoisted to its place. It is of one huge single block, all chiselled out of the solid.

Of Saxon roofs we have no remains; but from the illuminations in the MSS. of the Ælfric Pentateuch, and to Cædmon, now in the British Museum, we should suppose they formed an angle of 45°. They seem to be covered with a sort of tiles rounded at the end, or they probably may have been of shingles. A very curious instance, taken from the Harleian MS. (fig. 34), shows not only a gabled roof,

Roof.

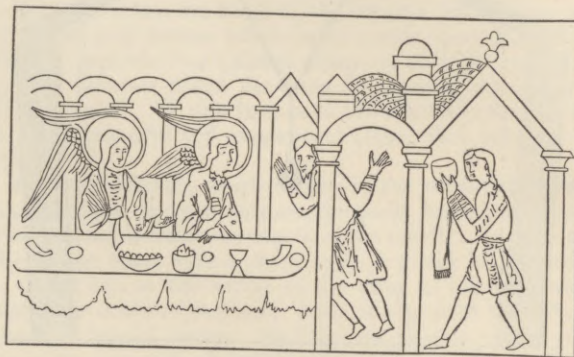


Fig. 34.

but also a sort of dome. The subject is Lot entertaining the two angels.

Few Norman roofs now remain, if any, and those which are supposed to be so are evidently much altered. Judging from the string courses up the gables, and the water-

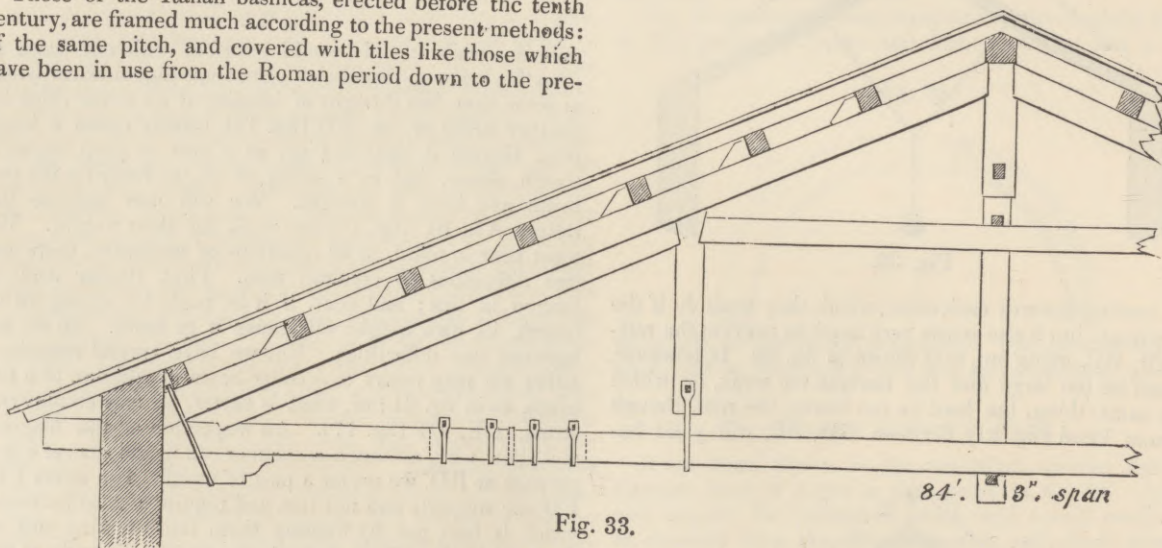


Fig. 33.

sent day. Fig. 33 shows the roof of San Paolo Fuori le Mura, lately consumed by fire at Rome. It is upwards of 84 feet in span, and consists of a king-post and two queens, without struts, but with a collar. The principal rafter is doubled from the head of the queen to the plate, which adds immensely to its strength. The kings and queens are not framed into the tie-beam, but the latter is hung up to them by iron straps. This perhaps is the earliest instance known where iron has formed one of the chief features in the construction of a roof, and this is said to have stood upwards of 1400 years. A curious instance of a roof is found in the tomb of Theodosius at Ravenna, supposed to have been erected shortly after the year 526; this is composed of a circular dome of white marble 36 feet in diameter, surrounded by a number of ears or lugs, by which

tables, they seem to have been of about the same angle as those named above; but in the next style, the early English, as has before been stated, the roofs suddenly sprung up to equilateral, and often even to whole pitch, or an angle of 64°. The singularity is, that many of them are covered with lead, and groined beneath; so that if bare economy or dry utility were the only object of the Gothic architects, as has been stated by many, the roof might have been flat, and an immense expense both in timber and lead have been saved. It only serves to show that, like all other architects, they were not always guided by considerations of dry utility alone, but had high, bold, artistic, and æsthetic feeling besides. It is not improbable that, as the pointed arch and slender shaft are evidently of Saracenic origin, and their use no doubt brought to Europe by the Crusaders,

Roof. so the aspiring roofs of the those of the early English period.

Year by year, as styles changed, the roofs became of less pitch, till in the latter styles, as has been stated, many, if covered with lead, became almost flat. A very curious illustration is found in the tower of St Regulus' church at St Andrews, on which are the marks of the lines of three roofs which have covered the building at three different periods. The lower is probably the line of the original Norman roof, the upper that of the early English period, and the middle that of the decorated. Much of course depended at all periods on the covering, tiles, for instance,

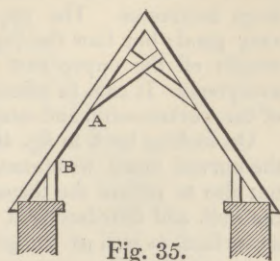


Fig. 35.

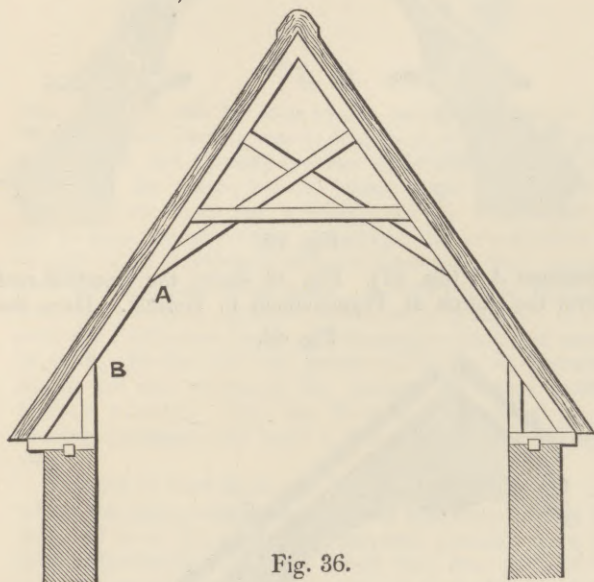


Fig. 36.

necessitating a sharper pitch than slates. No doubt the Norman roofs, like those of the Roman basilicas, from which they were derived, had level tie-beams. It is difficult to

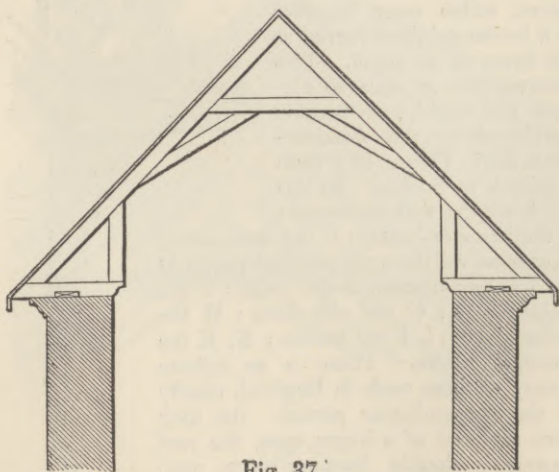


Fig. 37.

conceive how else they could have stood; but in the succeeding styles, when internal height became an object, these were often omitted, and as the thrust of the roof was enormously increased thereby, it was necessary to build large projecting buttresses to keep up the walls, instead of

using those of the Norman period, which are in fact mere shallow pilasters. The truth is, the buttresses, which were originally intended simply to stiffen the walls, were afterwards enlarged to that extent that they became struts to it (A, A, fig. 42), especially the flying buttresses, which continued the line of the principal rafters down to the ground, making the earth, as it were, the tie-beam. To such a degree was this system carried, that in many continental churches, and in some of our own, of which Henry VII.'s chapel is a known instance, there is literally no support derived from the walls, the windows filling the whole space between buttress and buttress, which last, from their vast mass and projection, sustain both roof and groining.

Roof.

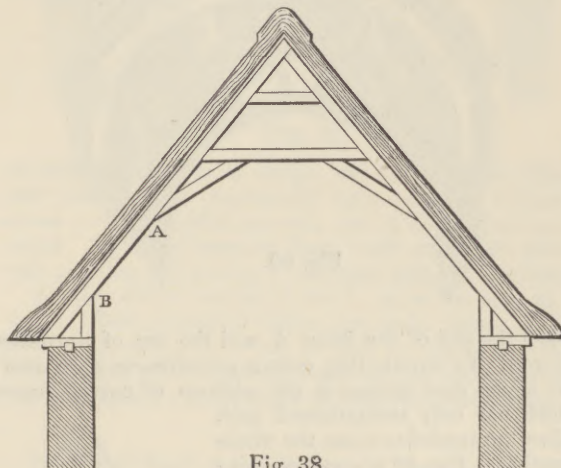


Fig. 38.

Mediaeval roofs may be considered,—1st, As those in which every pair of common rafters is framed together, and forms of itself a separate truss, or, as it was called in those days, a "couple;" 2d, As those with common rafters and trusses framed with collar-beams; 3d, As those with hammer-beams; 4th, As those with tie-beams.

But before going into this subject, we must warn our readers who are accustomed to roofs framed of fir, that the mediæval timbers are almost invariably of oak or some hard wood; so the strength or the scantling of the timber must not be judged by our modern notions. That

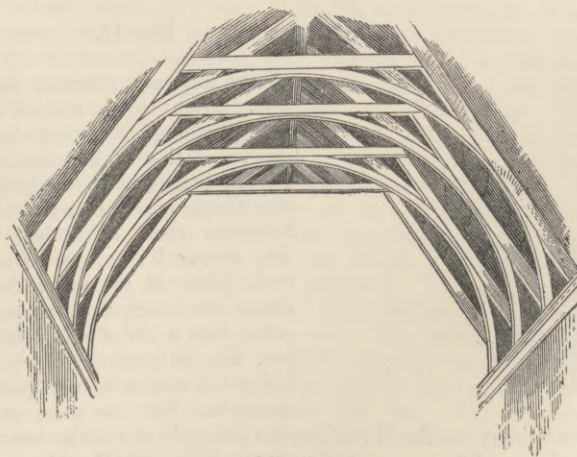


Fig. 39.

of oak to fir is assumed by Professor Robison to be as three to two. An inch of oak may be safely subjected to a strain of three tons for every square inch, while fir will bear but two.

The most common form of the first is a simple St An

Roof.

drew's cross, as at fig. 35; a cross and collar, as fig. 36; a collar and struts, as fig. 37; or two collars and struts, as fig. 38. All these are taken from examples of the thirteenth and fourteenth centuries. As has been before explained, these roofs are liable to spread, as there is nothing to tie the plates together, and they are all weak at the point be-

as to show as one long, pointed vault below. The thrust, which is immense, is resisted by walls 6 feet thick, with huge buttresses. The upper part of the construction is very good; but how the part between AB can sustain the weight of the upper part without bending has puzzled everybody. It can, in effect, be only due to the excellence of the workmanship and strength of the materials.

On looking back to fig. 40, it will be seen not only that the curved brace was intended to strengthen the rafters, but also to relieve the thrust by conveying it lower down the wall, and distributing it over a much larger portion of its surface, as well as bringing it more in a line with the

Roof.

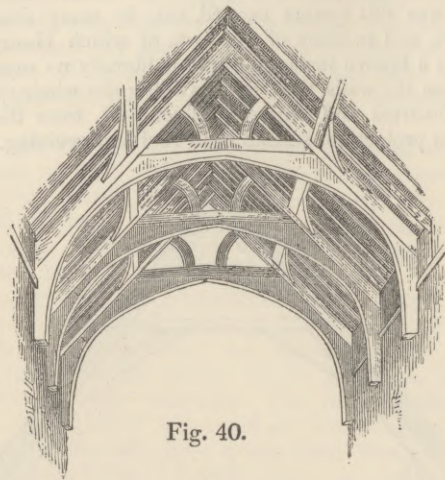


Fig. 40.

tween the end of the brace A, and the top of the ashler-piece B. To obviate this, various contrivances were used; one of the most elegant is the addition of curved braces, which not only strengthened each rafter, but tended to brace the whole together. Fig. 39 is a common example in England, particularly in Somersetshire.

As those roofs with simple couples could not be erected of any great span, they were commonly framed with trusses, purlins, and common rafters; and then the defect of these open roofs became more felt, as each truss had not only to bear its own load, but that

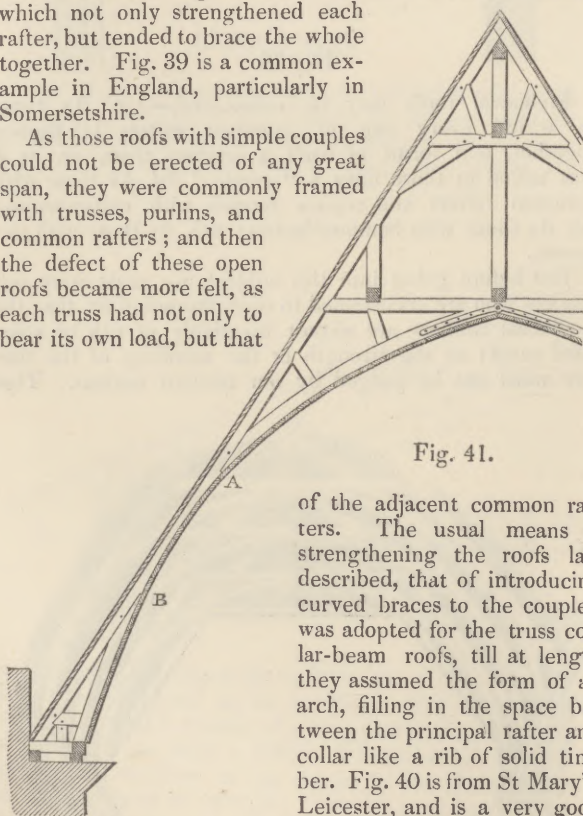


Fig. 41.

of the adjacent common rafters. The usual means of strengthening the roofs last described, that of introducing curved braces to the couples, was adopted for the truss collar-beam roofs, till at length they assumed the form of an arch, filling in the space between the principal rafter and collar like a rib of solid timber. Fig. 40 is from St Mary's, Leicester, and is a very good example. But the most ex-

traordinary mediæval roof, on the principle of a collar-beam and curved braces, is that over the Salle des Pas Perdus at Rouen, which was built in 1493, and is of inconceivable lightness and boldness (see fig. 41). It is 54 feet 5 inches English in span, and covers a hall 155 feet long, the trusses being not quite 4 feet apart. It is close-boarded inside, so

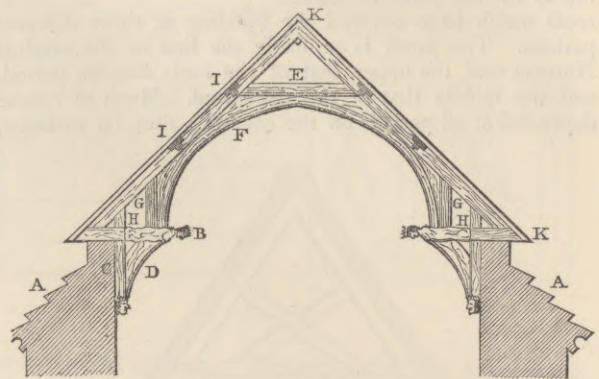
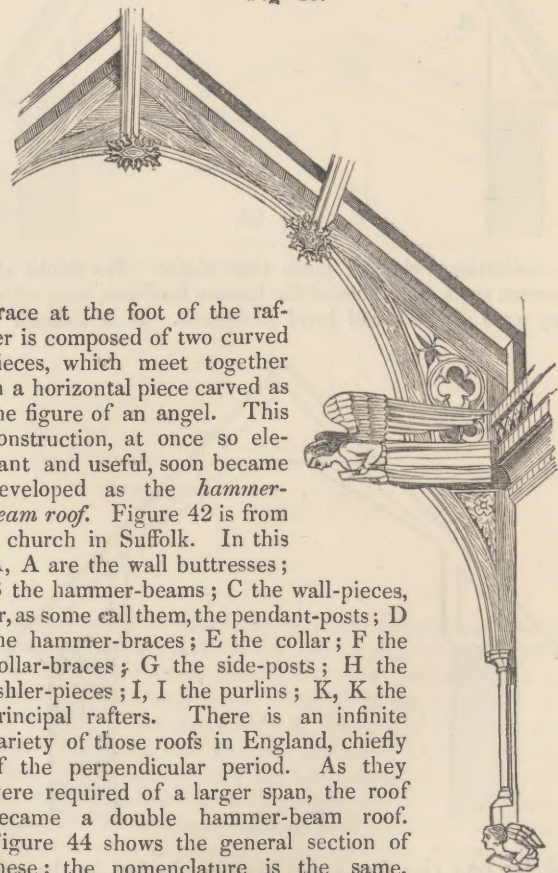


Fig. 42.

buttress AA (fig. 42). Fig. 43 shows the beautiful roof over the church at Wymondham in Norfolk. Here the

Fig. 43.



brace at the foot of the rafter is composed of two curved pieces, which meet together in a horizontal piece carved as the figure of an angel. This construction, at once so elegant and useful, soon became developed as the *hammer-beam roof*. Figure 42 is from a church in Suffolk. In this A, A are the wall buttresses; B the hammer-beams; C the wall-pieces, or, as some call them, the pendant-posts; D the hammer-braces; E the collar; F the collar-braces; G the side-posts; H the ashler-pieces; I, I the purlins; K, K the principal rafters. There is an infinite variety of those roofs in England, chiefly of the perpendicular period. As they were required of a larger span, the roof became a double hammer-beam roof. Figure 44 shows the general section of these: the nomenclature is the same, with the addition that A is the upper hammer-beam, B the upper hammer-brace, and C the upper side-post. Of these,

¹ Most Gothic curved braces are cut out of boughs of large trees bent by nature.

Roof. the most celebrated are those over Westminster Hall, Hampton Court, the palace at Eltham, and very many of our col-

folk. But it was reserved for the perpendicular period to design the most elegant roofs with level tie-beams. These

Roof.

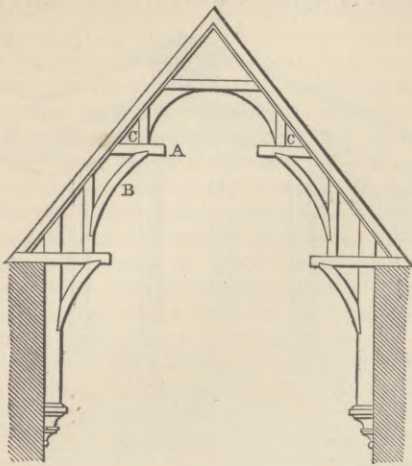


Fig. 44.

lege halls. It will be seen by the section, the use of the hammer-beam framing was to deepen, as it were, the principal rafter, and thereby prevent its bending between the collar and the plate; besides which it got better hold of the wall; but there was nothing to tie the walls together, nor to keep the truss from spreading; the consequence is, in spite of the buttresses, many of these roofs have opened, and the walls have gone over. A very curious roof, and one which is much stronger in point of construction, is that over the Parliament House at Edinburgh, which was begun in 1632. In this roof the pieces which act as hammer-beams are not horizontal but incline, or rather radiate towards a centre; they are filled in with arched pieces bearing pendants, and have a very original and pleasing effect.

The use of *level tie-beams* in roofs is of two kinds: one where the rafters are in couples, and they seem merely introduced to tie the plates together, and probably were inserted afterwards; the other where they form parts of the trusses themselves. In large roofs, we have already an example in fig. 35. In smaller roofs of the fourteenth century, fig. 45 is a very common and pleasing example. From

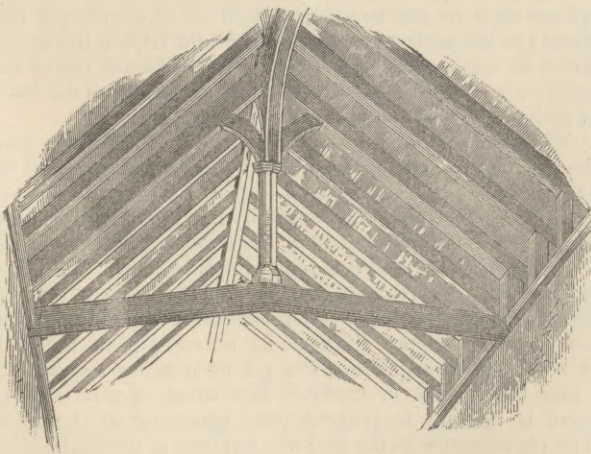


Fig. 45.

the tie-beam springs a king-post, from which branch four curved struts, one pair serving to support the principal rafters, the other pair doing the same for the ridge. This is called a *tree-post roof*. Figure 46 shows a very curious combination of a level tie-beam and curved struts. It is from the church of St Mary the Virgin at Pulham in Nor-

VOL. XIX.

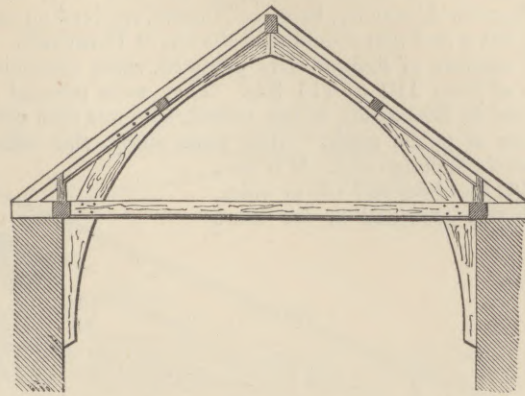


Fig. 46.

are of infinite variety in design, and are generally filled in with tracery, and ornamented with carving. Figure 47 shows a very beautiful example, that of St Martin's at Leicester. In many instances these roofs are richly adorned with painting and gilding of the most brilliant description.

Another sort of mediæval roof is yet to be noticed, and that is where, instead of timber principals, arches of stone are thrown across from wall to wall, and carry the purlins and common rafters: among these may be named the great hall at Mayfield; but they are of very rare occurrence.

Account of Roofs of Large Span (à grand portées) and some modern Roofs.

For many years the roofs of the basilicas at Rome were the largest spans that had been covered by the carpenter's art; but about three-quarters of a century ago there was a great desire to roof over much larger spaces without internal supports, for the purpose of military and other riding-schools. The vast roof over the *Salle d'Exercice* at Darmstadt, erected by M. Schubknecht in 1771, is 228 feet long and 154 feet in the clear of the walls, or 2 feet more in span than that roof lately erected over the railway station at Lime Street, Liverpool, and was the largest roof in the world till that we are about shortly to describe was erected over the New Street station at Birmingham. It appears to have stood very well, although its construction is certainly not on the best principles. The thickening out of the tie-beam by packing beam after beam, one on the other, must have caused considerable shrinkage; and the struts would be much better if placed the reverse way. This roof attracted considerable attention; and about ten years after its erection the Emperor of Russia, Paul I., happened to travel through Darmstadt, and visited the building. He expressed great astonishment at its vast proportions, and determined on his return that one should be erected at Moscow which should entirely eclipse it in magnitude. Accordingly the design was prepared. This gigantic roof was intended to have covered a hall 852 feet in length, by 308 feet in width from out to out. The walls were double, and formed a system of arcaded galleries round the building about 25 feet in depth; so that the span of the roof in the clear was reduced to about 230 feet. The main support of this roof was the curved rib of three thicknesses of timber, notched on to each other *en cremaillère*. Krafft says it was executed, and was used in 1790 for the exercise of the Cossack cavalry and infantry. But M. de Bétancourt, of whom we shall speak presently, affirms that it never was finished. The dotted lines show a method proposed by Rondelet and Krafft to strengthen this roof and make it effective. The chief defect, however, seems to be, that the

3 D

Roof.

principal rafters are too weak, and receive no direct support from the cross struts. The troubles in Russia seem to have caused the matter to drop, till the year 1817, when the Emperor Alexander, being at Moscow, resolved on carrying out a roof that should rival the one at Darmstadt. A great number of designs were prepared, none exceeding spans of from 110 to 115 feet. They were referred to General de Bétancourt, before named, who was then chief director of public roads. After some study, this officer prepared the design of it. It is for a hall 501 feet long and 150 in width, which was executed in the short

outside, to prevent their shifting apart, and are of vast strength, and particularly adapted to rooms where the ceiling is intended to represent a large arch or barrel vault, or

Roof.

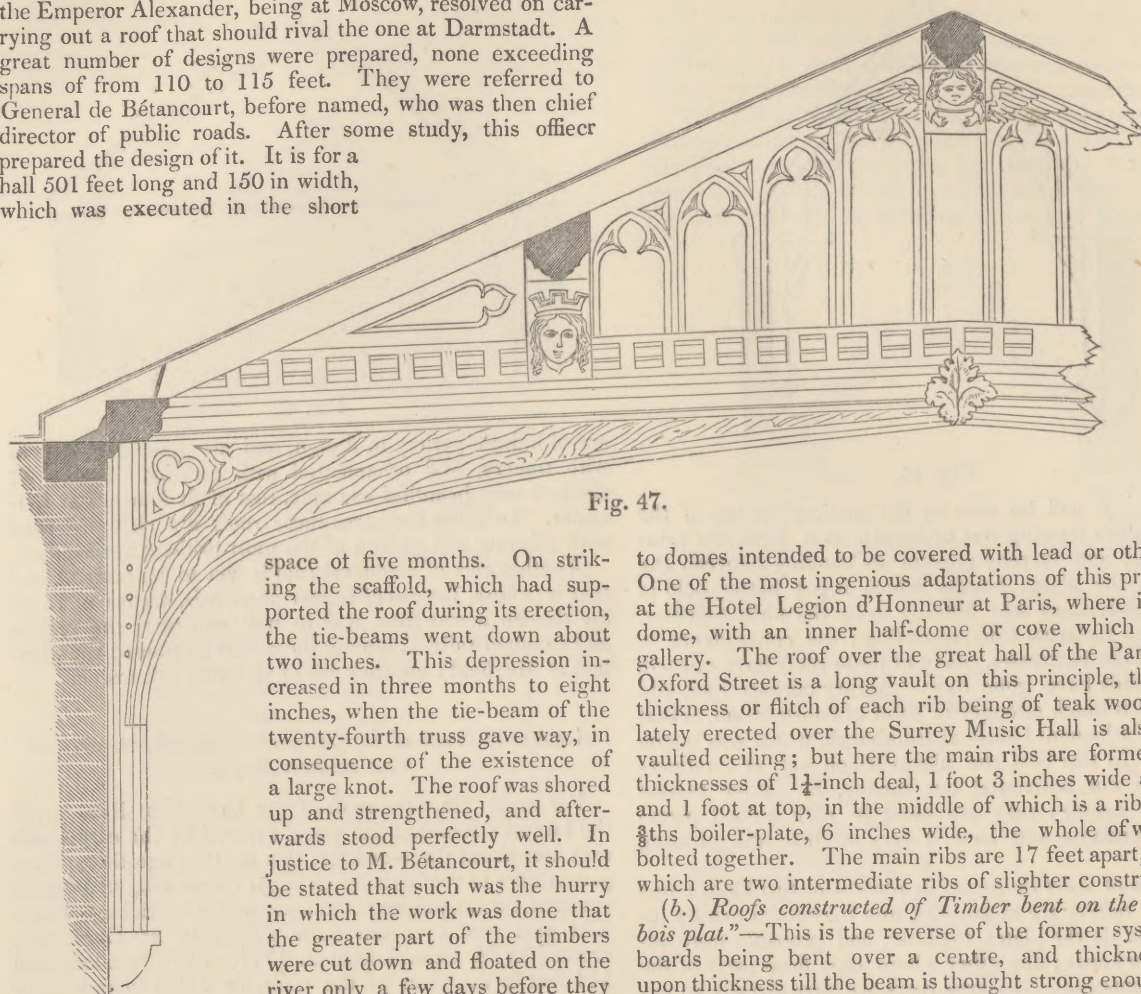


Fig. 47.

space of five months. On striking the scaffold, which had supported the roof during its erection, the tie-beams went down about two inches. This depression increased in three months to eight inches, when the tie-beam of the twenty-fourth truss gave way, in consequence of the existence of a large knot. The roof was shored up and strengthened, and afterwards stood perfectly well. In justice to M. Bétancourt, it should be stated that such was the hurry in which the work was done that the greater part of the timbers were cut down and floated on the river only a few days before they

were framed, which was done by 400 carpenters, or rather woodmen, who hewed the wood with axes—they being ignorant of the use of any other tool. The writer of this article has designed a roof for the first-class swimming bath in the Westminster Road. This is on entirely a new principle, being, in fact, the adaptation of the trellis or lattice principle to a roof. The trusses are about 18 feet apart, or nearly double the usual distance. The purlins, however, are prevented from bending by a series of light longitudinal trusses, likewise on the lattice principle. The roof is, in truth, trussed fore and aft, so that no part can move. It is of extraordinary lightness and cheapness, the trusses being so few and the timbers so slender. Its deflection, after receiving the load of slates, skylights, &c., was scarcely perceptible.

(a.) *Roofs Trussed with Curved Timbers.*—These are (a) with timbers side by side, flatwise, the ends breaking joint, or, as the system is called by French writers, “en bois plat.” It is the invention of Philibert de Lorme, a French architect, who published it in 1561, in a work called *Traité sur la Manière de Bien Bâtir, et à Petits Frais*. In this system the rafters are in effect curved ribs, of several thicknesses of timber, nailed side by side, care being taken that the ends do not come in the same place; in other words, that they break joint. The rib then resembles a beam cut out of a crooked limb of a tree, and owes its strength simply to cohesion of the particles. These beams are often used in pairs joined together by cross pieces, which are keyed on the

to domes intended to be covered with lead or other metal. One of the most ingenious adaptations of this principle is at the Hotel Legion d’Honneur at Paris, where it forms a dome, with an inner half-dome or cove which carries a gallery. The roof over the great hall of the Pantheon in Oxford Street is a long vault on this principle, the middle thickness or flitch of each rib being of teak wood. That lately erected over the Surrey Music Hall is also a long vaulted ceiling; but here the main ribs are formed of four thicknesses of 1½-inch deal, 1 foot 3 inches wide at bottom and 1 foot at top, in the middle of which is a rib of rolled ¾ths boiler-plate, 6 inches wide, the whole of which are bolted together. The main ribs are 17 feet apart, between which are two intermediate ribs of slighter construction.

(b.) *Roofs constructed of Timber bent on the flat “en bois plat.”*—This is the reverse of the former system; the boards being bent over a centre, and thickness added upon thickness till the beam is thought strong enough, when the whole is bolted together, care being taken, as in the former system, that the ends of the boards break joint. The difficulty is, to prevent the natural tendency of the wood to spring back to the straight, as well as to counteract the weight of the roof covering, which would cripple the curve either at the haunch or crown, as the pressure might be exercised. In this respect something analogous to the laws of arches will apply to explain the result.

The roof over the great riding-house at Libourne was designed by the celebrated Colonel Emy, and executed in 1826. Every rib is composed of five thicknesses of deal, each nearly 2 inches thick, about 6 inches wide and 40 feet long. The rib is semicircular, the springing about 24 feet from the ground, and the span about 70 feet. The ribs are not only bolted together, but clipped with a sort of stirrup-iron and bolts. From these ribs a number of struts radiate to and support the principal rafters, purlins, &c., and at the same time prevent the rib from being crippled at either the haunch or crown. The worst of this roof is, there is nothing to prevent their spreading at the foot. The consequence is, the wall was not only of unusual thickness (nearly 5 feet), but large buttresses were added to counteract the thrust. The roofs over the Great Northern Railway station at London are of about the same span, and are of similar construction, except that the ribs are of 1½ deal in 16 thicknesses, and the spandrels are filled in with ornamental cast-iron work in form of circles, guilloches, &c., which have a very pretty effect. Like the Libourne

Roof. roof, the thrust was compensated by massive brick-work.

To prevent this last defect, as well as to stiffen the rib at the springing, M. Émy designed the roof for the cavalry school at Saumur. This is intended for a span of upwards of 130 feet. Each truss is composed of two sets of ribs, similar to those before described, kept apart at the foot by a series of trellis, and joining together as one rib about half-way up the curve. Instead of one thick wall, it was intended to carry the ends of the trusses partly on an outer wall, which has strong double pilasters, and partly on one large square pilaster, intended to stand under the inner part of the end of the truss, as shown in the figure given in his work; so that, though the space is available for spectators, and little room is lost, the truss itself has a level bearing 18 feet in width from whence to spring.

But of all roofs ever projected, either in wood or iron, the most gigantic, the most original, and the boldest, is one for another riding-house, also by Colonel Émy. This has a span of 328 feet, or at least half as much again as the largest existing roof in the world,—that at New Street, Birmingham. It is intended to be composed of two ribs similar to those before described, with another intermediate rib carried up about two-thirds of the span, and braced, as shown in the figure. The building was to have been surrounded by an ordinary wall, at right angles to which, under the foot of every truss, was a return wall 50 feet long and 4 feet thick, perforated below with arches to form passages, and to serve for spectators, as in the former instance.

Iron Roofs.

Like most important discoveries, the use of iron in roofs has grown up from the smallest beginnings to the largest and most extraordinary results. From the simple substitution of an iron rod for a king or queen post in a wooden truss, we have attained the art of covering spaces so vast as to throw all other modes of construction into insignificance, so light as to appear the work of fairies rather than of human beings, and yet so strong as to bear their weight with ease, and to resist unshaken and unhurt the action of the roughest wind. The theory of these roofs, however, is just the same as those of timber, allowing only for the difference of weight and power of resistance of the materials. The tie keeps the walls together, the king and queen rods prevent the tie from sagging: all these are in a state of tension; while the struts prevent the rafters from bending, and are in a state of compression. Fig. 48

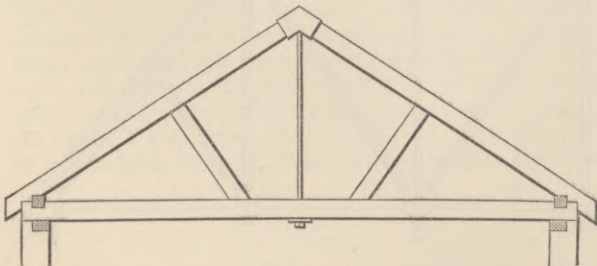


Fig. 48.

shows the earliest use of iron as the king-post of roofs suited to those of from about 20 to 30 feet span. In Plate CLXIII., CARPENTRY, figs. 38, 40, is shown the method of employing iron as king or queen posts of still larger dimensions. Fig. 49 shows a very convenient method of using iron rods as king-post and tie-beam in a collar-beam roof where height or head-room is of consequence; but this was shortly after superseded by the form fig. 50, the adjustment of the screws, &c., at A being more convenient than at

fig. 49. With large spans, however, the wooden tie-beam continued in use for a long time. One of the best in-

Roof.

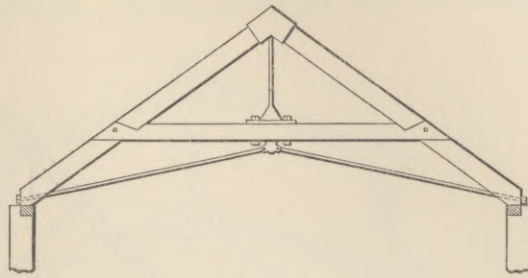


Fig. 49.

stances for the time it was executed may be found in the roof over the passenger-station at London Bridge of the

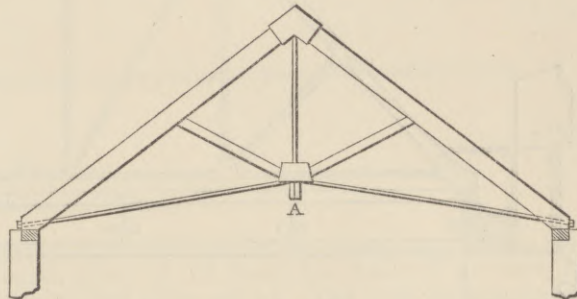


Fig. 50.

Croydon Railway. This roof, which is about 54 feet in span, is constructed with an iron king-post and ten sets of iron queens, with wooden struts. (See fig. 51.) It is, how-

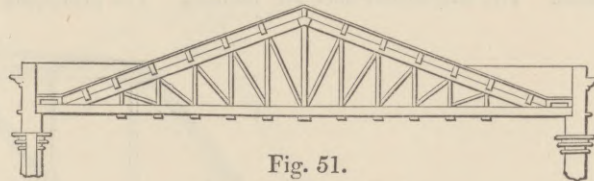


Fig. 51.

Croydon Railway Roof.

ever, somewhat twisted on the face by the winding of the timber. The great fire at the Houses of Parliament, and subsequently at the Royal Exchange, drew attention strongly to the importance of fire-proof roofs; and the first of these structures of any size or importance was designed by Sir Charles Barry for the new palace at Westminster. Fig. 52 shows the section of that over the committee-rooms in the front next to the river. This is entirely of wrought iron, excepting the shoes, by which the ends of the various pieces are connected. The iron is flat bar, simply cut to lengths, and punched to receive the bolts that pass through them and the shoes. They vary in width from 2 to 3½ inches, and in thickness from ¾ths to 1½ths. These light principals are not quite 3 feet apart, and are covered with a species of galvanized iron tile reaching from one to another, hung on a sort of connecting-rod without purlins. It is stated that the sulphurous acid in the smoke of London is already causing serious oxidation, and several methods have already been tried to prevent premature decay. This is to be regretted, as the material is very picturesque in character, as well as light, and not expensive. Some fault at the time was found with the construction of the shoes or connecting-plates, but they stand perfectly well, and there has been no failure. The suspension-rods at each side of the king are a peculiar feature; they not

Roof.

only keep up the tie, but bind the roof together at each intersection.

Fig. 53 shows the roof over the House of Lords. This is

of much larger span, being 45 feet, while the former is 28 feet 3 inches. It is of exactly similar construction, except that the struts, wall-plates, purlins, and bearers are

Roof.

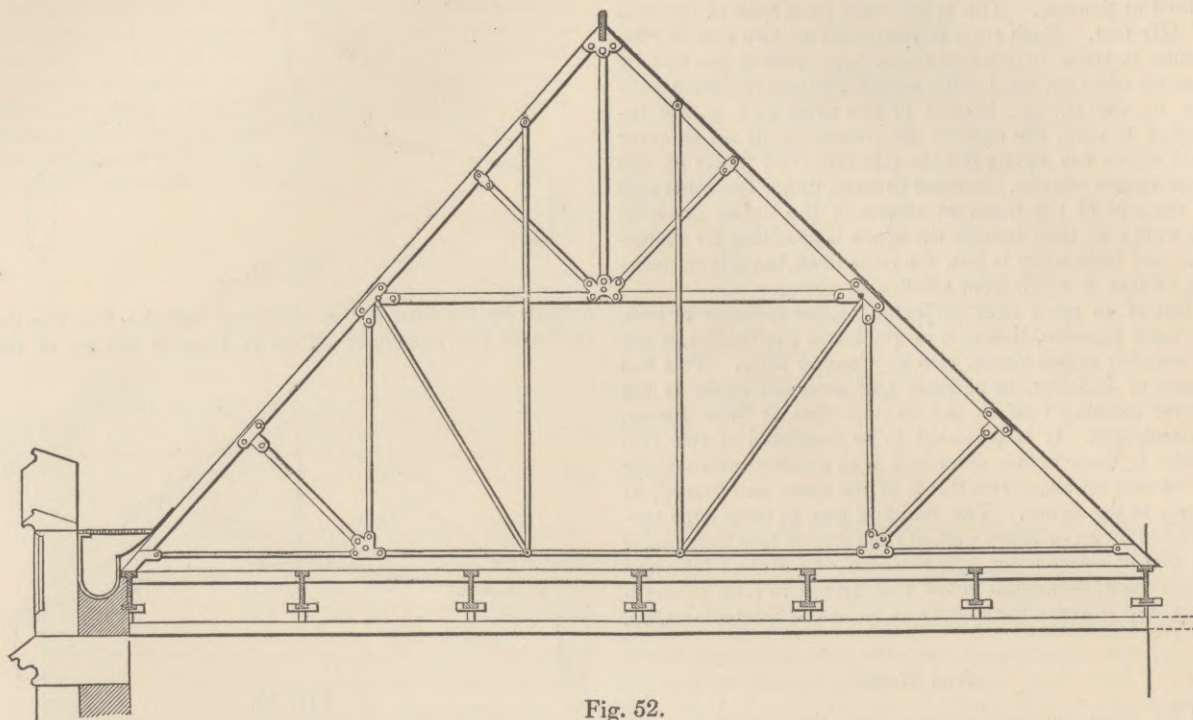


Fig. 52.

New Houses of Parliament—Roof over North and South Curtains.

of cast-iron, the section of the struts being the form of a cross. The suspension-bars are double. The principals

are 7 feet 6 inches apart—more than twice as much as the other roof, which of course necessitates the use of purlins.

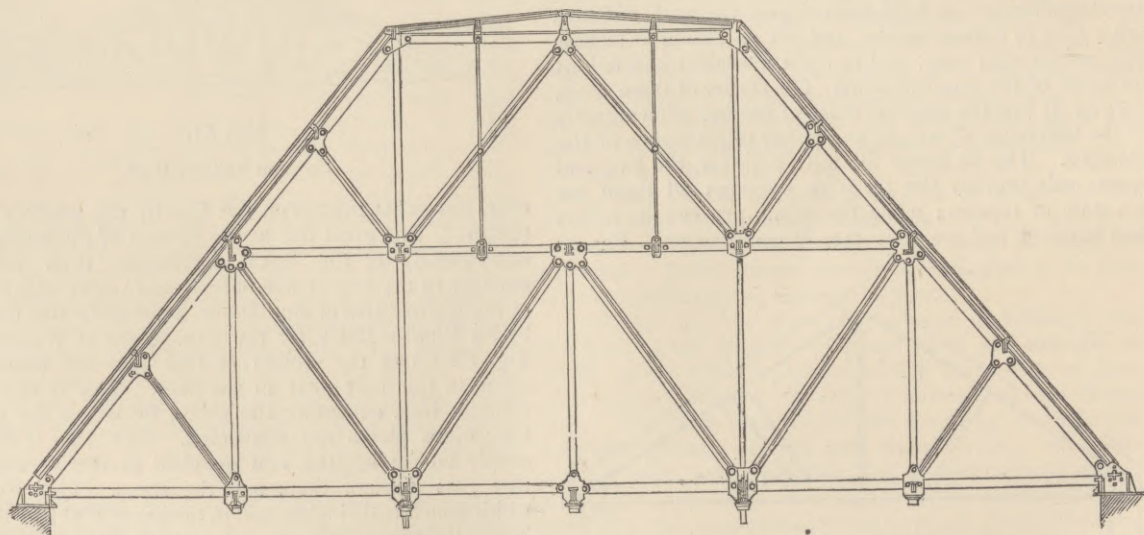


Fig. 53.

These carry two common rafters 2 feet 6 inches apart, this being the width of the iron plate or tile with which the roofs are covered.

Much animadversion has been expressed as to these roofs. The nearness of the principals has been criticised, as well as the small subdivision of detail; in fact, we shall shortly show roofs of three times the space with a less number of junctions, the principals of which are very much farther apart: so in this respect they are very much more

economical. But it must be remembered these Gothic roofs are of high pitch, while the others are very flat; and therefore more struts and queens are necessary; and that the distance of the principals was regulated in great measure by the nature of the covering. If we also consider they were the first roofs of the kind, we think they may be regarded with great commendation. The progress of railways caused a great demand for light roofs of every span and length, and the facilities for obtaining rolled T and L

Roof.

iron, and the machines invented for punching and rivetting, combined with the fact, that iron was not only the lightest material of its strength, but was at the same time incombustible, brought it day by day into more general use.

The awkwardness of fitting wooden struts to an iron tie-rod suggested the use of cast-iron for that purpose; and a very pretty light roof, first used on the Manchester and Birmingham line, was invented (fig. 54), which has since been

Roof.

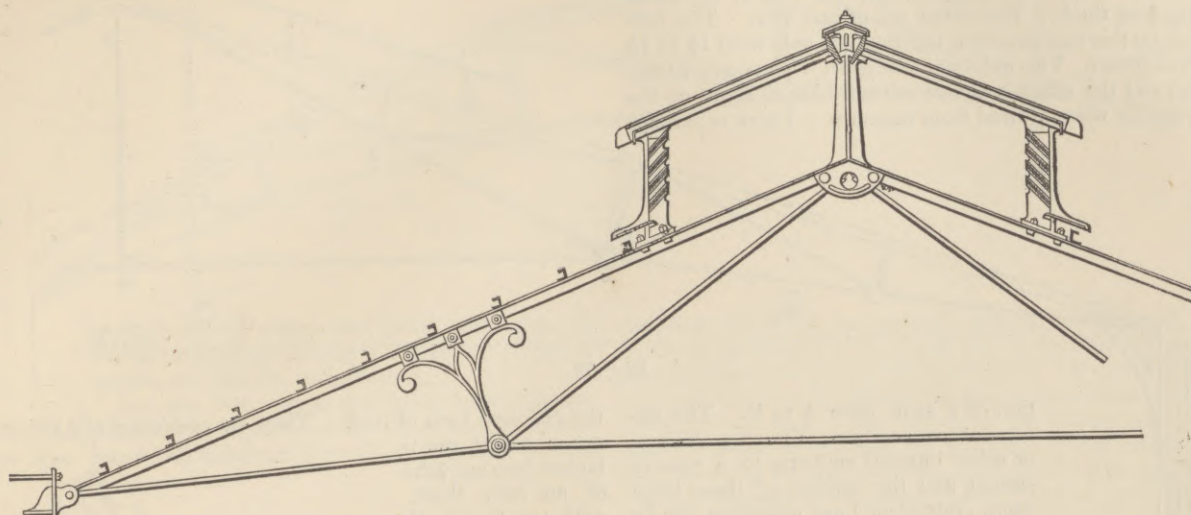


Fig. 54.

Engine-House Roof, Manchester Station.

of almost universal adoption for moderate spans. For small spans, a very simple and cheap contrivance was used (fig. 55). It is composed of ordinary wrought-iron tubing: A

the same principle as in fig. 54 is carried out, but to a much larger scale; fig. 57 shows the details of the strut AC, the principal rafter, and tie. This roof, however, is weak

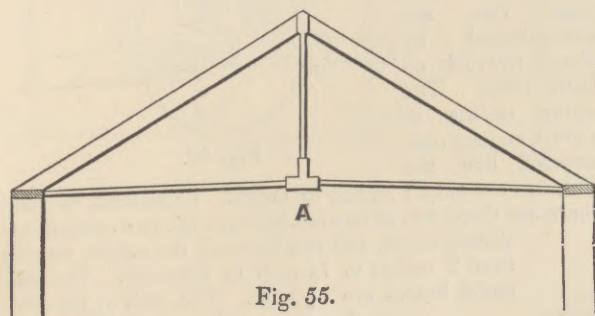


Fig. 55.

is a common tee-piece with right and left screws; the king and tie are thus brought together, the other ends first being put into the fire, and hammered into the form of straps. The considerations before named soon caused the abandonment of the use of wood as principal rafters altogether. Some important roofs were constructed with rafters of cast-iron; but this is a material which, if it gives way, breaks quite suddenly, and without any warning; and by degrees the rolled T iron superseded its use. A very large roof, 87 feet in span, was erected at Paris on the Quai Jemappes,

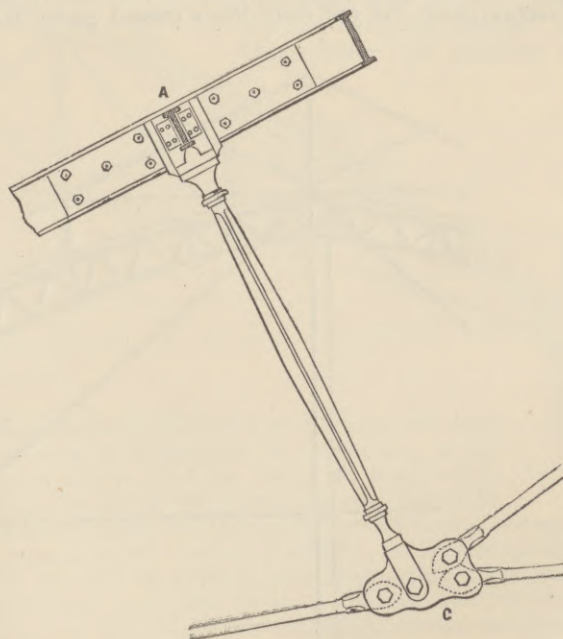


Fig. 57.

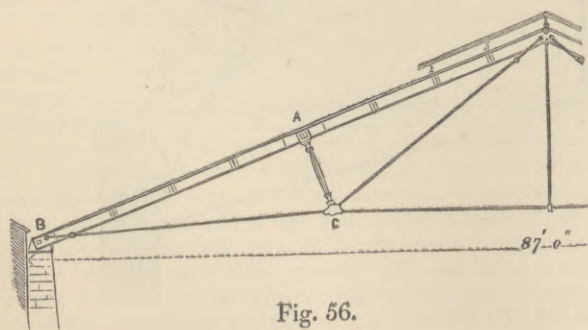


Fig. 56.

over the Providence magazine, as shown in fig. 56, where

between A and B, there being too long a bearing without a strut. It was, however, much improved at Paris at the terminus of the Rouen Railway, where one of a span of 88 feet 6 inches was erected, as shown in fig. 58; while fig. 59 shows the detail of the junction of the ties and struts. The introduction of more struts has much strengthened the principal rafter; but the triangle ABC is too large, and ought to have been subdivided by another strut from B to D, the point C being unfairly loaded, and there being a tendency to sink at the point D. A still larger roof, 97 feet 5 inches in span, was shortly after put

Roof.

up at the terminus of the Strasburg Railway at Paris (fig. 60). This is of an arched form, the principal rafter being a huge circular arc of wrought iron framed on the trellis principle. The top and bottom ribs are of rolled T iron, $3\frac{1}{2}$ inches deep, with a $3\frac{1}{2}$ flange, the web of the metal being $\frac{3}{4}$ ths thick. The struts are of cast-iron. The rods which tie this vast structure together are only from $1\frac{3}{8}$ to $1\frac{1}{2}$ inch diameter. The walls which support it are above 40 feet high; and the effect is almost cobweb-like, so slight do the ties appear when viewed from beneath. There is perhaps

a defect in making the centre part of the trussing two parallelograms, which could be easily prevented by the introduc-

Roof.

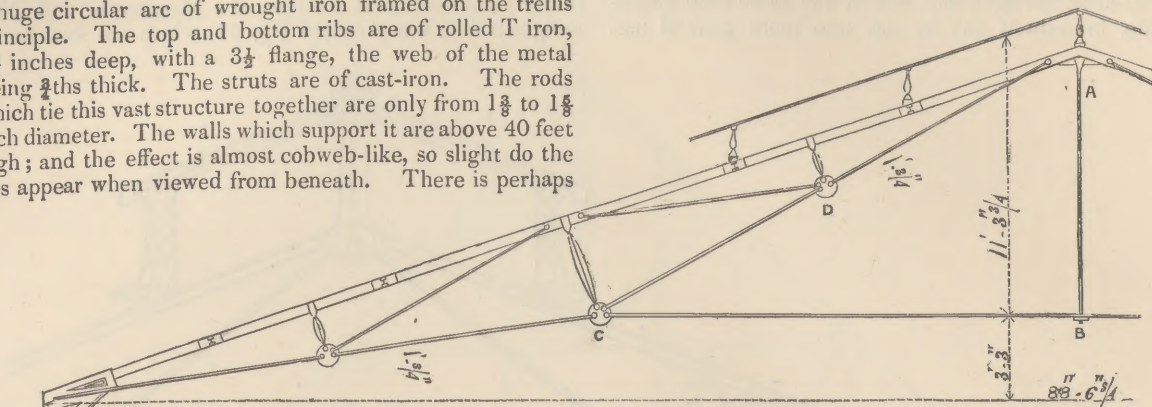


Fig. 58.

tion of a strut from A to B. The extreme inconvenience of having columns or other internal supports to a railway station, and the success of these large roofs, emboldened our engineers day by day to increase their spans; and in the year 1850 Mr R. Turner of Dublin erected the roof over the great station at Liverpool. This was 374 feet in length,

of the enormous span of 153 feet, and of the principle shown in fig. 61. The height of the springing is 25 feet, and to the crown 55 feet. The principals are 21 feet 6 inches apart, and are more like a trussed girder than

the ordinary form of roof. They are composed of a rib or

arc of rolled iron 9 inches deep and $\frac{7}{8}$ ths of an inch thick, with top flange $4\frac{1}{2}$ and bottom 3 inches wide; on this is rivetted a plate 10 inches wide and $\frac{1}{4}$ th of an inch thick.

From the springing to the haunches these ribs are strengthened by plates rivetted on both sides. The struts radiate as shown, and are constructed like the

ribs, but are only 7 inches in depth. From strut to strut there are three sets of tie-rods between the two extreme radiating struts, and two between the others, varying from 2 inches to $1\frac{1}{2}$ inch in diameter. The diagonal braces are $1\frac{3}{8}$ inch.

The ends of the principal are secured to a chair of cast-iron, resting partly on cast-iron columns, partly on the walls of the office, and partly on a box-girder. Each purlin is composed of three pieces of T iron. The centre piece runs straight

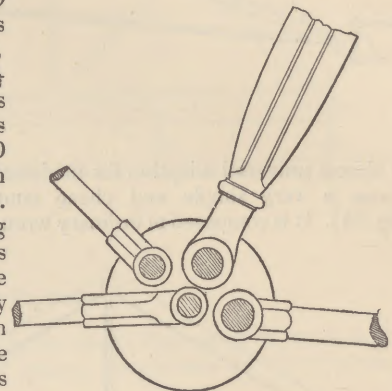


Fig. 59.

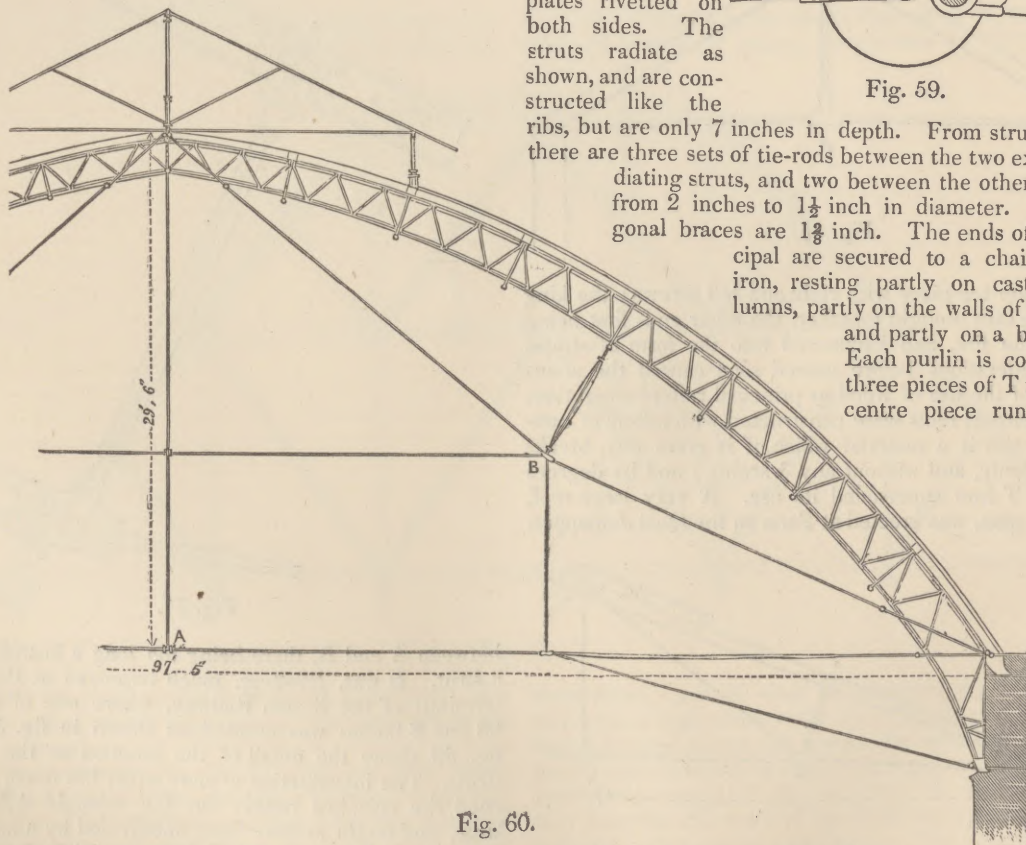


Fig. 60.

Roof of Station, Strasburg Railway, Paris.

from principal to principal, the other two branch off, so as to strut them in three points; besides this, they are crossed by

Roof. diagonal braces; so that the whole roof is trussed fore and aft, and forms one solid mass of framing. The attachments

are made by linking-plates, much like those in fig. 59. The roof is covered partly with corrugated galvanized

Roof.

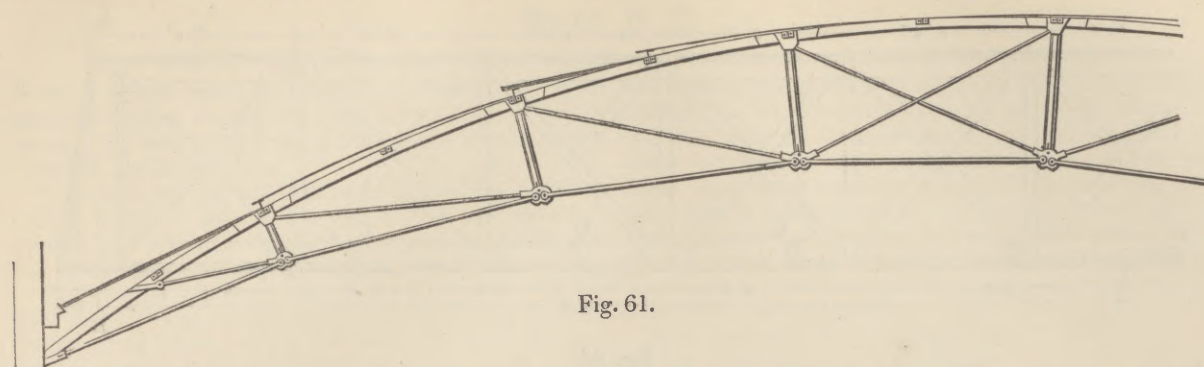


Fig. 61.

iron of No. 16 guage, and partly with glass, in sheets averaging 12 feet 4 inches by 3 feet 6 inches, and $\frac{3}{8}$ ths of an inch thick.

But this roof, vast as it is, sinks into comparative insignificance by the side of that over the joint station in New Street Birmingham (fig. 62), which was finished

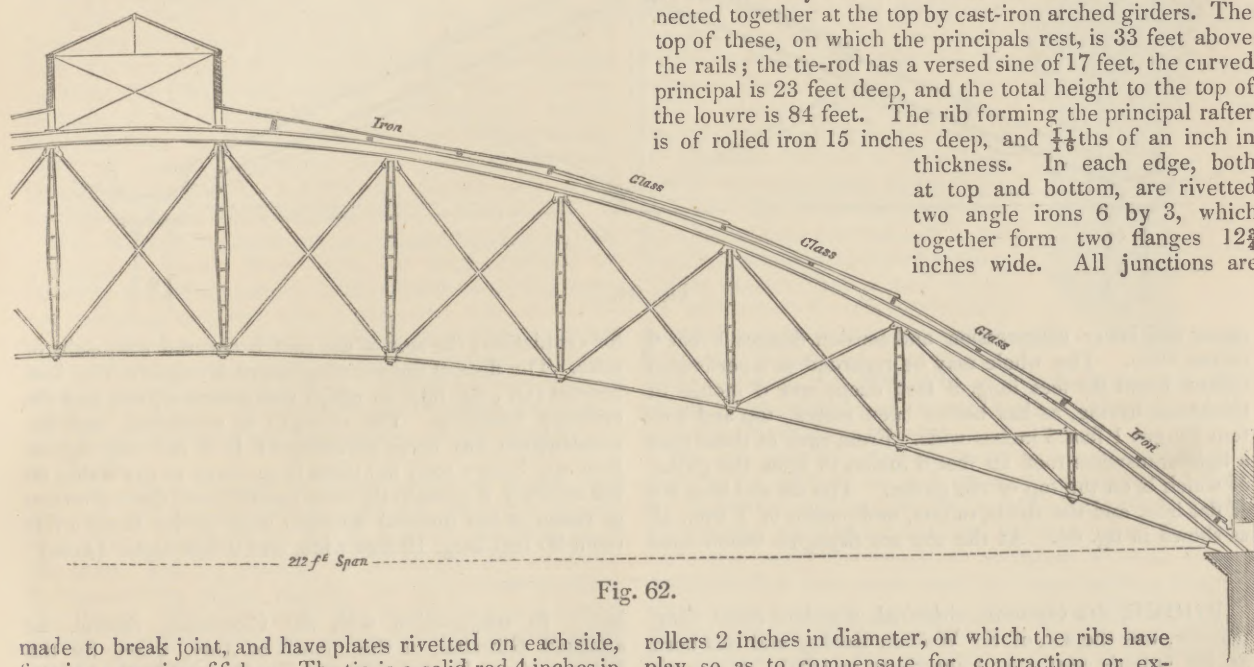


Fig. 62.

made to break joint, and have plates rivetted on each side, forming a species of fishes. The tie is a solid rod 4 inches in diameter, and is thickened out at every screw; so that the full diameter of the rod is preserved independent of the thread of the screws, which are right and left handed, and which meet at wrought coupling-boxes. On these the struts and diagonal braces take their seating; this is a cast-iron shoe with the requisite lugs and bolt-holes, and which clips the coupling-box, and is screwed to it from beneath. The diagonals are of $\frac{5}{8}$ ths rolled iron, varying from 5 to 3 inches in width. The struts, twelve in number, are of very original construction. They are vertical, composed of four pieces of angle iron set back to back, as if upon the four corners of a square, and are kept apart by iron crosses to which they are bolted. These crosses are larger in the middle of the strut than at the ends, so as to cause the angle irons to curve out each like a bow, and form a sort of open swelling strut, which is not only very strong, but has a very pleasing effect. At one end these vast ribs are secured to stones let into the wall; at the other, which is over the columns, are sets of plates, one attached to the foot of the ribs, and the other to the girders, between which are a series of

in 1854, and is the largest and lightest in the world. It is about $\frac{1}{4}$ th of a mile in length, and varies from 191 to 212 feet in width, the ground being irregular. It spans at once ten parallel lines of railway, four passenger platforms, and a long carriage road. The principals are 24 feet apart, and are supported on one side by the walls of the offices, and on the other by cast-iron columns 2 feet in diameter, connected together at the top by cast-iron arched girders. The top of these, on which the principals rest, is 33 feet above the rails; the tie-rod has a versed sine of 17 feet, the curved principal is 23 feet deep, and the total height to the top of the louvre is 84 feet. The rib forming the principal rafter is of rolled iron 15 inches deep, and $\frac{1}{8}$ ths of an inch in thickness. In each edge, both at top and bottom, are rivetted two angle irons 6 by 3, which together form two flanges 12 $\frac{1}{2}$ inches wide. All junctions are

rollers 2 inches in diameter, on which the ribs have play, so as to compensate for contraction or expansion of the metal by change of temperature. The purlins are of wood 6 inches square, and are 10 feet apart, trussed with three-quarters tension-rods. Louvres for ventilation are shown in the figure. A little more than half the roof is covered with rough-rolled fluted glass $\frac{3}{8}$ ths thick, each plate being 6 feet long and 16 inches wide; the other part is covered with galvanized corrugated iron. Some idea of this vast construction may be formed when we are told it comprehends 2 acres of galvanized iron covering, and rather more than 2 acres of glass. This last weighed 115 tons, and the whole iron work 1050 tons. The cost was L.32,274, or about L.19 per square; but iron at that time was exceedingly low in price—more so, in fact, than had ever been known.

A very ingenious roof (fig. 63) has just been erected over the new Royal Italian Opera House at Covent Garden. It was designed by Mr Edward Barry, and is 90 feet in span, and on the ridge-and-furrow principle. The spans being supported by a series of double-trellis girders 9 feet deep, and 19 feet 6 inches apart from centre to centre,

Rooke.

between which are the painting-rooms, carpenters' shops, &c. They are entirely of wrought iron, the ends AB

(fig. 63) being, in fact, box-girders for a length of 3 feet 9 inches. A double set of iron trellis is then constructed, as

Rooke.

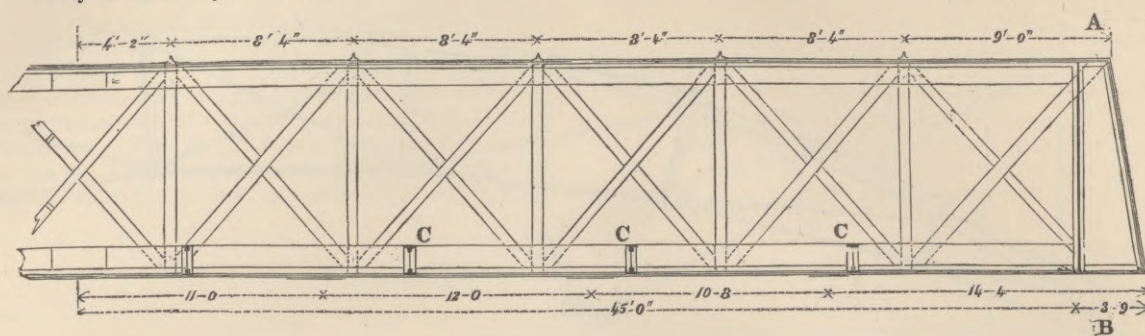


Fig. 63.

Trellis Girder and Roof, Royal Italian Opera.

in fig. 63, 9 feet deep, and 6 inches apart. On the top and bottom of each set, and on both sides (fig. 64, AB), a series of angle iron is rivetted, on the top and bottom of which, again, a plate of flat iron is also rivetted, forming

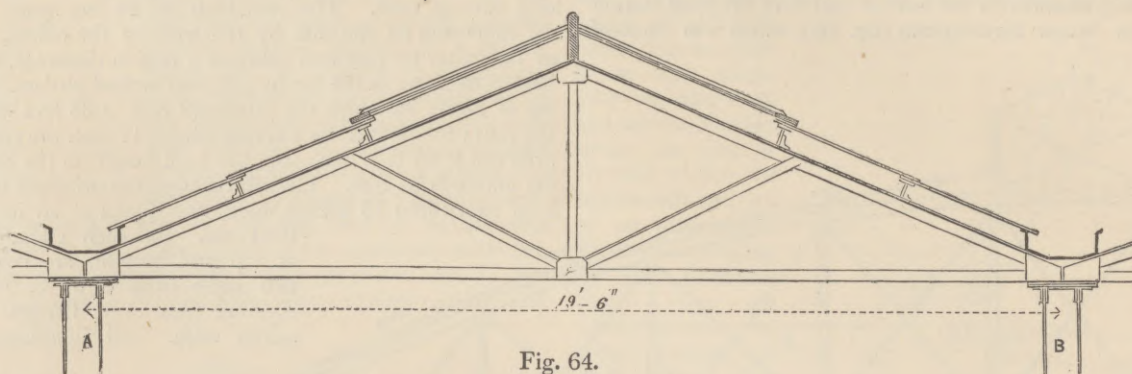


Fig. 64.

upper and lower compression and tension flanges 1 foot 6 inches wide. The whole may be regarded as a perforated hollow beam 90 feet long, 9 feet deep, and 6 inches in thickness, having, as has before been stated, top and bottom flanges 1 foot 6 inches wide. From each of these rises a light transverse roof 19 feet 6 inches in span, the gutter of which is on the top of the girder. The tie and king are of flat iron, and the struts, rafters, and purlins of T iron, all as shown in fig. 64. At the top are skylights which open

for ventilation; the rest of the roof is covered with slabs of slate. The floor of the painting-rooms is supported by iron bearers (CC, fig. 63), on which rest common joists and the ordinary boarding. The strength is enormous, and the construction has these advantages: It is not only lighter than any known roof, but there is no thrust in the walls; on the contrary, it tends to tie them together, and there is no loss of room, as the interval between each girder forms a fine room 90 feet long, 19 feet wide, and 9 feet high. (A. A.)

ROOKE, SIR GEORGE, *Admiral*, a gallant naval commander, was the son of Sir William Rooke, and was born at his father's seat near Canterbury in 1650. His merit raised him by regular steps to be vice-admiral of the blue, in which station he contributed largely to the gaining of the battle of La Hogue, on the 22d of May 1692. The vice-admiral was rewarded for this important service by a pension of L.1000, and he was subsequently made vice-admiral of the red, and had bestowed on him the honour of knighthood. He was in 1694 appointed admiral and commander-in-chief in the Mediterranean. During King William's reign Sir George was twice elected member for Portsmouth; and upon the accession of Queen Anne in 1702, he was constituted "vice-admiral and lieutenant of the admiralty of England, as also lieutenant of the fleets and seas of this kingdom." Upon the declaration of war against France, he was ordered to command a fleet sent against Cadiz; and on his passage home he attacked the Plate fleet, pillaged and destroyed it. For this action Sir George received the thanks of the House of Commons, and was appointed to a seat in the Privy Council. In the spring of the year 1704 Sir George commanded the ships of war which conveyed King Charles III. of Spain to Lis-

bon. In conjunction with Sir Cloudesley Shovel, he attacked Gibraltar in the month of July, when, by the bravery of the English seamen, the place was taken on the 24th,—an action which was conceived and executed in less than a week, though it has since endured sieges of many months' continuance, and more than once baffled the united forces of France and Spain. On the 9th of August of the same year Rooke fell in with the French fleet, which consisted of 52 ships of the line and 24 galleys. After fighting the whole of that autumn day, the enemy wore off to leeward in the evening and escaped. The French lost 3000 men in that bloody engagement, and the English 2000. This brave officer being at last obliged, by the prevalence of party spirit, to quit the service of his country, retired to his seat in Kent, where he spent the remainder of his days as a private gentleman. He was thrice married, and by his second wife left one son. "I do not leave much," said he on his deathbed, "but what I leave was honestly gotten: it never cost a sailor a tear, or the nation a farthing." He died on the 24th of January 1708, in his fifty-eighth year. (See *Life and Glorious Actions of Sir George Rooke, Vice-Admiral of England*, London, 1707).

R O P E.

Rope.

ROPE, a general name for all kinds of cordage, but more correctly applied to such as is above one inch in circumference, the smaller sorts being distinguished by the names of twines, cords, and lines.

The art of twisting into lines and ropes various materials, such as thongs of animal hide, the hairs of animals, tough grasses, and vegetable fibres, is of remote antiquity, and has existed even among the rudest people.

The tarabita or rope-bridge of the Peruvians, and the lasso of the Chilian hunter, are formed by twisting together thongs of ox's hide; and in our own country at the present day ropes for particular purposes are made of horse's hair. The coir-ropes of Ceylon and the Maldiv Islands are made from the fibrous husk of the cocoa-nut; the Manilla rope from the fibres of a species of the wild banana, the *Musa textilis*; and the *Sunn* ropes from those of the *Crotalaria juncea*.

Many other vegetables have fibres of great tenacity, and fitted for the purposes of the rope-maker; but preference is given to those of the *Cannabis sativa*, or cultivated hemp, and the *Linum usitatissimum*, or flax, the fibres of both of which possess in a remarkable degree the essential qualities of flexibility and tenacity. Some idea of the importance of the manufacture under consideration may be obtained from the fact that, in the year ending January 1857, the value of the hemp alone imported into Great Britain and Ireland was L.1,953,444, and the value of the cordage exported was L.246,925.

The fibres of the hemp are first twisted together to form a thread or yarn. Many yarns are then combined by twisting, and form a strand; three strands are in like manner combined, and form what is properly a rope, and technically termed a shroud-laid rope or hawser-laid rope; and three of these ropes may be again combined, forming what is termed a cable-laid rope. The fibres should be so arranged that each in the finished rope shall offer the greatest resistance to its being torn asunder in the direction of its length.

If we take a bundle of fibres, equal in length and strength, and fasten it at the ends, each fibre will, upon a strain being applied to the bundle, bear its proper share of the stress; and the strength of the bundle will evidently be measured by adding together the strength of the separate fibres. But if we twist this bundle so as to form a thread, the strain will no longer be equally distributed among the fibres; for, by the torsion, the external fibres of the bundle will be wound round those that lie nearest to the centre, and, in proportion to their distance from the heart of the bundle and the amount of twist given, will form spirals more or less inclined from the axis of the thread. The external fibres will in consequence be longer than the internal ones, and the greatest share of the strain will be borne by the latter. Further, by the operation of twisting, the fibres in a thread are strained, and, on account of their position, the external ones the most. It is of importance to consider the proper length of the primary fibres, and the degree of torsion that ought to be given in forming them into a thread.

All threads require the fibres to be so fine, and of such a length, that the quantity of fibres used, and the number of turns each has round its axis, shall be so great as to produce the necessary compression amongst them, to prevent them from sliding upon each other. If the thread be small, the fibres must be fine, and may be short; and if the thread be large, then must the fibres be long. If the fibres be long in proportion to the size of thread to be made from them,

less twisting will obviously be necessary to keep them from sliding; and the finer and softer the fibres are, the more may the twist be diminished; for soft fibres enter into closer combination with each other than those that are hard. Long fibres requiring thus less twist than short ones, it has been a standing rule with all theoretical writers, that fibres should always be spun into the thread endlong, and never by their bight or double. Now, in the practice of hand-spinning, the fibres are always spun into the thread by their bights, and never by their ends.

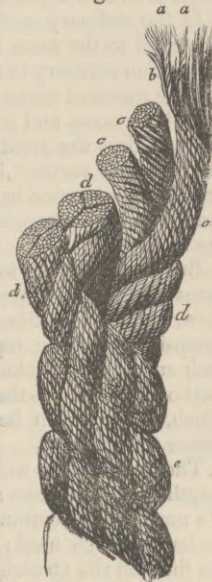
It is certainly an advantage in threads which are to be used merely as such, to secure as great a length of fibre as possible, as any strain tends directly to pull the fibres asunder; and they are retained in their position merely by the compression among the co-fibres, produced by twisting. But many threads are combined in forming strands; new forces are brought into action, and so at every further combination. This will be better explained by the following diagram. Let *aa* be the primary fibres, formed into threads *b*; in each thread the fibres are retained in their position by the compression produced by twisting. Let *bb* be threads twisted together to form a strand. Here the threads mutually compress each other, and the primary fibres of each thread are compressed by the surrounding threads. Let *cc* be strands twisted to form a hawser-laid rope. In this the compression on the primary fibres is again increased, and so in the next combination, where the three hawser-laid ropes are twisted into the cable-rope *d*.

We may from this deduce, that it is not the length so much as the intrinsic strength of the fibre which fits it for the purpose of the rope-maker; and practice perfectly fixes this position, the ropes made from the short waste fibre of the hemp called tow being by no means so weak when compared with those made from the hemp itself, as theory would lead us to suppose, seeing that these fibres are the shortest and weakest of the material. It may therefore be laid down as a rule, that in the making of ropes it is of greater consequence that the fibres should be strong, soft, and finely hackled, than that they should be of great length.

Let us consider a little more how the twist of the thread is affected by its future combination. The fibres are first twisted in a certain direction to form threads. A collection of these threads is then twisted together to form a strand; and this last twist being in a direction contrary to that of the threads, untwists them to a certain extent.

Had the twist in the first instance been no more than would just have kept the fibres from sliding upon each other, it would now be inadequate to produce that effect. Hence one would think it necessary to provide means to put more twist into the threads as they were being formed into strands, or to put as much more twist into the threads while spinning, as the twisting of the strands abstracts from them; but when these strands are combined to form a hawser-laid rope, the direction of the twist is again the same as that of the threads, and restores to them a certain portion of what they had lost. If, however, three of these hawser-laid ropes are formed into a cable-laid rope, the threads are

Fig. 1.



Rope.

Rope. again to a certain extent untwisted. The untwisting suffered by the thread in forming the strands is much greater than the subsequent retwisting in forming the rope; and if the thread had been at the first too little twisted, or too soft, as it is termed, it would never make a serviceable rope; and for such ropes as require to be impervious to water, it would be totally unsuitable.

It is, then, on the proper angle of twist in the *combined* threads, and not in the threads when *separate*, that the efficiency of the rope depends; and this can be determined by experiment alone.

When many threads or yarns are combined to form strands, the effects produced on the latter by strains are analogous to those produced on the fibres when formed into threads, and, from the greater size of the component parts, are more apparent.

In the ordinary method of procedure the threads are all stretched to the same length, and then twisted together in a direction contrary to their individual twist. This, by winding the external yarns round those beneath them, shortens the whole mass, and puckers up the yarns nearest the centre, and thus the greatest share of any strain is thrown on the external yarns. It has therefore been considered of primary importance in all inventions intended to improve the making of ropes, to equalize the strain on the yarns in the strands.

Belfour attempted to effect this by shortening the internal yarns in the degree necessary to prevent their puckering up. Now, although the fibres of hemp are not in themselves very extensible, yet the rope formed from them is; and when such an extension takes place in a rope formed by Belfour's method, the strain is thrown entirely upon the internal yarns, which, if the strain be great enough, will break from the centre outwards.

The manner in which the external yarns of a strand lengthen, will be seen at once by fig. 2. Here *a* is a section of a newly formed strand; *a'* a section of the same strand after having been used; while *b'b'* is a part of the surface of the first, on the stretch out; and *b'b'* a part of the surface of the other. By the straining produced by use, the yarns in *a* are brought into closer contact, and the diameter of the strand is reduced. If in the strand *a*, *bc* represents the angle

at which any external yarn is supposed to lie, this, by the reduction of the diameter, will in *a'* be changed to *b'b'*; and if in *a*, *de* represents a heart-yarn, this yarn in *a'* must stretch to *e'*, or break, which, as it is very little extensible, it is likely to do. It is of importance to observe, that the breaking of the heart-yarns of a strand in this manner is attended with much greater danger than the breaking of the external yarns, as the injury not only remains concealed, but water can easily penetrate to the core of the strand, which in consequence speedily decays.

It would appear, then, that a certain degree of puckering in the internal yarns of a strand is necessary to compensate for the extension that the superficial yarns undergo by use; and where ropes are made by machinery, it would be perfectly possible to arrange it so that, from the central yarn outwards, every one could be wrought into the strand in due length to allow for the stretching.

The further operations are the forming the strands into hawser-laid ropes, and these again into cable-laid ropes. The many uses to which ropes are applied preclude the possibility of applying specific rules to their manufacture.

Rope. Some require flexibility, others impenetrability to water; strength may in some be of primary importance, or it may be secondary to other qualities which better adapt the rope for its peculiar purpose. The goodness of the rope depends upon the previous operations; but it must be a standing rule in all the processes, never to make use of so much twist as will impair the strength of the fibre.

To prevent the decay of such ropes as are exposed to continual changes from wet to dry, the yarns forming them are soaked in hot tar previously to their being worked up. It would be well if some other substance than tar could be found suited for this purpose, as it unfortunately happens that ropes lose much of their strength in the operation of tarring; and after having been kept for some time, the loss of strength is progressively increased, and this to a greater extent in hot than in cold climates. M. Duhamel made several experiments on this subject in 1741–1746, and from the results obtained he concludes,

1st, That untarred cordage in constant use is one third more durable than the same cordage when tarred;

2dly, That untarred cordage retains its strength for a longer time when kept in store;

3dly, That untarred cordage resists the ordinary influence of the weather one fourth longer than when it is tarred.

Some experiments were made in 1803 by Mr Chapman, civil engineer, to determine the effects of a new process of washing the tar to free it from the soluble substances contained in it, and for which process he had obtained a patent. Yet although the result of these experiments proved beyond a doubt the superiority of Mr Chapman's method, it is singular that it has never come into use. The same gentleman made some other experiments in 1806–1807, confirmatory of those of M. Duhamel. The result of one series is given in the table below.

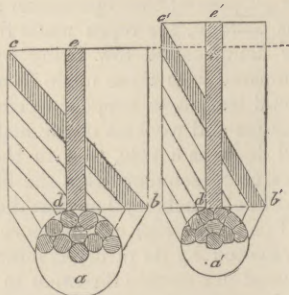
Date of Experiment.		Girth in Inches.	Breaking Weight.	Comparative Strength.	Cwts. on each Inch of Square of Girth.
1806, Oct. 2.	White rope.	2.75	75 cwt.	100.	9.9 cwt.
Oct. 24.	Tarred rope.	2.8	55	73.3	7
1807, May 3.	Same rope...	2.8	41.4	55.2	5.3

We shall now offer a few of the rules which have been given by different authors for computing the strength of ropes.

Mr Tredgold says, "that in a hawser-rope, it may be proved that the strength of the straight fibres of hemp is to the strength of the rope as the radius is to the mean between the square and the cube of the cosine of the angle of twist, when the fibres are all equally extended, and the angle of twist measured at the greatest stretch the rope will endure without fracture. The cosine of the angle under these circumstances is in general about 0.87, and therefore the strength is about 0.708 times the strength of the hemp, or very little exceeding two thirds of its strength; but in most cases the loss of strength will be greater than one third, because the stretching of the different parts is unequal. And in a cable-laid rope, that the strength of the hemp is to that of the cable as the radius is to the mean of the third or fourth power of the cosine of the angle of twist under the same circumstances as before; or, that its strength is to that of the ropes which form it simply as the cosine of the angle of twist. This, in usual cases, will be nearly as eighty-seven to a hundred, that is, there are thirteen parts in every hundred of the strength lost in forming cable-laid ropes."

The following rule is given by Dr Robison for finding the strength of ropes: Multiply the circumference of the rope in inches by itself, and the fifth part of the product will be the number of tons which the rope will carry. Thus, in the experiment of Mr Chapman, the weakest tarred rope

Fig. 2.



Rope-making.

broke with two tons, and by our rule we find that it ought to carry with safety one ton eleven hundredweight. The practical rules of the workshop are as follows:—To find the breaking weight of 3-strand hawsers; square the circumference, and divide by 3. To find the breaking weight of 3-strand cables; square the circumference, and divide by 5.

The following rule may also be of use:—To find the weight in pounds of a foot in length of any hempen rope, multiply the square of the circumference in inches by 0.045 for shroud-laid ropes, and by 0.027 for cables. (J. N.)

ROPE-MAKING is the art of combining fibrous materials, by twisting in such a manner as to form a continuous flexible cord.

We have before stated that the fibres used for this purpose are those of flax and hemp; the former for small lines and cords only, and the latter for all kinds of cords, from the smallest to the largest. The preparation and manufacture of hemp and flax into such articles as either are adapted for being the same in both, we mean, in the following sketch of these operations, to speak of hemp as the material made use of. This article we obtain from Riga and St Petersburg, whence it is shipped for our ports in great bundles, weighing, according to quality, from forty-five to sixty-five poods each, the pood being equal to thirty-six pounds avoirdupois. On the arrival of the vessels, these great bundles are cut up, and the hemp is thrown from the hold in small bundles, bound at one end, and weighing each about twelve pounds. These small bundles are termed *heads*; and in this condition the rope-manufacturer gets his raw material.

The fibres of hemp, of a good quality, should be long, fine, and thin; smooth and glossy on the surface; of a yellowish-green colour; and free from spills or small pieces of the boon or woody fibre of the hemp plant, which remains after the operation of breaking; and they should, above all, possess the essential qualities of strength and toughness.

Hemp loses many of its good qualities by lying long in warehouses; and when shipped in a damp state it loses its glossy appearance, becomes what is termed *rusted*, and is then much weaker, and hard and disagreeable to work.

The operations of the rope-maker are carried on in the following order:—

1st, Hackling the hemp; 2d, Spinning or twisting the fibres into threads or yarns; 3d, Tarring the yarns; 4th, Making the yarn into strands; 5th, Laying or forming the strands into ropes, called hawser-laid ropes; 6th, Laying or forming hawser-laid ropes into cable-laid ropes.

1st, *Hackling*.—To prepare the fibres for the use of the spinner, they are drawn over pronged instruments called *hackles*, which clear from them the refuse, and split them into different degrees of fineness, to suit the size of thread into which they are to be spun.

Fig. 1 is a representation of a hackle of the largest kind, called a *cag*. Here *aa* is a strong board; and *bb* steel prongs, polished and tapered, and made very sharp at the point.

The prongs of the next size of hackle are smaller and closer set, and so on, diminishing to the finest size, which reduces the fibres to the last degree of tenuity.

The operation of hackling is performed in the following manner. The operator stands at a convenient distance in front of the hackles, which are fixed on a steady bench at a proper height. He then takes a bundle of hemp, and divides it into such portions as he can conveniently grasp. One of these he holds firmly by one end, and draws it over the hackle, beginning with the end of the bunch farthest from

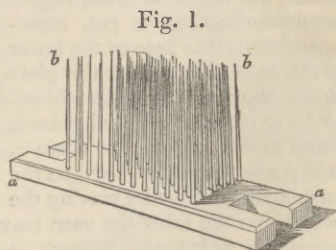


Fig. 1.

his hand, and by repeated operations disentangles and splits the fibres nearly to where he grasps the bunch. He then takes hold of the finished end, and operates on the part which he before had grasped. To facilitate these operations, he from time to time oils the hemp with a little whale-oil. When the hemp is combed out and split as perfectly as the first size of hackle enables the workman to do, he carries it, if it be necessary for the purpose intended, to the next in degree, and so on to the last. The short fibres which are pulled out of the bunch by the hackle, and remain sticking to it, are collected from time to time by the workman, as they impede his progress, and are laid aside. They are afterwards drawn over the hackle to lay the fibres straight, and are, under the name of *tow*, used in making inferior ropes.

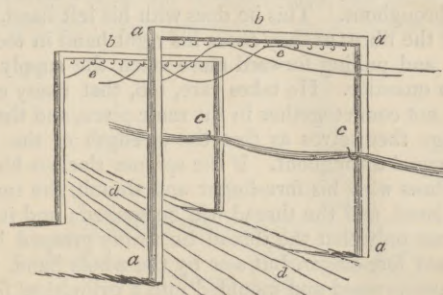
As the workman finishes his handfuls of hemp, he lays them aside in bundles for the spinner.

The operation of hackling would seem to require little skill on the part of the workman; but this is by no means the case, as bad workmanship would convert the greater part of the hemp into tow. Hackling is performed in a house, which ought, for convenience, to be near to where the threads are spun, that the spinners be not put to unnecessary expense of time in getting their stuff.

2dly, *Spinning*.—The place where the operation of spinning is carried on, is one division of a walk or alley termed the rope-walk, and is generally enclosed by walls, and roofed over; and in some places where ropes and twine are made, the building is in two stories, the rope-yarns being spun below, and the twine in the loft above.

The walk for rope-yarns is, according to circumstances, from 600 to 1200 feet long, and the width is regulated by the extent of the business to be carried on. One end of the walk is termed the head or fore-end, and the other the foot or back-end; at both ends the machines for communicating twist to the yarns are erected; and along both sides of the walk, at equal distances, and opposite to each other, are erected posts. Between every pair of posts a rail stretches across the walk, at the height of eight feet above the ground; and along the under side of the rail, hooks are fixed, on which the yarns are hung as they are spun; and to one of the upright posts of each pair a large hook is fastened, on which the yarns are hung when collected together. Fig. 2 shows this arrangement; *aaaa* being the upright posts,

Fig. 2.



bb the rails stretching across the spinning walk, *ee* the hooks for the yarns, and *cc* the large hooks on which the collected mass of yarns is hung. At the head of the walk a stout post is fixed in the ground, and to it the yarns are fastened as they are finished. At the foot of the walk a similar post is fixed for the same purpose. These posts must be at that side of the walk on which the large hooks are fixed.

The walks on which small threads for twines and small cords are spun, have, in place of these rails and hooks, rails about three feet long, let loosely into mortises sunk in the top of upright posts, about three and a half feet above the ground; and along the top of the rail upright pins are fixed, to keep the threads separate.

The spinning machines for rope-yarns consist of two up-

Rope-making.

Rope-making.

right posts, *aaa*, fig. 3, between which the wheel *bb* is hung on its axis *c*. A belt from this wheel passes over and gives motion to a number of small pulleys, called whirls, *ddd*, inserted in a circular arc *ee*, called the head, fixed to the top of the posts. The axis of each of these pulleys is prolonged in front of the head, and bent into a hook, as shown more distinctly at *f*; and on this hook the fibres of hemp are hung to be twisted.

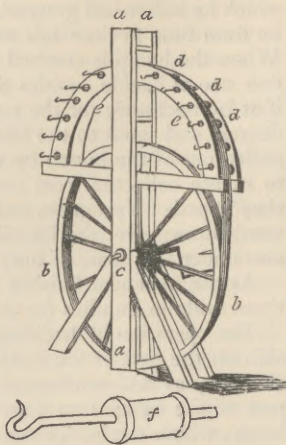
The spinning-wheel for the smaller sorts of threads differs from this chiefly in being smaller, and having the parts slightly modified to suit the diminution of size.

The operation of spinning is conducted as follows. The

spinner takes a bundle of hemp of sufficient size to make one or more threads the whole length of the walk; he puts this bundle round his waist, the bight or double being in front, and the ends passing each other at his back; and he secures it in this position by buckling a strap round it, or by fastening it with his apron. He then draws out from the face of his bundle as many fibres as he thinks will make the size of yarn required; the bight of these fibres he hangs on one of the whirl-hooks, and the wheel being now turned by an assistant, it throws twist or turn into the fibres. The spinner having laid a piece of thick woollen cloth in the hollow of his right hand, with the end hanging over his forefinger, grasps with it the fibres he had drawn out, pressing them firmly with his thumb and forefinger, the interposed cloth preserving his fingers from being cut by the fibres as they pass. He now walks backward down the walk, that is, from the head to the foot, the wheel-man all the while turning the wheel just so fast as to keep the turn or twist up to the spinner, of which he is admonished by signs made by the left hand of the latter, or, in complete establishments, by a bell, the cord of which traverses the walk. The aim of the spinner is to regulate the supply of fibres from his bundle in such a manner as to render the thread equal in size throughout. This he does with his left hand, drawing back the fibres as they enter his right hand in too great number, and pulling forward more when the supply is deficient in quantity. He takes care, too, that many ends of fibres do not come together in the same place, and that they so arrange themselves as that the strength of the thread shall be equal throughout. If the spinner slacken his grasp of the fibres with his fore-finger and thumb, the turn will pass his hand, and the thread will be spoiled; and it is necessary not only that the thread be firmly grasped by the thumb and fore-finger, but also by the whole hand, that it may be compressed and moulded into a cylindrical form.

We have hitherto described the operation as performed by one spinner; but as many spinners may work together as there are whirls in the head. Suppose, then, that all the spinners have set on, as the fastening of their threads to the whirls is termed. They proceed together down the walk, and when they are a few paces below the first rail, *b*, fig. 2, every man throws his thread on one of the hooks, and so at each rail, until they arrive at the foot. They then join the ends of every pair of yarns, and hang them over the post already mentioned; and for the convenience of afterwards separating them, the pairs are kept apart in the following manner. A piece of twine is tied by its middle to the first pair, a little in advance of the post; the second pair is then put over the post, and the string is tied

Fig. 3.



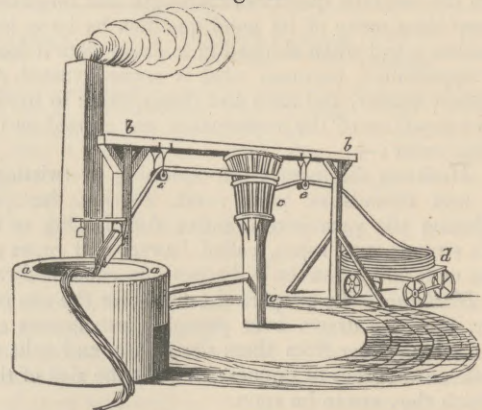
over them; and in like manner every pair is tied in. This is called netting. The spinners now set on at the foot or back-end wheel, and spin up the walk. The fore-end wheel-man having unhooked the yarns from the whirls of his wheel, and hung them over the post, and tied them in pairs as at the back-end, proceeds down the walk, collecting the yarns from the hooks of the rails, and laying them in a heap in the large hooks *c, c*, fig. 2. When the spinners again spin down the walk, these same operations are performed by the back-end wheel-man. When the collected yarns number about 400, they are coiled up in a haul, and are ready either for tarring, or laying into white ropes. Previous to the haul being taken up for tarring, there is a slight turn put into it to keep it from getting entangled in the tar-kettle. In the government rope-works, by the regulations of 1802, the spinners had to produce, from a bundle of hemp weighing 64 lbs., 18 threads of 170 fathoms each; 400 of such threads constituted a haul, and weighed 12 cwt. 2 qrs, and when tarred 15 cwt.

3dly, Tarring.—The next operation is that of tarring. This is variously performed. Here we shall describe the simplest method of doing it.

The apparatus used in tarring consists of a copper bedded in brickwork with a proper furnace below, and flues around it. The copper is termed the tar-kettle, and at one side of it is erected a strong frame, in which a capstan works.

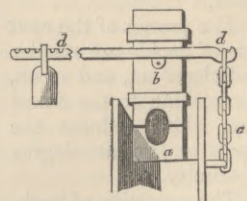
Fig. 4 shows this arrangement. Here *a* is the kettle; *bb* the frame; *cc* the capstan, which may be turned either by manual labour, or horse or other power; *dd* a truck, on which the haul is being coiled away as it comes from the capstan; and *ee* small rollers by which the haul is supported. In the upright nearest the boiler is fixed the nipper for squeezing the superfluous tar out of the haul. The nipper is drawn to a

Fig. 4.



larger size in fig. 5. Here *aa* is a copper-plate with a hole in it about two and a half inches diameter; above it another plate *bb* slides, and out of its lower edge a semicircular piece is cut, corresponding to the hole in the lower plate, so that by sliding this plate down, the aperture is diminished. A lever *dd* of the second order is fixed at one end to the chain *c*, and presses on a stud fixed on the upper plate, so that by moving the weight on the lever the yarn may be pressed to the degree necessary as it passes through the aperture; and as the tar oozes out of the yarn, it is received and carried back to the kettle by the spout *f*, fig. 4.

Fig. 5.



The tar having been put into the kettle and heated to the proper degree, which is about the temperature of boiling water, and is known to the workman, in the absence of more correct means, by a scum closing over its surface, the

Rope-making.

superintendent begins to pass through the haul. A rope attached to the capstan is passed through the nippers, and attached to the end of the haul. The haul is then coiled gradually into the kettle, and the capstan is moved round. The haul is thus drawn slowly through the tar, and the superfluous tar squeezed out of it as it passes through the nippers, the superintendent regulating the weight on the lever, so as to produce the required pressure; and the end of the haul, as it comes from the capstan, is coiled away, or reeled upon large reels. In this operation the heat of the tar is the most important point to be attended to. If it be too hot, the yarn will be charred; and if too cold, it will be black, whereas yarn intended to be made into ropes should be of a bright-brown colour. The proper heat is indicated, as was before stated, by a scum closing over the surface of the tar, which takes place at about 212° Fahrenheit. If this scum do not rise, the tar is too cold; and if there be an appearance of ebullition, the tar is too hot.

Athly, Forming Strands.—

The yarn is now ready for the next operation, which is the making of the strands. This comes under the head of laying. The place where this and the subsequent operations are carried on is termed the laying-walk; it is generally part of the alley of which the spinning-walk forms a portion, and it may be of such a width as to allow of many ropes being made at one time. The fixtures of this walk consist of tackle-boards and wheels for twisting strands, and stakes and stake-heads for supporting them. The tackle-board for twisting large strands is fixed at the head, and is represented in fig. 6; *aa* strong upright posts, *bb* a plank pierced with holes corresponding to the number of strands in a rope, which is generally three. Through these holes winches, called forelock hooks, work. Fig. 7 is an enlarged section of the board, with a forelock hook in its place; *a* is the handle, *b* a collar working against the board, and *c* the forelock let into an eye in that end of the hook which points down the walk. Fig. 8 is a representation of one of the wheels for twisting smaller strands; *bbb* being pinions with their axes prolonged, and bent into hooks at *b'*; *aa* is the driving-wheel, moved round by the winch *c*, and *dd* is a strong post fixed at the head of the walk, and to which the wheel is attached in such a manner that it can be easily disengaged, and a larger or smaller wheel applied, as the rope may require. Corresponding to every twisting apparatus, at the head there is a row of bearers or stake-heads for sup-

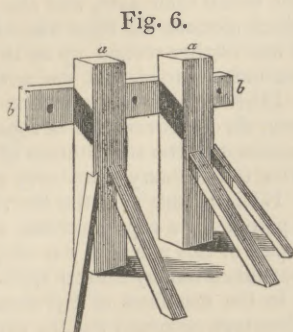


Fig. 6.

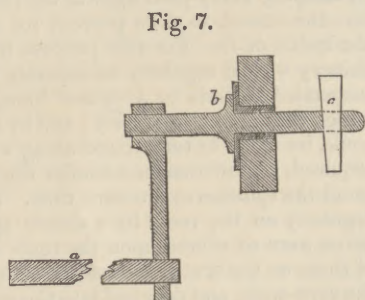


Fig. 7.

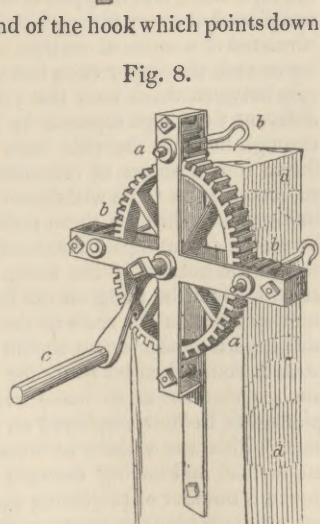


Fig. 8.

porting the strands when twisting, and extending from the top to the bottom of the walk. These are represented in fig. 9, where *aa* is an upright post, called the stake, firmly fixed, and standing four feet above the ground; and *b* the stake-head, let through a mortise in the upright at a foot below the head of the post. In the stake-head there are upright pins, between which the strands are laid, as seen by the drawing. There are also posts at the head and foot for fastening the yarns to when run out for laying. As twisting the strands shortens them, it is necessary to provide at the foot moveable machines for communicating twist. These are called sledges; the largest are formed as in fig. 10, and the smaller sizes as in fig. 11.

Fig. 9.

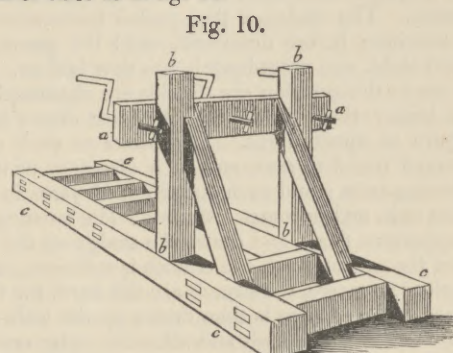
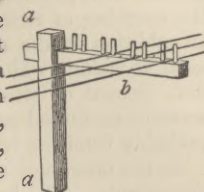
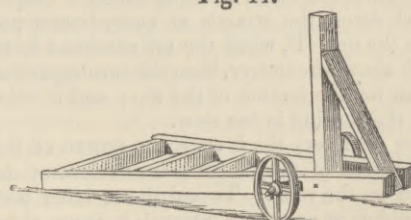


Fig. 10.

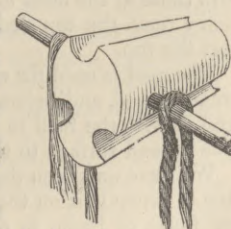
In fig. 10, *aa* corresponds to the tackle-board, and is called a breast-board; it is bolted to the uprights *bb*, which again are firmly fixed and stayed to the frame *cccc*. The part of the frame behind the uprights is called the tail of the sledge, and on it are laid weights to afford pressure enough to keep the strands stretched. These weights consist of old tar-barrels filled with clay, and are called press-barrels. In laying large ropes, sufficient pressure cannot be obtained by the barrels; and in that case a double block and tackle is used, one end being fastened to a strong bolt behind the sledge, and the other to the tail of the sledge, and with the tackle-fall a turn or two is taken round a post. The smaller sledges (fig. 11) have only one upright post, to which some one of the wheels, similar to fig. 8, is fixed; and they have likewise two trucks to run on.

Fig. 11.



Of the smaller implements used, the first are the tops (fig. 12) for laying the strands into a rope. These consist of conical blocks of wood, of different sizes, having three equidistant grooves along their surface, and pins through them laterally, serving for handles. A piece of soft rope is attached to each handle of the top by its bight, and the ends are used to wrap round the rope in the process of laying. These ropes are called tails. When the top is very large, it requires to be supported on a sledge, as shown in fig. 13; and in that

Fig. 12.



Rope-making.

case the tails are attached to the sledge. Woolders are stout pins with a rope fastened to one end, and are used to assist the action of the machine in twisting the rope. In addition to the above, there is used in making white ropes a rubber, formed of steel rings interwoven like linked mail; and it is probably from the resemblance that it is termed a mail.

In the operation of laying, the yarn is first warped for the strands. The haul is run out along the bearers of the laying walk, and the number of yarns for the size of rope about to be made is separated from it by means of the netting. The separated yarns are then divided into three equal portions. Each portion is laid in a separate division of the bearers, and hung upon its hooks at the tackle-board and sledge. The sledge is then pulled backwards by the tackle-purchase before described, until the yarns are all stretched tight, and press-barrels are now laid on. When things are in this position the threads are examined, and if any be longer than the others, they are drawn up until every yarn is equally tight. The hooks at each end are now heaved round *in time*, and in a direction contrary to the spinning twist; and each collection of yarns is twisted round its axis, and becomes a strand. The twisting of the strands shortens them, and draws the sledge up the walk.

When the torsion in all the strands is sufficient, or when, in technical language, the strands are full hard, the twisting is stopped. The sledge is then drawn up the walk a small piece to slacken the strands and allow the outer ones to be taken off their hooks and hung on the middle hook. It is again drawn back by the purchase, and the top (fig. 12) is inserted among the strands which will occupy its grooves.

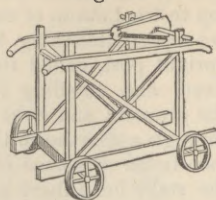
The top is now forced back as near the hook of the sledge as possible, and the workmen at the head again turn their hooks in the same direction as before. As soon as the workmen at the sledge perceive it moving forward, they remove some of the pressure, and begin to turn their hook in a direction contrary to its former motion. The top is by this forced forward, and the three strands closing behind it form the rope. When the top gets far enough from the sledge to admit of their application, the tails are wrapped round the rope, and by their friction they enable the workmen to keep the top from moving forward by jerks, and they also make the rope close better. The care of the topman is to regulate the speed of his top in relation to the twist at both ends, the mean of doing which is simple. He makes a mark across the strands at every bearer previous to putting in the top. If, when the top reaches a bearer, he find the mark above the bearer, then the turning at the fore-end is too fast for the motion of the top; and if below the bearer, then the turning is too slow.

In the case of a very thick rope, the power of the men applied to the hook of the sledge is insufficient of itself to pass the turn up the rope. To aid them, other workmen apply the woolders at necessary intervals between the sledge and the top. The strap of the woolder is wrapped round the rope, and the pin used as a lever to heave round the twist; the workmen at the woolders keeping time in their heaving with those at the hook of the sledge. And in the case of a heavy rope, the top sledge (fig. 13) is made use of to support the top.

The mail is used for white ropes only. When the strands are hardened, and before the top is put in, workmen rub the strands with the mail to smooth down any rough fibres, and give a good surface to the rope.

We have now seen that in the processes described, every step is dependent on the skill of the workmen. In supplying fibres of hemp in due quantity to form the thread, in giving the proper degree of twist to the thread, in giving

Fig. 13.



the strand the degree of hardness required, and in the proper speed of the laying top, the workman has no certain guide; and it is surprising that, although machinery for the improvement of almost every other manufacture had been introduced, no attempt appears to have been made to apply it to the art under consideration, until about 1783, when a machine to supersede the necessity of a rope-ground was invented by a Mr Sylvester; and this invention was followed up by many others. Such of these as have come under our notice are briefly described in the following account of them, arranged according to their dates.

1783. About this time Mr Sylvester's machinery was invented. In it the threads were spun by bobbins and spindles; the three several quantities required for the strands were wound on three separate reels, which turned individually round their axes, and also round a common centre, by which motions the rope was formed; and by the machinery it was further wound up as it was made. This invention was not patented, and was never carried into effect.

1784. In this year a patent was taken out by a Mr Seymour for improvements in rope-making; but the invention consisted in the substitution of animal for human power to drive the ordinary machinery of the rope-work.

1792. In this year the Rev. Edward Cartwright took out a patent for a rope-machine, which he called a cordelier. A part of this machine was adopted by Mr Huddart in a patent taken out by him in 1805.

In the machines of Sylvester and Cartwright the only advantage proposed was the saving of labour. There was no attempt made to improve upon the old defective principles of rope-making; the merit of the first attempt to do this is due to the next inventor.

1793, March 16. John Daniel Belfour, of Elsinore, obtained a patent for machinery "to improve the manufacture of ropes and cordage, by making every yarn employed in the composition thereof bear its proper and equal proportion of the stress." This the patentee proposed to effect by keeping every yarn tight at the time of its being twisted into the strand, so as to prevent its being puckered up in the inside of it. For this purpose the yarns were by machinery wound regularly on separate reels. The reels were suspended in tiers in a square frame on iron spindles on which they could turn freely; and by a contrivance the reels could be made to turn round along with the spindles when required, and motion in a similar direction could be given to all the spindles at the same time. The yarns were spread regularly on the reels by a simple apparatus. When the yarns were so wound upon the reels in the frame, the ends of those on the first or lowest tier of reels were carried down the rope-walk, and dropped into the separators, one of which was placed at every fifteen fathoms or so. These separators consisted of a series of vertical bars, fixed to a frame at their lower end, the upper ends being left free; into the intervals between these bars the yarns were dropped, and the different tiers kept separate by horizontal iron rods passed through holes in the side bars, so as to divide the whole frame into a series of reticulations; and these rods were so contrived as to be withdrawn separately or together. By being passed through these reticulations, the threads would be suspended at equal distances from each other from the top to the bottom of the walk, and, if meant to form one strand, would be hung on the hook which was to give them motion; and on the reels in the frame would be left just so much yarn as the strand should take up in hardening. The strand would then be ready for twisting; and to do this in such a manner as to make every yarn occupy its proper place, Mr Belfour employed an instrument called a top-minor. This was a block of wood formed somewhat like a sugar-loaf, and having inserted round its larger circumference a number of projecting pins. Into the recesses formed by these pins the yarns were inserted, and motion being

Rope-making.

Rope-making.

given to the wheel, the top was moved slowly up the walk by the workman, the reels at the same time giving out the yarns as they were taken up by the twisting. When the workman arrived at the first separator, the iron rods were, by the contrivance already alluded to, at once withdrawn, and the yarns left free, and so the workman proceeded until he arrived at the reel-frame, when the turning or heaving at the hook was stopped, and the strand prevented from untwisting, by being seized in a kind of nipper formed of iron. The ends of the yarns were then unfastened from the reels, and the strand was completed. By increasing the size of the reel-frames and separators, and by using three top-minors fixed to a sledge or otherwise, three strands could at the same time have been formed. The strands formed by this machinery were then laid together into ropes in the ordinary manner.

1793. In April 12th of this year, Mr Richard Fothergill obtained a patent for rope-machinery, embracing the following objects: First, freeing the hemp from its native husk, and fitting it for the subsequent processes; secondly, dressing the hemp, and drawing it out into slivers fit for spinning; thirdly, spinning the hemp; and, fourthly, twisting or making it into ropes or cordage. All these operations required no rope-walk to carry them on. Engravings of the machinery will be found in the fourteenth volume of the second series of the Repertory of Arts.

1793. In April 25th, Mr Joseph Huddart took out a patent for certain improvements in the formation of ropes. His method of registering the strands, in order to acquire an additional degree of strength, by giving the length of the yarns which compose the strand a certain ratio, according to the angle and hardness or compression the rope is intended to be laid with, and thereby acquiring a more equal distribution of the strain upon the yarns than ropes made in the common way, consisted of the following principles: First, by keeping the yarns separate from each other, and drawing them from bobbins which revolve, to keep up the twist whilst the strand is forming; secondly, by passing through a register which divides them by circular shells of holes, the number in each shell being agreeable to the distance from the centre of the strand, and the angle the yarns make with a line parallel to it, and gives them a proper position to enter; thirdly, by a cylindrical tube, which compresses the strand, and maintains a cylindrical figure to its surface; fourthly, by a gauge to determine the angle which the yarns in the outside shell make with a line parallel to the centre of the strand when registering, and according to the angle made by the yarns in this shell, the length of all the yarns in the strand will be determined; lastly, by hardening up the strand, and thereby increasing the angle in the outside shell, which compensates for the stretching of the yarns and compression of the strand.

In this, as in Belfour's invention, the registering apparatus was moved up the rope-walk by the twisting of the strand; but the machine differs from Belfour's in the following particulars. First, in place of the bobbins or reels being fixed in an upright frame, they are placed in horizontal ranges, each range rising higher from the front towards the back part of the machine. Secondly, in place of the separator of Belfour, sets of horizontal rails, notched to receive the yarns, and hung in cleats fixed to upright posts, are placed at regular intervals down the walk, so as to keep the yarns separate the whole length of the strand. Thirdly, in place of Mr Belfour's *top-minor*, a plate pierced with concentric circles of holes is made use of, the circles being about two inches asunder; and behind this plate a smaller plate, pierced with a similar number of holes, is fixed, the holes in the latter plate being so close together as merely to keep the yarns clear of each other. Immediately behind this last plate is fixed a tube made of thin steel, of a spring temper, and in two parts longitudinally;

Rope-making.

the thin edges of the one part overlapping those of the other, and the two parts being compressed by a thong or wire wound round them several times, and fastened to the jaws of an instrument called a heaver. By means of this, the yarns, in passing through the tube, can be compressed by a constant force; and if the yarns be thicker or smaller in different parts of the strand, the tube will expand or contract, to suit the difference of size.

In addition to these, an instrument called a register-gauge is used to measure the angle of twist of the yarns in the strands, with the view to employ the same twist when the strands are formed into a rope. Some of the parts of the machinery above noticed, it will be seen, have been adopted by other inventors, and some of them are still in use.

1797, September 13. At this time Mr William Chapman of Newcastle obtained a first patent for laying, twisting, or making ropes or cordage, of any number of yarns or strands, or any number of threads tarred or untarred, from the size of a cable down to the smallest line formed of more than one thread. The machinery for this purpose was less complicated than those formerly mentioned, but was only capable of forming ropes on the common principle. In the month of January 1798 he obtained a patent for Scotland for further improvements in rope-machinery, and containing the substance of his former one and of another taken out for England on the 6th of March 1798. The inventions embrace the making of ropes either by stationary machines, or by moving machinery on a rope-walk. In the former, the operations of forming the yarns into strands, twisting the strands into a rope, and coiling away the rope, on reels or otherwise, go on at the same time. One of the arrangements of the machinery by which these different operations are carried into effect, is as follows. Three or more discs, according to the number of strands, are placed round a common centre, with their planes inclined to each other in such a manner that their produced axes would meet in a given point. These discs are by the inventor termed strand-tables, and each of them is fixed to a hollow shaft, capable of revolving round its axis; which shaft is called the strand-shaft or upper shaft. These shafts are on the sides of the discs which are inclined to each other. On the opposite sides of the discs yarn-reels are suspended on spindles, on which they can turn freely. The yarns from the reels are passed through the shafts, and by the turning of the discs or strand-tables they are twisted into strands. In a part of the shaft there is a transverse opening to admit of two blocks of hard wood or other matter being applied on each side to press the yarns, and retard their passage through the shafts, so that they may be twisted to the degree required. These blocks are called press-blocks or compressors, and are held together by springs or weights. Instead of blocks the patentee sometimes substitutes rollers moving round their axes, and holding the yarns by their friction. Besides these, the yarns pass through a perforated plate called a yarn-guide.

The strand-tables all move round in one direction, and the strands as they proceed from the shafts are concentrated into a point, over a fixed grooved block, corresponding to the top in the ordinary process. Behind this block the strands are received into a hollow axis, which turns round in a direction contrary to the twist of the strand-tables, and in which the strands are formed into a shroud-laid rope, by being twisted by the apparatus attached to the shaft. This consists of a pair of wheels or sheaves, moving easily on their axes, to admit the rope a free passage, and at the same time compel it to twist equally round with the shaft. These sheaves are grooved in such a manner as to prevent the rope from turning sideways, and are called twisting-sheaves. Instead of the sheaves moving freely on their axes, such a motion may be given to them as, in every revolution of the rope-shaft, which makes one turn

Rope-making.

of the rope, the groove of the sheaves shall move such a space as is equivalent to the length of rope that is designed to be made by every turn. When the rope has passed through these sheaves, it is coiled upon a reel in such a manner as merely to require tying up; but if too unwieldy for reeling, it is coiled on a revolving platform. Such is an outline of the process of making shroud-laid ropes by Mr Chapman's machinery. For cable-laid ropes the same or similar machinery is used, the chief difference being, that in cable-laid ropes the twists are contrary, and the disparity of turns in the strands and rope not so great as in shroud-laid ropes; for which reasons, if the same machine be used, the means must be provided for making the shaft to assume contrary motions, and making them to move in different proportions.

"By the method previously described," says Mr Chapman, "for making a complete rope at one operation, I, during the act of making the strands, unite them into a rope by means of what I then call a rope-shaft, in which they are all concentrated, and receive the twist which forms them into a rope; but I also occasionally omit the concentrating of them, and the subsequent part of the operation, during the making of the strand or strands, and in place of twisting them into a rope, I only draw the strand forward as made, and coil it or them in any manner whatsoever, they in this instance having no rotative motion. The apparatus for drawing them forward is not fixed to the revolving shaft, containing the reel or reels and other necessary appendages, but may be permanent, and receive its motion in any proportion whatever to the revolutions or twists given to the strand by that shaft.

"The principles of making the strand in these two different ways are obviously portions of the process that would, as has been described, make the whole rope at one operation. And these two methods of making the strand, independently of making the complete rope, are reducible to the following principle: That in making a strand simply, one end need only to be twisted, and the other held from turning, but that both be permitted to pass forward, and progressively change place; and that the yarns be, if deemed necessary, so regulated as to come off these reels in such a manner as the part of the strand they come into may require.

"There is a third method of making a strand, compounded of the two preceding, which may be followed, viz. that of using two revolving shafts in place of one; the reels being placed on one of them, and the strand coiling upon the other. These two shafts ought to turn in contrary directions to each other."

The part of the invention in which a common rope-walk is made use of is thus described by the inventor: "At the head of the ropey, or in any other part, I fix upon pins so many reels as will contain all the yarns requisite for a strand, or the given number of strands determined to be made at one time, each reel containing one or more yarns; then in the instance of making three strands, I fix to three different hooks on the foreboard of a sledge, so many yarns, separately concentrating to each other, as are requisite; the yarns being previously passed through the openings of these separate fixed tops or yarn-guides, one opposite to or correspondent with each hook. Before, or on the face, or on the face of each top, toward the sledge, there may or may not be fixed a cylinder, such as I have described, below the laying block at the head of the rope-shaft. The yarns are then to be prevented from passing too easily off their reel, either by a pressure on the reels themselves, or on the yarns in their passage to or upon their separate tops, or in any manner that will permit them to come off as wanted.

"The men are then to heave upon, or turn round, the hooks of the sledge in the usual way; and the only remaining difference consists in the sledge being drawn progressively backwards, as the strand is making, until the

whole, or any determinate part, of the strand be made. The process of drawing back the sledge may be done in various ways; amongst others, by a rope to a capstan, moved either by a horse or men, according to the strength requisite." When the strands are thus twisted, the rope may be completed in the usual way. Such, then, is a brief outline of the general features of these important inventions of Mr Chapman; but his own specification, with illustrative drawings, will be found in the ninth volume of the first series of the Repertory of Arts.

1798. In this year also Mr Belfour obtained a patent for an improvement on his former machinery; and in 1799 Mr Belfour's machinery was adopted in the government-yards, and the sum of L.4000 was paid to the inventor for his superintendence of the erection of his machine, and the use of his patent.

1798. November 8th, Mr Chapman at this time patented an invention, which was so to regulate the motion of the sledge that for every revolution of the strand it should move backward through the exact length of axis assigned to it, and thus render the twist uniform. The sledge, in this case, travelled backwards on a railroad; and along the whole length of the walk, a rope, called a ground-rope, was laid. This rope was passed in the form of an S round two or more grooved wheels, which were pressed together so as to bind the rope, and having upon their axles toothed wheels connecting them with each other, and with the hooks for twisting the strands, which in this case were driven by one great crank. Thus, when the hooks were driven by the crank to twist the strands, the sledge was also moved backwards by the grooved wheels acting upon the rope; and by changing the connecting toothed wheels the backward motion could be given in any ratio to the twist of the hooks. Besides this, Mr Chapman connected the sledge by a rope to a horse capstan at the foot of the walk; and as the horse's power applied to the capstan could not draw the sledge faster backwards than the ground-rope permitted, the spare power was of course given in aid of the twisting of the strands by means of the wheels which connect that operation with the backward motion.

1798. November 17th, Mr John Curr of Sheffield took a patent for forming flat ropes for the use of mines, &c. "The said flat rope may be formed," says Mr Curr, "by connecting two or more small ropes sideways together, by sewing or stitching, lapping, or interlacing them with thread, or small rope made of hemp, flax, or other fit material, or with brass or iron wire, in such a manner as to prevent their separating from each other, and so as to cause them to exhibit, as nearly as possible, a flat form, or flat pliable rope.

1799. April 30th, Mr Belfour obtained another patent for a further improvement on his invention. This consisted, among other things, in winding a number of yarns, not exceeding four, upon each reel, and forming them, as before, into strands. He farther proposed to spin the hemp after having been tarred; and also to place a spinning-wheel at each end of the rope-walk, to enable the spinners to spin both up and down in the manner now practised. If we mistake not, this method of spinning up and down is mentioned by Duhamel as being in use in his time. However this be, it was, on Mr Belfour's recommendation, adopted in the government rope-works, and, according to the report of Mr Fenwick, the master rope-maker at Chatham, a saving was effected by it to the amount of a sixth part of a day's work to each man.

1799. July 26th, Mr William Chapman, in conjunction with Mr Edward Chapman, took a patent for many improvements in the art; the first of which was for machinery to spin the yarns in such a manner that the fibres of hemp, on entering the thread, were shortened in proportion to their proximity to the axis; and further, that by this machinery, women, children, and invalids could be employed as spinners.

Rope-making.

Rope-making.

Although the yarn thus produced was of superior strength to hand-spun yarn, yet, as it was attended with additional cost in the manufacture, the invention was laid aside.

The next part of the invention was in the application of locomotive power to the machinery of the rope-work. Part of this consisted in the application of an endless rope, reaching from end to end of the rope-walk, and moved with considerable speed, to any of the machines, whether stationary like the fore-end wheels, or changing position like the sledges. The application of the endless rope to the sledge was effected by passing a turn round suitable grooved wheels fixed to the sledge, and capable of giving motion to its machinery. By this machinery great advantages were gained, as each revolution of the strands and the rope, and the proper motion of the sledge, were predetermined and fixed by changes of wheels. For this purpose tables were made out to show what wheels were to be used for each kind of rope. Instead of two hundred men, the number usually employed in closing a twenty-one inch cable, fourteen only were required; and they, with the help of the steam-engine, which was only of eight horse power, were able to coil away the rope when made.

1799. In the same month Mr Mitchell obtained a patent for a "method of manufacturing cables, hawsers, or shroud-laid ropes, and other cordage, on scientific principles."

These principles consisted in combining by twisting the integral yarns of a strand, in numbers of two, three, or more, previous to their being formed into the strand; and thereby lessening the strain on the external yarns when ultimately formed into a rope. The strain on the external yarns would doubtless be by this method lessened, but the number of yarns exposed to external injury would, at the same time, be increased. The ropes formed on this principle were by the patentee termed selvegee cordage.

1799. August 20th, Mr Huddart took out a patent for an improvement on his apparatus of 1793. In this the registering apparatus, instead of being moved up the walk, was, like Mr Chapman's press-blocks, fixed to the tackle-board, and the machinery for twisting the strands was stationary, and also contained apparatus for winding the strands upon reels as they were formed.

1799. In the same month Mr Grimshaw obtained a patent for improvements in rope-machinery, which consisted, first, in dressing the hemp preparatory to spinning; secondly, in winding up the yarn; thirdly, in preparing the yarns for tarring; and, fourthly, in laying the ropes or cordage. The first step appears to be best entitled to notice. The hemp in this was conducted to rotatory hackles through conical fluted rollers, by which means the hemp was equally mixed.

1800. July 1st, Mr Huddart took another patent for further improvements in the manufacture of cordage. "A considerable expense," says the patentee, "is attached to having the tarred yarns wound upon bobbins; and also the tar, especially when the ropes are laid in cold weather, is not sufficiently incorporated amongst the yarns to render it compact for durability, whether registered or laid in the common way. In order to obviate these inconveniences, I have invented a method of registering the strands of ropes during the operation of tarring the yarns, which may be effected in the following manner. The white yarns must be wound separately on reels or bobbins, and placed upon a frame or otherwise, so that the yarns may be delivered from them with as small and equal a tension as possible, and to pass under rollers, or through holes, or between separating rods of wood or metal, to be guided into the tar, when sufficiently heated in the kettle, and thence to the register, separate from each other, to prevent entanglement, until they enter the tube, which must be placed at the end of the tar-kettle opposite to that where the bobbins of white yarns are placed. The registering tube now acts in a double capacity, viz. in forming the strand fair, as in ordinary

VOL. XIX.

Rope-making.

cases, and in acting as a nipper to squeeze out the superfluous tar. The strands are now twisted as before, and the twisting forces out some more tar, which must be cleared off by making the strand pass through the common adjustable nipper plate."

1801. July 16th, Mr William Hoard obtained a patent for "a portable machine for manufacturing ropes and cordage of any length in a short space, particularly adapted for shipping." This machine consists of separate reels, one containing the full length and number of yarns for a strand, from which reel they are drawn out to such distance as the two reels can conveniently be placed asunder, and are attached to the other, which is then empty, one of the reels being in a sledge or moveable frame. The process then begins by twisting the intermediate length of strand, until the reels have approached to each other the usual proportional space, namely, one fifth. The length of strand thus made is then wound up on the second described reel, and so much is let off from the first reel as to admit of their being at their greatest distance asunder, which process is necessarily continued until the whole strand be made, and wound up on the second reel. Lastly, three strands thus made have their ends united to a fourth reel placed opposite to them at its greatest convenient distance. By these four reels, the process of making the rope is carried on similarly to that of making a strand, except in the use of a top to regulate the progress of the twist of the rope in its approach to the three strand reels.

In 1801, Mr Archibald Thompson of Plough Court, Lombard Street, took out a patent for "certain new or improved machinery, for the purpose of spinning rope yarn and sail-cloth yarn, and for laying and making ropes and cordage." Mr Thompson's invention includes the whole process of spinning, tarring, and laying the cordage. Preparatory to spinning, he draws out the hemp into a long sliver, by different sets of chain hackles, moving with progressively greater speed; and in the end the sliver is spun by a spindle with its plyer and bobbin into a thread. The threads remain wound up on their bobbins until wanted to be made into a rope, tarred or untarred. The bobbins are then, according to the number of yarns wanted in a strand, placed so as to form two circles of the same diameter, round an open cylinder consisting of three hoops or rings, distant from each other the length of a bobbin, and placed near to one end of a long horizontal axis; and, if the rope be to be tarred, the yarns are led through a ring of a few inches diameter, near that end of the described open cylinder which has the spare length of axis projecting from it. The yarns are then diverged in different degrees, so as to form, when passed longitudinally through an open cylindrical frame of several feet in length, so many different concentric circles round the axis mentioned, as there are different shells or concentric coats of yarns in the strand; and from the further extremity of this last-mentioned cylindrical frame, the yarns are concentrated to one focus at the extremity of the axis, which is there concave, and has an opening through which the yarns pass to the machine which is to twist them into a strand, and draw them forward to be coiled up within itself. At the focal point described, there are arc nippers to express the tar from the yarns, which is put into them in the following manner, viz. the last-mentioned open cylinder, between the ring from which the yarns enter to it, and the perforation of the axis where they concentrate and quit it, lies over a tar-kettle, and has a portion of its lower half immersed in the tar, just so far as to imbue either the whole or any portion of the yarns with tar, as may be deemed expedient. This cylinder must, of course, turn round with such a convenient degree of speed as not to let the yarns be drawn off the cylinder before it comes in their rotation to pass through the tar. When the full length of strand is made, the twist of which is principally given by the revo-

3 F

Rope-making.

lution of the frame, in which it is progressively wound up during the process of making, the yarns are cut off; and three of these strands, from so many stationary strand frames, each of which has performed the operation last described, revolving only round its own separate axis, are concentrated together, and pass through the axis of one end of a rotatory frame, which twists them into a rope, and coils it up, progressively as made, upon a barrel within the frame.

1801. Mr Cutting of the United States invented a method of making lines and ropes. His machinery was of much the same kind as Sylvester's, Fothergill's, and others already described.

1802. January, a patent was granted to Mr Chapman for his invention of the application of certain substances to the preservation of cordage. This has already been noticed under the head ROPE.

1802. March 9th, a patent was obtained by Messrs Mitchell and Son for further improvements in rope-making, in addition to their patent of 1799. The specification of this patent will be found in the second series of the *Reperatory of Arts* (vol. viii. p. 241).

1804. Mr Huddart took out a patent for a machine for manufacturing hemp and flax into yarn. We have seen that in hand-spinning the fibres of hemp are spun into the yarn by their bight or double, but by this invention they were to be spun into the yarn by their end. The spinner, in this case, instead of walking backwards, remained stationary, with the machine containing the apparatus for twisting at a little distance from him. In front of the spinner a table or other support, containing a number of upright pins like those of the hackle, was fixed. This table was made broad enough to hold on it half the length of the article to be spun, while the other end was held by the spinner. The spinner commenced his work by drawing some fibres of the hemp, and making them fast to the hook of a whirl; the machine was then set in motion, and the spinner with his spinning cloth took hold of and compressed the yarn as it was formed. By this means, says Mr Huddart, in his description, the longest hemp or flax may be spun without having its fibres reduced in length; for the pins before mentioned occasion all the fibres to be drawn out to their full respective length, or nearly so, and also prevent irregular drawing of the fibres.

It may not be amiss to mention in this place, that in France a method of spinning fibres by the end instead of the bight had long existed. Instead of the spinner fastening his bundle of hemp round his waist, it was fastened to a distaff by being laid along it and tied at the upper end, and the distaff was fastened by its lower end to the waist, and lay on the left shoulder of the spinner; the lower end of the bundle of hemp thus hung loose, and the fibres were spun into the thread endlong.

M. Duhamel made certain experiments to ascertain what advantage this method had over the usual way of spinning by the bight, and the result did not warrant him in recommending its adoption where the men had been accustomed to the other mode.

1805. October 30th, Mr Huddard took another patent for improvements in the manufacture of large cables and cordage in general. This invention consisted of a machine for twisting into ropes the strands formed by the machinery formerly invented by him, and resembled in some parts the machine of Mr Cartwright, called the *cordelier*.

In Mr Huddard's machine the three strands were wound on their separate reels, which were hung in frames having a motion round their own axes, so as to give hardening to the strands; and also a motion round a common centre in an opposite direction, in order to combine the strands into a rope. On the end of the axis round which the reels were carried for the last-mentioned purpose, the top was fixed, having in it three holes for the strands, and behind

the top the rope was passed round three whirls, in such a manner as to regulate its tension while twisting.

1805. November 16th, Mr Curr secured by patent an invention of a method of laying or putting together the strands which form a rope.

The invention consisted, first, in so proportioning the teeth of the wheel at the upper end of the walk which twists the strands, to the teeth of that of the lower end which closes the rope, that the workmen, by keeping time with each other in their heaving round the winches of their respective wheels, would give the proper amount of hardening twist to the strands and closing twist to the rope; and, second, in regulating the motion of the laying-top, by having attached to it the end of a line or wire which is wound on a reel fixed to one of the wheels of the sledge, and made to move with a certain velocity according to the size and intended hardness of the rope.

1806. August 9th, Mr Ralph Walker of Blackwall took out a patent for a new mode of making ropes and cordage, applicable to the making of ropes and cordage of any size.

The machinery for effecting these purposes is on the same principles as many of those already described; but the arrangement of the parts is different, and very ingenious. In place of the reels with their yarns being hung on the face of three revolving discs, as in Mr Chapman's machine, they are arranged on the surface of three cylindrical flyers, and the yarns are carried over rollers in the inside of the cylinders, and conveyed to their axes at one extremity, where they are compressed by passing through a hole. These cylinders, like the discs, revolve round their axes, and twist the yarns at that point of the axis where they pass through; and they also revolve round a common axis, which is the main shaft of the machine. When the strands leave the cylinders they are guided by pulleys to a point in the main shaft, where they are formed into a rope. The patentee also describes a manner of tarring the yarns previously to their being wound upon the reels. In this case the tar in the kettle is heated by steam, and the yarns are passed through the kettle under a large roller which keeps them immersed. Engravings of all the machinery may be found in the *Reperatory of Arts*, 2d series, vol. xxvi.

1806. In this year Mr Curr took out a patent for proportioning the number of twists in the yarns to the length, moved by the spinners, so that they might elongate equally on being untwisted in forming the strand. To effect this purpose he had a cord wound upon a barrel attached to the spinning-wheel, and receiving a determinate motion from it; the end of this cord, when the spinners were going to set off, was attached to any one of them, whose speed could thus be regulated by the unwinding of the cord, and the other spinners had to keep pace with him.

1807. October 30th, Messrs Chapman obtained a patent for a method or methods of making a belt or flat band of rope for mining and other purposes. This invention consisted in the combination of two or any greater number of the strands of shroud laid-ropes placed side by side so as to form any determinate breadth of belt or band; and in a locomotive machine for stitching or riveting them together when stretched at full length.

1808. June 25th, Mr S. Gadd took a patent for a method of forming ropes, which consisted in twisting the threads together in pairs, and forming the strands of these doubled threads.

1808. June 28th, Mr John Hall took a patent for regulating the twist of the thread in spinning, by means of an endless band traversing the walk, and moved with a given speed by pulleys fixed on the head of the spinning-wheel. To certain parts of this band marks are attached. When one of these marks is at the wheel, a spinner sets on, and in spinning keeps pace with the motion of the band, as indicated to him by the mark.

1828. September 4th, Mr Robertson took a patent for im-

Rope-making.

Rope-making. improvements in the manufacture of hempen rope or cordage. The improvements consist in impregnating the yarns with tannin, by steeping them in an infusion of oak-bark, catechu, sumach, or valonia, previous to their being twisted into cordage.

1832. February 1st, Mr James Lang, flax-dresser, Greenock, obtained a patent for such improvements in the construction of the gill spreading or drawing heads, and roving or spinning frames, as adapted them for the spinning of rope-yarns. Fig. 14 shows a side view, and fig. 15 a top view, of the first drawing or spreading machine; and fig. 16

Fig. 14.

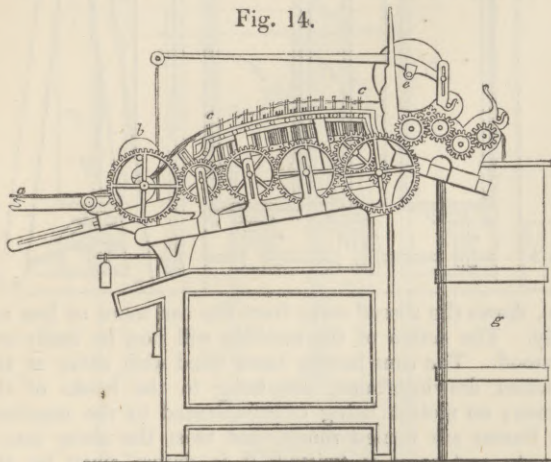


Fig. 15.

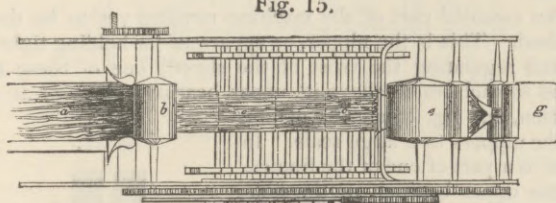
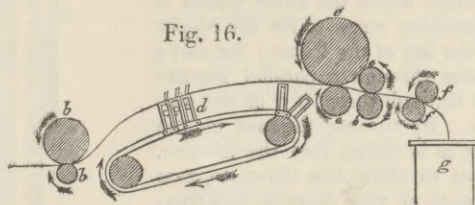


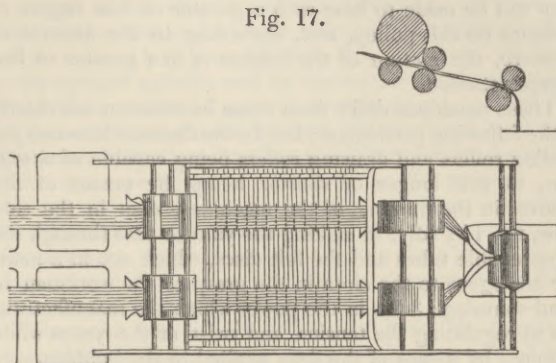
Fig. 16.



is a diagram illustrative of its mode of action. The same letters refer to the same parts in all the figures. Here *a* is a portion of a board called the spreading-board. Over the surface of this board an endless band of leather travels, in the direction indicated by the arrow; and on this band the hemp to be operated upon is spread. By the motion of the band the hemp is carried forward until it is taken hold of by the feeding rollers *bb*, by the motion of which it is carried onwards to be acted on by the gills or travelling hackles *ccc*; and the gills are fixed to slips of brass screwed to bars which extend across the machine, as seen in fig. 15. These bars pass through grooves formed in the links of an endless chain, by the motion of which they are carried round; and their ends move in peculiarly formed slits in the framing of the machine, by which they are confined to their proper course. By the gills being made to move faster than the surfaces of the feeding rollers, they pass through the hemp many times in the course of its passage across the space in which it is acted on by them, and they are thus enabled to split and straighten the fibres. The hemp now passes between the drawing rollers *ee*, the surfaces of which can be made to move from forty to sixty times faster than those of the feeding rollers, according to the material to be acted

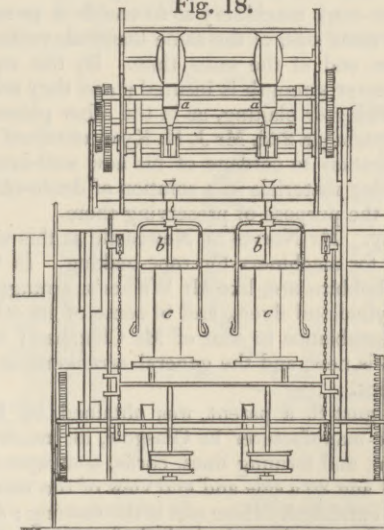
on. By them the hemp is drawn into a sliver of a certain state of fineness, and this sliver, after passing through the delivering rollers, falls into the can *g*. When a certain quantity of sliver is delivered into the can, a bell is rung by the machinery; the filled can is then removed by the attendant, and an empty one substituted. The filled cans are then conveyed to the second drawing machine, which differs from the first chiefly in being smaller, in having no spreading-board, and in having a double set of rollers and gills in the width, as will be seen by the top view, fig. 17. The cans

Fig. 17.



containing the slivers from the first drawing machine are placed at the end of this, in such number as may be required, and many slivers are then passed together through each set of feeding rollers. After having been acted on by the gills and the drawing rollers, the slivers may be delivered separately, or they may be combined, as shown in the drawing, by passing through a tray previous to entering the last pair of delivering rollers. The slivers, after having been subjected to a third drawing, in a machine the parts of which are still finer than those of the second machine, are carried to the roving or spinning machine. This machine has feeding rollers, gills, and drawing rollers similar to the drawing machines; but the parts are still finer than those of the last machine. In fig. 18 the spinning apparatus is

Fig. 18.



shown. The slivers, on leaving the drawing rollers, pass into the trumpet-mouthed tubes *aa*. The upper part of these tubes is in two halves, one of which is fixed to the cross rail of the machine, while the other is pressed against it by means of a spring, in such a manner as gently to compress the sliver on entering the tube. The bottom of the tube is set into another tube serving as a socket, and into this last tube discs of felt or cloth are put, through which a slit is made for the reception of the thread, which is thus com-

Rope-making.

Rope-making.

pressed and smoothed in the same manner as by the cloth in hand-spinning. From these tubes the threads are led to the flyers *bb* and bobbins *cc*, as in the ordinary spinning apparatus. Any degree of twist and of tension during twisting can be given to the yarn, by making the bobbins take up more or less of it for each revolution of the flyer; and this is simply effected by means of a drag formed of two steel springs fixed to the bobbin-rail. The ends of the springs partly embrace a peculiarly-formed pulley attached to the bottom of the bobbin, and by means of a pinching screw they can be made to bear with a greater or less degree of pressure on this pulley, and, according to the amount of pressure, the motion of the bobbin is in a greater or less degree retarded.

These machines differ from those in common use chiefly in the following particulars: 1st, In the distance between the feeding rollers and drawing rollers being capable of alteration, to suit longer or shorter hemp, by means of the grooves in the framing of the machines, seen in the side view, fig. 14; 2dly, in making the yarn to pass through the compressible tubes and the felt discs, which act in a manner analogous to the cloth in the grasp of the workman in hand-spinning; 3dly, in the power which the manufacturer has in regulating the tension and twist of the yarns while forming, by means of the drag applied to the bobbins.

The yarn produced by this machine is of excellent quality, and is much stronger than hand-spun yarn, as appears from certain experiments made for the purpose of testing them; the result showing, "that the patent-spun yarns are stronger than those of equal grist when spun by hand, and from the best staple or long hemp, by fifty-five per cent."

Mr Lang's machinery has in consequence been adopted by some of the most extensive rope-manufacturers in Great Britain.

1832. August 8th, Mr Crawhall obtained a patent for an improvement in the manufacture of flat rope, such as is used in mines. It will be remembered that in Mr Curr's patent, the method described of forming these bands was by sewing several ropes together side by side; and the improvement of Mr Crawhall consists in adding such wheels to the ordinary rope-work machinery as to enable it to make four ropes of the same size, of the same material, twisted in the same manner, and at the same time. By this equality of the ropes greater strength is insured; and they are put together by sewing or plaiting, as in the other patents.

1832. September 22d, Mr J. H. Kyan obtained a patent for the application to cordage of his now well-known process of steeping materials in a solution of deuto-chloride of mercury for the purpose of preserving them.

1833. May. Mr Norvel of Newcastle at this time took out a patent for machinery for rope-making. In this machinery the bobbins are, like Mr Walker's, arranged on the surface of cylindrical flyers, and in some of its other parts there is a resemblance to that of Mr Chapman; but there is much that is new, and the general arrangement appears to be excellent.

1838. August 8, a patent was obtained by Mr John Stewart, rope-manufacturer in Glasgow, for machinery for spinning yarn, and forming lines, cords, and ropes.

In figs. 19 and 20 a side and end view of the machine for spinning are exhibited. Here *aaa* is the framing; *bb'*, a fast and loose pulley on the principal shaft; *ccc*, bevel-wheels on the same shaft, gearing into pinions fixed on the frames *ddd*, which run in two bearings, one at the foot, and the other at *eee*, fixed to the rail of the frame; *fff* are sliver-cans, with projecting pins for hanging them in the hooks of the frames *dd*, so that any can may be shifted without disturbing the machinery; *gg* is a roller moved by a belt on the principal shaft, round which roller a turn of the thread is taken as it comes from the cans, and the motion of the roller, which may be increased or diminished at plea-

Fig. 19.

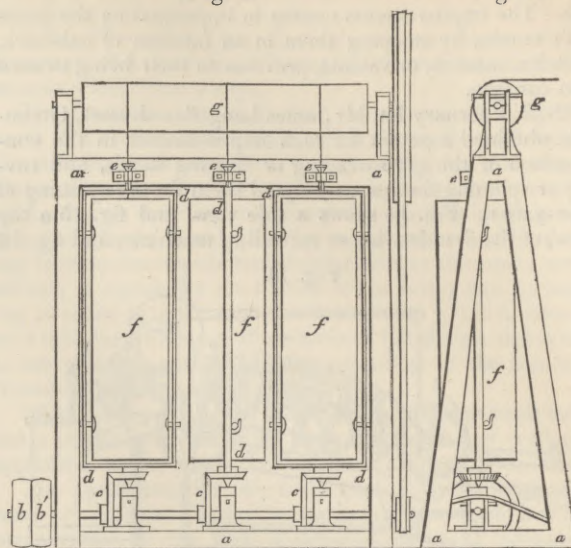


Fig. 20.

Rope-making.

sure, draws the thread away from the can more or less rapidly. The action of the machine will now be easily understood. The cans having been filled with sliver at the common drawing-frame, are hung in the hooks of the frames; on motion being communicated to the machine, the frames are turned round, and twist the sliver into a thread; and as it is twisted, it is drawn away by the roller.

An essential part of the machine remains yet to be described. This is the nipper, or apparatus for holding tightly and regulating the twist of the sliver; one of these is fixed to each frame above its upper bearing. Fig. 21 is a

Fig. 21.

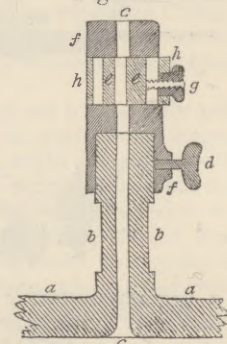
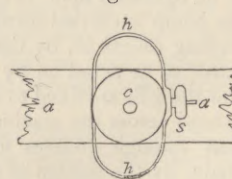


Fig. 22.



section, and fig. 22 a plan, of one of the nippers to a large scale. In it *aa* is a part of one of the frames, *bb* the upper bearing, *cc* the hole through which the sliver passes, *d* a pinching screw to fix the nipper in the top of the frame; the part *e* works through a parallel mortise cut through the part *ff* of the nipper. By turning the nut *gg* the part *ee* is thrust into the mortise, so as to allow the sliver to pass through *cc* with more or less freedom, as may be required. Any irregularity in the thickness of the yarns is provided for by the spring *hh*, which allows *e* to yield a little when a part of the yarn happens to be thicker, or forces it inwards when any part happens to be smaller, than the general size, while the steady pressure is maintained by means of the nut *gg*. Through this part of the apparatus, then, the end of the sliver is put previous to being carried to the roller, and it is between this and the roller that the sliver receives its twist to convert it into a thread or yarn. When the yarns leave the roller they are wound on bobbins, or made use of in some other manner. The patentee describes a method of putting a slight twist into the slivers before the cans are hung in the frames of this machine. He also describes a modification of the frame, in which, in place of the cans, bobbins may be used; and he describes an apparatus for filling the bobbins. His machinery for forming lines, cords, strands, and ropes is represented in

Rope-making. fig. 23, a vertical, and fig. 24, an horizontal, section. Here *aaa* is the framing; *bbb*, sliver cans, mounted each in its frame *ccc*, which is furnished with a nipper at its upper bearing.

Fig. 23.

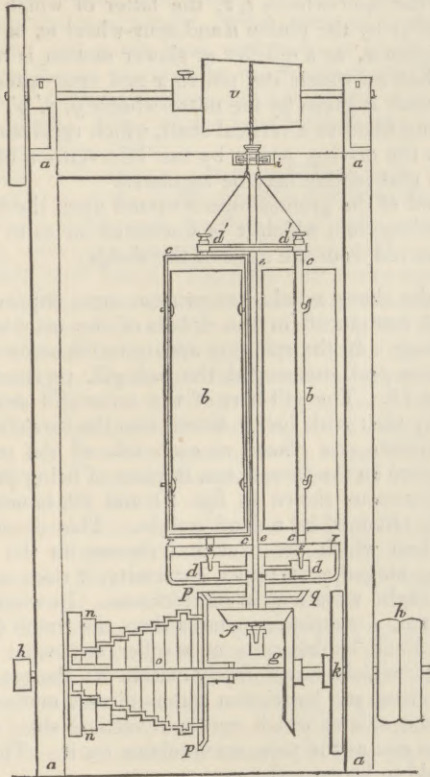
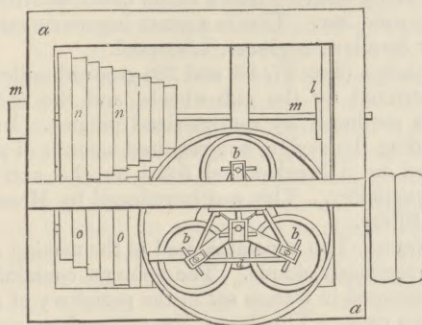


Fig. 24.



rection from under the bracket *i*, and meet in one which is carried to the top of the spindle, where is fixed a nipper similar to those of the can-frames. The roller *v* is for the purpose of pulling away the strand, cord, or rope, as it is formed; and in this case is made slightly conical, so that by shifting it along its shaft, the speed with which it draws may be varied. The action of the machine will be easily comprehended. By the revolution of the spindle *ee* the can-frames are carried round a common centre; and as they turn they receive a motion, each round its own axis, by means of the wheel *r* and the pinions *ss*. If sliver be put into the cans and carried through their nippers, they will be twisted into yarns between the nippers and the holes in the upright spindle, and by the revolution of the spindle they will be combined so as to form a strand or cord. If in place of slivers strands be used, the result will be a rope. The patentee further describes machinery for the formation of flat ropes, or bands for mines and the like purposes.

Having thus, as far as in our power, given an account of the progressive improvement of the art by the application of machinery, we shall conclude with a description of the most improved forms of machines and apparatus used in laying ropes in the present day.

When the yarns have been spun upon Mr Lang's or other spinning machines, or by hand, they are wound from the bobbins in a haul, upon a large octagonal reel about eight or nine feet diameter: the number of yarns in the haul are, of course, regulated by the conveniences of the manufactory. The haul is then passed from this reel through the tar-kettle, and, after undergoing the action of the nippers, is again wound upon a similar reel. From this reel the yarns are wound singly upon the reels or bobbins to be used in the laying. The bobbins, with their yarns, are then hung in frames, and the further machinery used is an improved form of Mr Chapman's locomotive apparatus. The whole arrangement of these parts will be better understood from the drawings. In the drawings the connection of the different parts with the moving power is not shown. This may be steam, water, or any other power, and may be placed in any convenient situation, so as best to serve all the purposes of the establishment.

Figs. 25 and 26 show the general arrangement of the

Fig. 25.

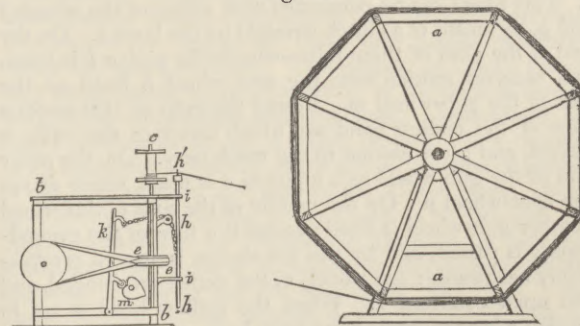
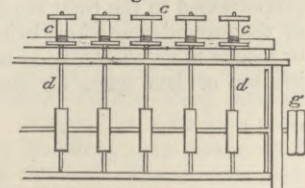


Fig. 26.



winding apparatus; fig. 25 an end view, and fig. 26 a back view, of a portion of the winding-table. *aa*, reel about eight feet diameter, on which the haul is wound; *bb*, frame containing eight bobbins or reels *ccc*, fastened on vertical spindles *dd*, on the lower end of which the pulleys *ee* are fixed; on the horizontal shaft a corresponding number of pulleys are fixed, to drive those of the vertical shaft by belts. One end of the horizontal shaft carries a fast and loose pulley *g*,

Rope-making.

to which motion is given by a belt from the driving power. The apparatus for spreading the yarns on the reels consists of a rail *h'*, with loops or eyes opposite to each reel: through these eyes the yarns are passed. The rail is supported by two upright rods *h*, *h*, which slide through holes in the brackets *i*, *i*. To these rods the alternating motion is given by a chain connecting them with the lever *k*, which is wrought by the heart-wheel *m*. Figs. 27, 28, 29, show the ar-

Fig. 27.

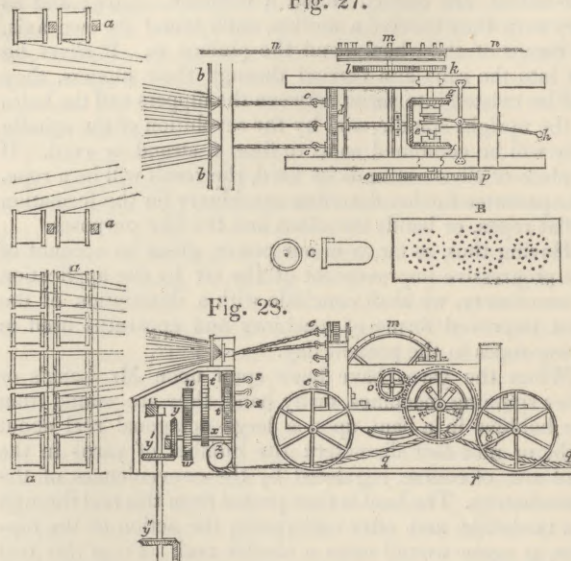
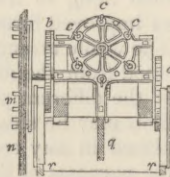


Fig. 28.

angement of the apparatus for twisting the strands, and laying them into a rope. *aa* the reel-frame; *bb* the register-plate, through the concentric circles of holes of which the yarns are put. These holes are seen in the detached front-view of the plate at B. Immediately behind the plate the yarns are passed through the press-blocks, one of which is figured detached at C. They are then hung on the hooks of the sledge *cc*. These hooks are on the prolonged axes of pinions driven by a spur-wheel *d*, which again is driven by the mitred wheel *e*. This wheel can be connected with either of the wheels *f* and *g*, by means of a clutch wrought by the lever *h*. On the end of the axes of these mitre-wheels the pinion *k* is fixed, and receives motion from the spur-wheel *l*, fixed on the axis of the gub-wheel *m*. Round the gubs of this wheel a turn of the endless band *nn*, which traverses the walk, is passed, and gives motion to the machinery. On the other end of the gub-wheel axis a pinion *o* is fixed, which drives the spur-wheel *p*. On the middle of the axis of this wheel another gub-wheel is fixed; round it a turn of the ground-rope *q* is passed, and by this the sledge is moved progressively backwards: the wheels of the sledge are flanged, and run upon a railroad *r*. When the endless band is set in motion after the yarns have been hung on the hooks of the sledge, the sledge travels backwards at a rate which may be proportioned to the twist required to be given, by the gubs of the ground-rope wheel being made to shift further from or nearer to its centre, so as to move the sledge through a greater or less space for each revolution of the hooks.

Fig. 29.



When the sledge has reached the foot of the walk, the strands are hung together on the centre-hook of the wheel, and by means of the lever *h* the motion is reversed; at the same time the yarns are cut over by the tackle-board, and hung on the hooks *s*, *s*, *s*, at the fore end. To these motion is given by the spur-wheels *t*, *t*, the latter of which may be driven either by the pinion *u* and spur-wheel *w*, or directly by the pinion *x*, as a quicker or slower motion is required. To the shaft on which the pinion *x* and spur-wheel *w* are fixed, motion is given by the mitre-wheels *y*, *y*, *y*, the two latter being fixed to a vertical shaft, which receives its motion from the driving power by the intervention of cones, by which that motion may be regulated.

The end of the ground-rope is wound upon the barrel *z*, by unwinding from which it is slackened so as to allow it to be removed from the gubs of the sledge.

Since the above article was written, some improvements have been introduced in the details of the machinery for rope-making. In the spinning apparatus the screw-gill has for the most part superseded the link-gill, represented in figs. 14 to 18. The gill-bars of the screw-gill are moved forward by their ends being forced into the threads of two parallel screws, one placed at each side of the machine. The pressure on the thread, too, in place of being produced by the apparatus shown in figs. 21 and 22, is now more commonly obtained by a dead weight. This consists of a piece of iron which lies over and presses on the thread, and being hinged at its upper extremity, it rises and falls with the slight variations in its thickness. In winding the bobbins, too, a simpler apparatus than the frame (fig. 26) is used. Each bobbin rests on a roller somewhat shorter than itself, which moves freely within its flanges. The roller revolves, and by friction communicates motion to the bobbin, the axis of which moves in vertical slits, so as to allow it to rise as the yarn accumulates on it. The pressure is said to improve the yarn.

In the laying apparatus (fig. 27) the pressure-block *c* is heated by being inserted into a steam chest substituted for the former solid bar. This is a great improvement, and is due to Mr Swallow, engineer, Liverpool.

In the sledge (figs. 27, 28, and 29) grooved pulleys have been substituted for the gub-wheels, and the change in velocity is produced by various-sized pinions. In place, too, of loading the sledge, any required amount of pressure is produced by a break-wheel fixed on the axis of the ground-rope pulley. This was introduced by Messrs Garnock and Bibby.

Wire-Rope.—The apparatus used in the making of wire-rope is exceedingly simple. The bobbins containing the wire are mounted in frames set in the periphery of a larger frame like a cage. The larger frame revolves round an axis, on the bottom of which is a fixed spur-wheel; and the lower end of the vertical axis of each bobbin-frame carries a spur-wheel gearing into this. There is thus obtained a sun-and-planet motion; the large frame carrying the bobbins round the central axis, and each bobbin-frame revolving also round its own axis. The wires from the bobbins pass through holes in the top of the central axis, and are there united to form the strand or rope as the case may be. The apparatus for small strands or ropes is sometimes arranged so that the bobbins revolve round a horizontal in place of a vertical axis.

(J. N.)

Rope-making.

ROQUE, SAN, a town of Spain, Andalucia, in the province and 56 miles S.E. of Cadiz, and 7 N.W. of Gibraltar. It stands on a hill, and consists chiefly of low houses. In the principal square is a town-hall; and the other public buildings are a church and convent, several schools, an hospital, poor-house, and prison. Outside the town is a public walk and a cemetery. Wine, cordage, leather, soap, pottery, &c., are made here, and there is some trade in corn. San Roque was built by the Spaniards in 1704, after their loss of Gibraltar, principally out of the ruins of the ancient Carteia. The climate here is salubrious, and living very cheap. Pop. 7619.

ROREE, or LOHUREE, a town of British India, in Sind, on the left bank of the Indus, 20 miles S.S.E. of Shikarpoor. It occupies a picturesque position on a rocky precipice 40 feet high, round the base of which sweeps the river, here about 1200 yards broad. There are four rocky islets in the stream; and the ruins of some buildings in the centre seem to give countenance to the ancient tradition, that the Indus formerly flowed in a different bed. Roree has narrow streets; and the houses are large and lofty, but not very substantial. There are about forty mosques, the largest of which is a gloomy brick building on a rising ground. The town has also two bazaars, and a large lodging-place for travellers. The manufactures are few and insignificant. Pop. estimated at 8000.

ROSA, SALVATOR, a celebrated landscape-painter, was born at the village of Arenella, in the neighbourhood of Naples, on the 20th of June 1615. His youth was characterised by a wild and self-willed disposition. The desire of his father that he should enter the church had no effect on his conduct. He behaved so rebelliously at the college of the congregation of Somasca that he was expelled. Nothing would satisfy him but to become a painter. When he found himself unable to obtain a proper instructor in that art, he resolved to learn from nature. Setting out alone, he was soon lost among the solitary and romantic scenery of the Bay of Naples. It is even said that he ventured into the den of the bandits of Sant' Angelo, and spent some time in sketching their mountain haunts and their own picturesque features. Nor, on his return to Naples, was he less bold in displaying the artistic skill which he had gained. He painted history after Ribera, and battle-pieces after Aniello Falcone, and assailed with satirical epigrams all those envious rivals who dared to scoff at the first attempts of his genius. Salvator Rosa settled at Rome in 1634, and commenced to practise as a professional landscape-painter. The obscurity and poverty in which for a long time he toiled had an effect upon his genius. His imagination conjured up scarcely any scenes but what were dark and awe-inspiring. Yawning ravines, gloomy thickets, barren wildernesses, and lonely sea-shores, were his favourite subjects. The rocks were rugged and riven; the trees were maimed and dishevelled; the skies were black and troubled; and the figures were lurking bandits, wayworn travellers, solitary anchorites, and castaway mariners. The general effect, indeed, was to give a striking and complete representation of uncultivated and savage nature. Between 1647 and 1657 Rosa was in Florence, enjoying a brilliant career of fame. The grand duke and the courtiers caressed him and heaped favours upon him. Many of the citizens admired his pictures, sung his cantatas, and could repeat parts of his unpublished satires. His house was the resort of all the men of genius and refinement in the place. Among these he appeared in the character of a very prodigy of versatility. He acted comic pieces, recited his own poems, sang his own songs to his own tunes, performed upon every kind of instrument, and discoursed upon every kind of subject. The remaining days of Salvator were spent at Rome in the composition of historical pictures. In these he showed that he could transfer to figures the same gloomy loftiness

which he had imparted to landscape. "Pythagoras on the Sea-shore," "Pythagoras issuing from a Subterranean Cavern," "Jeremiah thrown into a Pit," "The Catilinarian Conspiracy," and "Saul and the Witch of Endor," were terrible and grand. He might even have attained to higher efforts in the same line, had he not been cut off by dropsy on the 15th of March 1673.

Many of Rosa's pictures are in Britain. A large landscape, representing "Mercury and the Woodman," is in the National Gallery. There are also two of his paintings, a landscape and a sea-piece, in the National Gallery of Scotland. The chief biographers of Salvator Rosa are Baldinucci, Passeri, and Pascoli. His *Life and Times* by Lady Morgan is far too romantic and rhetorical to be worthy of its name.

ROSAMOND, daughter of Walter, Lord Clifford, was a young lady of exquisite beauty, and is generally known by the common epithet of "the Fair Rosamond." The popular story of her is as follows:—Henry II. saw her, loved her, declared his passion, and triumphed over her honour. To avoid the jealousy of his queen Elinor, he kept her in a wonderful labyrinth at Woodstock; and by his connection with her had William Longsword, Earl of Salisbury, and Geoffrey, Bishop of Lincoln. On Henry's absence in France, however, on account of a rebellion in that country, the queen found means to discover her; and, though struck with her beauty, she recalled sufficient resentment to poison her. The queen, it is said, discovered her apartment by a thread of silk; but how she came by it is differently related. This story of "Fair Rosamond" was once exceedingly popular in England, and is still heard of through the medium of attractive broadsides in remote districts, where it is eagerly read, and as eagerly believed. Yet it is not supported by history. She was buried in the church of Godstow, opposite to the high altar, where her body remained till it was ordered to be removed, with every mark of disgrace, by Hugh, Bishop of Lincoln, in 1191. She was, however, considered as a saint after her death.

ROSARIO DE CUCUTA, a town of New Granada, in the province of Boyaca, stands in the fertile valley of Cucuta, 30 miles N.N.E. of Pamplona. The surrounding country produces large quantities of cacao, sugar, coffee, and cotton; and an active trade is carried on here in these articles. Pop. 5000.

ROSARY (Lat. *rosarium*, a rose-garden), a string of beads used by Roman Catholics in their devotions, on which they reckon the number of times they repeat the Pater-noster and the Ave Maria. The former, or Lord's Prayer, they recite fifteen times; the latter, or angelical salutation, they recite one hundred and fifty times. Accordingly, the rosary is three times the ordinary chaplet. It is reported to be instituted in honour of the fifteen principal mysteries in our Saviour's life, and that of the Virgin Mary. Some have attributed the origin of the rosary to St Dominic. A Spanish writer tells us "we owe to Dominic de Guzman, a canon of the order of St Augustin, two most important blessings, the rosary and the holy office," A.D. 1202. Mosheim, among others, ascribes to this institution a higher antiquity (*Eccles. Hist.*, cent. x., part ii., c. 4). "Pretty distinct traces," he says, "of the rosary and crown of St Mary, as they are called, or of praying according to a numerical arrangement, are to be found in this (the tenth) century. For they who tell us that St Dominic invented the rosary in the thirteenth century do not bring satisfactory proof of their opinion." "This," he adds in a note, "is formally demonstrated by Mabillon, *Acta Sanct. Ord. Bened.*, Præf. ad sæcul. v., p. 58, &c." This festival falls on the first Sunday in October. Its name is said to have been changed by Gregory XIII., from St Mary of the Victory, given to it by Pius V. on its institution in honour of the battle of Lepanto, which took place on that day. (See Brande's *Dict. of Science*.)

Roscius
||
Roscoe.

ROSCIUS, Q., the most celebrated comic actor of Rome, is spoken of in terms of the highest commendation by Cicero. The exact period of his birth is unknown, but he must have been somewhat older than Cicero (born B.C. 106), as he had already earned a high reputation before the death of Sulla, B.C. 78. His subsequent career was said to have been predicted by a strange occurrence whilst he was still a child. His early years were spent at Solonium, near Lanuvium; and whilst he was sleeping in his cradle, a serpent entwined itself round his body without injuring him. This circumstance in the life of the actor was afterwards represented by the artist Praxiteles, and celebrated by the poet Archias. Of his education we know nothing, except that he and Æsopus, the tragic actor, used to attend the Forum when Hortensius the orator pleaded, that they might imitate on the stage what they admired in him. Roscius had a peculiar squint of the eye, but this was of course concealed by the mask he wore. His private character was highly respected, and Cicero remarked that he was such an artist that he seemed the only one fit to appear upon the stage, and yet so excellent a man that acting was beneath his dignity. He thought him worthy of the Senate. He used to contend with Cicero which of them could represent the same sentiment in the greatest variety of ways, he by acting, and Cicero by his eloquence. So high an opinion did he entertain of his profession that he wrote a work comparing it with oratory. He gave lessons in elocution, and used to say that he never had a pupil whom he could altogether approve of. His gains as an actor are variously stated,—by Macrobius at 1000 denarii (L.32, 5s. 10d.) a day; and by Cicero at 600,000 sesterces for ten years (L.48, 434 10s.), which would make it somewhat less than L.5000 a year; but for the last ten years he had refused to receive this pension from the Roman people. He had a dispute with one Fannius Chœrea respecting a slave of whom they were joint owners, and Roscius was defended by Cicero in a speech which has come partially down to us. At what time this took place we have no means of judging. He died a little before the time (about B.C. 61) that Cicero delivered his oration in defence of Archias. (See Unterholzner, in Savigny's *Zeitschrift*, vol. i., p. 248; also München, *Oratio M. T. C. pro Q. R. C. juridice exposita*, Coloniae, 1829.)

ROSCOE, WILLIAM, a distinguished writer, was born at Liverpool on the 8th of March 1753. He was the only son of William Roscoe, who then kept a public-house called the Bowling-Green, to which he united the profession of a market-gardener. The elder Roscoe is described as a man below the middle stature, but of remarkable bodily strength and activity. His wife, Roscoe's mother, is said to have been a woman of a superior mind and of warm affections, and to have exercised over the character of her son an influence, of which the effects were never obliterated to the latest period of his life. The first elements of learning he acquired under the tuition of a schoolmistress; and at the age of six he was removed to a superior school. Roscoe quitted school at the age of twelve, the master having reported that his scholar had learned all that he professed to teach. He acquired a very early relish for reading, and particularly for poetical reading. "I was at this period of my life," he has recorded, "of a wild, rambling, and unsocial disposition; passing many of my hours in strolling along the shore of the River Mersey, or in fishing, or in taking long walks alone. . . . I now began to assist my father in his agricultural concerns, particularly in his business of cultivating potatoes for sale, of which he every year grew several acres, and which he sold, when produced early in the season, at very advanced prices. His mode of cultivation was entirely by the spade; and when raised early, they were considered in that part of Lancashire as a favourite esculent. When they had at-

Roscoe.

tained their proper growth, we were accustomed to carry them to the market on our heads, in large baskets, for sale, where I was generally entrusted with the disposal of them, and soon became a very useful assistant to my father. In this and other laborious occupations, particularly in the care of a garden, in which I took great pleasure, I passed several years of my life, devoting my hours of relaxation to reading my books. This mode of life gave health and vigour to my body, and amusement and instruction to my mind; and to this day I well remember the delicious sleep which succeeded my labours, from which I was again called at an early hour. If I were now asked whom I consider to be the happiest of the human race, I should answer, those who cultivate the earth by their own hands."

Having reached his fifteenth year, he found it expedient to make choice of a profession. His love of reading induced him to prefer the avocation of a bookseller, but he was disappointed in his expectation of finding it altogether pleasant, and after a trial of a month, he returned to his rustic labours. In the course of the ensuing year (1769) he was articled to a young attorney, who died before the completion of his clerkship. The remainder of it was passed in the office of Peter Ellames, who was eminent in his profession, and who was much satisfied with his pupil's talents and industry. During this period he still continued to reside with his father, but he had previously the misfortune to lose his mother. Although very punctual in his attention to business, he always found some precious intervals of leisure for the cultivation of his literary talents; and his early love of poetry had its usual effect in purifying and refining the taste. His chief favourite was Shenstone, with whose elegant simplicity he appears to have been greatly captivated. He cultivated an intimate friendship with other ingenuous youths who cherished the same love of literature. In conjunction with two of these, William Clarke and Richard Lowndes, he applied himself to the study of the ancient languages; and with these individuals, to the close of their lives, he continued in habits of the strictest intimacy. They had another associate, who was capable of directing as well as participating in their studies. This was Francis Holden, a young man of uncommon talents, who was an assistant in his uncle's school, where it was his business to teach, not only mathematics, but likewise the Greek, Latin, Italian, and French languages. They were accustomed to meet early in the morning, and to pursue their classical studies till the hours of business called them to less genial avocations. It was the example of Holden that prompted Roscoe to begin the study of the Italian language, in which he at length attained to so great proficiency. He thus continued to improve his taste and to enlarge his fund of knowledge. From a fervent admiration of poetry there is generally an easy transition to the composition of poems. He wrote many verses in his early youth, and at the age of twenty he printed an *Ode on the Foundation of a Society for the Encouragement of the Arts of Painting and Design*, in the town of Liverpool. About the same period he wrote a descriptive poem, entitled *Mount Pleasant*, which was not, however, published till the year 1777. His ode was then reprinted. These poems were favourably received; and they obtained the approbation of two very competent judges, Mr Mason and Sir Joshua Reynolds.

Having completed his clerkship, he was in 1774 admitted an attorney of the Court of King's Bench. During the same year he entered into partnership with a Mr Bannister, but their connection was of very short duration. He afterwards formed a more permanent engagement with Mr Samuel Aspinall, who had long been known as a respectable practitioner. He was assiduous in his attention to the business of his profession; but he did not find himself con-

Roscoe. strained to abandon his literary studies, and he thus continued the gradual improvement of his excellent talents. At an early period of his life he became intimately acquainted with the family of a respectable tradesman named Griffies. Jane, the second of three daughters, "soon attracted his admiration, and won his affection, by her gentle yet lively manners, by the sweetness of her disposition, and by the many admirable qualities of her truly feminine mind. Although the state of his circumstances at this time gave little promise of an immediate union with the object of his attachment, it was not the wish, and perhaps it was scarcely in the power, of one possessing the frank and ardent character of Roscoe to conceal from her the feelings she had inspired. From that moment to the close of his long and eventful life, he never found reason to regret for one instant the judgment of his youth." A considerable interval elapsed before they could prudently fulfil their engagement; but his professional emoluments gradually became more ample, and they were married on the 22d of February 1781. Their union was attended with more than common felicity.

The African slave-trade was now in its fullest vigour; and as it formed a very material part of the commerce of Liverpool, the great body of the inhabitants were interested, either directly or indirectly, in the continuance of this detestable traffic. For any individual to raise a warning voice against it in such a community required no small portion of moral courage. The generous feelings and manly character of Roscoe urged him to take a very prominent share in those proceedings which finally led to its suppression; a measure which reflected so much honour on that administration which included Fox, Grey, Holland, and Erskine. He composed, in blank verse, a poem entitled *The Wrongs of Africa*; of which the first part was published in 1787, and the second in 1788. It was translated into German by a clergyman named Kühn. In 1787 he likewise published *A General View of the African Slave Trade, demonstrating its Injustice and Impolicy, with Hints towards a Bill for its Abolition*. This seasonable tract was followed in 1788 by *A Scriptural Refutation of a Pamphlet lately published by the Rev. Raymond Harris, entitled "Scriptural Researches on the Licitness of the Slave Trade," in four Letters from the Author to a Friend*. Harris was a clergyman of the Established Church, but had been educated for the Popish priesthood. Such talents as he possessed were employed in an attempt to prove that slavery, as a system, has obtained the Divine approval; that God has sanctioned the principle of one portion of mankind treating another like beasts of burden. For his satisfactory refutation of this reverend apologist of such enormities Roscoe received the thanks of the London Abolition Committee. They likewise printed a new edition of his pamphlet, which was extensively circulated, and highly approved. In 1792 he published *An Inquiry into the Causes of the Insurrection of the Negroes in the Island of St Domingo*. Of this insurrection the advocates of slavery had endeavoured to avail themselves, as a most powerful argument against the abolition; and he therefore performed another important service by exposing the fallacies of their reasonings and inferences.

In other public transactions of that eventful period he likewise felt a deep interest. On all subjects his sentiments were humane and liberal. With some of the most enlightened men of the kingdom, he contemplated the French Revolution as a glorious event; and his feelings of exultation were expressed in more than one poetical effusion. In the year 1796 Roscoe published *Strictures on Mr Burke's Two Letters, addressed to a Member of the present Parliament*. At an earlier period (1791), Roscoe had printed a merry ballad concerning *The Life, Death, and Wonderful Achievements of Edmund Burke*; and had adorned it with

VOL. XIX.

a frontispiece etched by himself, and representing Burke equipped like a knight-errant, and assailing Fox in the House of Commons. About this period his mind was vigorously devoted to an undertaking of a more important nature. The plan of preparing a biographical account of Lorenzo de' Medici had occurred to him at a very early stage of his literary career. He long continued to collect books and to amass materials; and at the close of the year 1789 he communicated his design to his intimate friend Mr Clarke, who was then residing in Italy for the benefit of a milder climate. This gentleman had been engaged in commercial pursuits, but is said to have been skilled in ancient as well as modern literature. With great alacrity he undertook the task of exploring the archives and libraries of Florence, in quest of materials for the projected work; and the author acknowledged himself deeply indebted to the assistance which he had thus received. The sale of the Crevenna and Pinelli libraries enabled him to procure many rare books, for which he might otherwise have made a hopeless search. *The Life of Lorenzo de' Medici, called the Magnificent*, was at length published in the year 1796, in two volumes quarto. It was elegantly printed by John Maccreery, who, at the author's suggestion, had recently established a press in Liverpool. The success of this publication exceeded the most sanguine expectations which the author could have ventured to cherish. From the periodical critics he obtained ample praise. He received letters of warm commendation from men of rank and men of letters, with several of whom he had no previous acquaintance or correspondence. One of these was the eccentric Earl of Bristol and Bishop of Derry, who was then residing in Rome. He first applied to Mr Cadell, the bookseller, in order to ascertain the author's profession, resources in life, and what present of books, pictures, or statues might be most acceptable to him. Dr Parr's fervent zeal in the cause of literature likewise prompted him to seek the correspondence of the elegant biographer, which ultimately led to an intimate friendship. The first edition of this work was printed at the expense of the author; but soon after its appearance Cadell and Davies offered him no less a sum than L.1200 for the copyright. Of this liberal offer he did not hesitate to accept; and little doubt can be entertained that the booksellers found it a very advantageous transaction. The fourth edition, in three volumes octavo, was printed in 1800. In other countries the success of this book was equally brilliant. Three editions were speedily circulated in America. The work, translated into German by Sprengel, was published at Berlin in 1797. In 1799 a French translation, by François Thurot, was published at Paris. During the same year an Italian version, by the Cavaliero Gaetano Mechirini, made its appearance at Pisa, in four volumes octavo. It was undertaken at the suggestion of the elegant Fabroni, who had himself published a Latin Life of Lorenzo, which he intended to translate into his native language; but he was so much delighted with Roscoe's work that he abandoned his design, and recommended the other task to Mechirini. In the course of the ensuing year he addressed a very gratifying letter to the author. Similar letters were addressed to him by Blandini, the learned keeper of the Laurentian Library in Florence, and by the Abate Andres, a Spanish Jesuit, resident in Italy, and deeply skilled in Italian literature.

For the avocation of an attorney Mr Roscoe never had any hearty relish, and he finally relinquished it in the year 1796. With his last partner, Mr Lace, he made an arrangement which secured him some interest in the business; and during the following year he entered himself at Gray's Inn, with the view of being called to the bar. He kept Hilary term, but made no further progress in this new career, although, according to the opinion of his son, he possessed qualities which must in all probability have ren-

Roscoe.

dered his success certain. In conjunction with Mr Thomas Wakefield, he had in 1793 obtained a lease of an extensive tract of peat-moss in the vicinity of Manchester; and from the draining and improvement of this land he anticipated an ample return. In 1799 he purchased one-half of the Allerton estate, a valuable property situated about 6 miles from Liverpool. The family of his intimate friend Mr Clarke, which had long been connected with an extensive banking-house at Liverpool, was at the close of the year 1799 placed in circumstances of considerable difficulty, when by great and unremitting exertions Roscoe brought the affairs of the house into a better train of management; and towards the close of the year 1800 he could again command some portion of leisure for his favourite pursuits. He had previously published *The Nurse, a Poem translated from the Italian of Luigi Tansillo*. This elegant version was favourably received, and it reached a third edition in 1804. But he had for some time contemplated a more magnificent undertaking, a *Life of Leo X.*; and on receiving, through the kindness of Lord Holland, some important and unpublished materials from Florence, he reverted to it with new ardour. *The History of the Life and Pontificate of Leo X.* was published in four volumes quarto in the year 1805. It had been in the press upwards of two years. For one-half of the copyright Cadell and Davies paid the sum of L.2000. This work, notwithstanding its great and varied merit, experienced a less favourable reception than its precursor. The *Life of Leo*, with the omission of the documents contained in the appendix, was speedily reprinted at Philadelphia; but the sale was not there so rapid as that of his former work. A German translation, by Professor Glaser, was published at Leipsic in three volumes octavo, which successively appeared in 1806, 1807, and 1808. A preface, notes, and disquisitions were contributed by Henke. In 1808 a French translation, by P. F. Henry, was published at Paris, and a corrected edition appeared in 1813. An Italian version was subsequently undertaken by Count Luigi Bossi, who began by translating from the French. This work extended to twelve volumes octavo, published at Milan in 1816 and 1817. He added a variety of notes and documents illustrative of the text, together with numerous engravings of portraits and medals. The sovereign pontiff Leo XII. inserted this translation in the catalogue of prohibited books; but in spite of his denunciation 2800 copies of it have been dispersed in Italy, where the name of the elegant author continues to be held in no common estimation.

Soon after the appearance of his great work he was suddenly induced to place himself in a new sphere of action. On the eve of the general election in 1806 he received a requisition from a number of the most respectable burgesses of Liverpool, requesting him to come forward as a candidate for the representation of his native town. This requisition he received on the 30th of October; he issued his address to the electors on the following day; and the election commenced on the first of November. His two opponents were General Gascoigne and General Tarleton; of whom the former had represented the borough for ten, and the latter for sixteen years. They were both Tories, but with this difference, that Tarleton was a deserter from the Whigs. They were both supported by the corporation; but after a very strenuous contest of seven days, the election terminated in favour of Roscoe, who had nearly two hundred votes over Tarleton, and thirteen over Gascoigne. Of the House of Commons he was not a silent member. He took a respectable share in various debates; and he had the high satisfaction of raising his voice in favour of the abolition of the slave-trade.

On the dissolution of Parliament in 1807 Roscoe returned to Liverpool in the month of May, and resolved to

decline again entering Parliament. In 1808 he published *Considerations on the Causes, Objects, and Consequences of the Present War, and on the Expediency or the Danger of Peace with France*. This was an able as well as a seasonable publication; but we cannot add that it produced any extensive or speedy effects. It was soon followed by *Remarks on the Proposals made to Great Britain for Opening Negotiations for Peace, in the year 1807*. The several tracts which he had published on such topics were in 1810 collected into a volume, bearing the title of *Occasional Tracts Relative to the War*. This collection, which includes several tracts that have not been enumerated, remains a monument of his wisdom in the midst of the general frenzy which then prevailed. In 1812 he published *A Review of the Speeches of the Right Hon. George Canning on the late Election for Liverpool, so far as they relate to the Questions of Peace and Reform*. Roscoe was an able and enlightened advocate of parliamentary reform, as of all other attempts to improve the general welfare. The commercial pressure, caused partly by the cessation of the war, and also by the enormous increase of the national debt, told unfavourably on the banking-house with which Roscoe was connected. After struggling for a few days in the vain hope of supporting their credit, the directors were, on the 25th of January 1816, reduced to the necessity of suspending their payments. A committee appointed by the creditors reported that, after the liquidation of the debts, there would remain a surplus of L.61,144. The bank was never shut; and the house was allowed six years for discharging all the debts, with interest. Roscoe undertook the management of its affairs, and exerted himself with surprising energy. One of the greatest trials which he sustained was the necessity of parting with his library, pictures, and other works of art, the valuable and cherished accumulation of nearly half a century. The auction of his library, which was sold by Winstanley of Liverpool, extended to fourteen days, commencing with the 19th of August 1816. It included rare and precious works in several departments, but was particularly rich in Italian literature. The sale of the books was immediately followed by that of the prints, which occupied eleven days, and, being divided into 1352 lots, produced the sum of L.1915, 1s. The drawings, consisting of 610 lots, and the paintings, of 156, were sold for L.2825, 19s.

In the midst of these vicissitudes and trials, which he endured with exemplary fortitude, he still retained his love of literature. In the establishment of the Royal Institution of Liverpool he lent his effective aid. A plan for such an institution had in 1813 been written by Dr Traill, now (1859) professor of Medical Jurisprudence in the university of Edinburgh. The scheme was at length brought towards maturity; and, after an interval of four years, Roscoe, as chairman of a committee, prepared an explanatory report. He was induced, though not without considerable difficulty, to compose and to deliver the inaugural address at the opening of the institution. The attendance was very numerous, and he received the most gratifying applause. On the ensuing day he was requested by the committee to publish his discourse, and it accordingly appeared under the subsequent title: *On the Origin and Vicissitudes of Literature, Science, and Art, and their Influence on the present State of Society, a Discourse delivered on the Opening of the Liverpool Royal Institution, 25th November 1817*. In 1819 he published his *Observations on Penal Jurisprudence and the Reformation of Offenders*. In 1822 appeared his *Additional Observations* on the same subject; and a third part followed in 1825. He afterwards published two tracts on the penitentiary discipline of the United States. In all his literary undertakings he aimed at improving the morals and increasing the happiness of mankind.

Roscoe.

Roscoe.

Roscoe having now withdrawn from business, he seems to have placed his chief reliance on the remuneration of his literary labours. Some of his friends privately raised the sum of £2500, and vested it in trustees for the benefit of himself and his family. "The office of communicating to him this kind and liberal act on the part of his friends was confided to Dr Traill, who, by his judicious representations and affectionate remonstrances, succeeded in removing from the mind of Mr Roscoe the objections which he felt to incur obligations of so serious a nature." About this period he found a pleasing employment in arranging and improving the library of Mr Coke, afterwards Earl of Leicester, and in preparing a catalogue of the numerous manuscripts. His visits to Holkham were rendered peculiarly pleasant; and this gentleman, as we are informed, "conferred upon him obligations of no ordinary nature." His literary ardour was still unabated; and in 1822 he published an octavo volume, under the title of *Illustrations, Historical and Critical, of the Life of Lorenzo de' Medici, called the Magnificent, with an Appendix of original and other Documents*. An Italian version, exclusive of the appendix, was published at Florence by Pecchioli in the course of the following year. In 1822 he likewise published a *Memoir of Richard Roberts Jones of Aberdaron, in the county of Carnarvon, in North Wales, exhibiting a remarkable instance of a partial power and cultivation of intellect*. This extraordinary character, who was originally a fisher-lad, "continues to display a love of learning and an extent of erudition seldom exhibited within the walls of schools or universities, united with a want of common-sense amounting almost to idiocy, and a squalor and wretchedness of appearance of which a common mendicant would be ashamed." At Allerton, Jones had a conversation with Dr Parr on languages, oriental and occidental; and on being afterwards asked his opinion of the learned stranger, he replied, "He is less ignorant than most men."

During this year he quitted his residence in Liverpool, and took a house in Lodge Lane, Toxteth Park, about a mile from the town. Two years afterwards he had the severe misfortune to lose the excellent and cherished partner of all his joys and sorrows. She died on the 24th of September 1824. In the early part of the year he had been elected an honorary associate of the Royal Society of Literature; and after an interval of a few months he was appointed an associate of the first class. In 1827 the great gold medal of the society was awarded to him for his merits as a historian. From other learned associations he obtained various honours; nor must we omit to state that, during the same year, he was elected a corresponding member of the Academia della Crusca.

In the spring of 1821 he had been engaged by the London booksellers to undertake a new edition of the works of Pope. It appeared in 1824, in ten volumes octavo. He contributed a copious and elegant Life of the author, and to a selection of the notes of former editors added a few of his own. Of the character of Pope, both as a man and as a poet, he formed a more favourable estimate than either Dr Warton or Mr Bowles. Those who deny, or reluctantly concede, to Pope the name of a poet, seem to judge according to a very arbitrary standard. A few months after the appearance of this edition Bowles published *A Final Appeal to the Literary Public relative to Pope*, in Reply to certain Observations of Mr Roscoe in his Edition of that Poet's Works; to which are added, some Remarks on Lord Byron's Conversations, so far as they relate to the same subject and the Author; in Letters to a Literary Friend. To this publication Roscoe speedily replied in *A Letter to the Rev. W. Lisle Bowles, Prebendary of Sarum, &c.* His edition, as well as his Letter, obtained a favourable notice in the *Quarterly Review* for October 1825; and Bowles was induced to publish *Lessons in Criticism to William*

Roscoe, F.R.S., &c. These lessons in criticism were not very satisfactory to the public, and Roscoe wisely desisted from any further controversy.

In 1827 he published an edition of the *Life of Lorenzo* in two, and of the *History of Leo* in four, volumes octavo. He had now reached an advanced period of life, and had begun to feel the pressure of age. Towards the close of this year he was suddenly attacked with paralysis, which affected one side of his face, and deprived him of the use of one hand; but medical aid was promptly procured, and he recovered the use of his hand, as well as of his speech. Botany had been among the number of his favourite pursuits. He had been a contributor to the *Transactions of the Linnean Society*, and was regarded as no mean proficient in this science. After his recovery from the paralytic attack, he published the fifteenth and concluding number of a splendid volume on *Monandrian Plants*. Towards the end of June 1831 he experienced a severe attack of influenza; and, after he seemed to be recovering, he was on the 27th of that month seized with a violent fit of shivering, accompanied with almost total prostration of strength. The near approach of death he contemplated with calm resignation to the will of God. On the 30th he closed his mortal career, after having completed the seventy-eighth year of his age. The proximate cause of his death was an effusion into the chest. His remains were interred in the burying-ground of the Unitarian chapel in Renshaw Street.

Dr Traill, the friend and physician of this eminent man, speaks of him in the following terms:—"In person, Mr Roscoe was tall and rather slender. In early life he possessed much bodily activity. His hair was light auburn, almost inclining to red; his full grey eye was clear and mild; his face expressive and cheerful. As he advanced in life the benevolent expression of his countenance remained, but the vivacity of the features was tempered into a noble dignity, which it was impossible to see without respect and admiration; while the mouth bespoke taste and feeling, and the clustering hoary hair round his temples gave a venerable air to his manly features. . . . Of the qualities of his heart, as a private individual, it is impossible to speak too highly. In the relations of husband, father, and friend, his conduct was most exemplary; and it would be difficult to point out a man who possessed the fascination of manner which attracts and rivets attention in a higher degree than William Roscoe." (*Edin. New Phil. Journ.*, vol. xiii.)

Three of Roscoe's sons have secured a respectable place in literature. HENRY, author of the *Life of William Roscoe*, London, 2 vols. 8vo, 1833, was a barrister, and author of several legal works, besides having written the *Lives of Eminent Lawyers* for Lardner's *Cyclopædia*. He died at the early age of 37, on the 25th March 1836. ROBERT, who was likewise a member of the legal profession, wrote some pleasing poems. He died in December 1850, aged 60. THOMAS, who still (May 1859) survives, has likewise written very extensively. Besides poems, tales, tours, and translations, he has published an excellent English version of Sismondi's *Historical View of the History of the South of Europe*, and of Lanzi's *History of Painting*.

ROSCOMMON, an inland county in the province of Connaught, situated on the western bank of the great river Shannon, and nearly in the centre of Ireland. It is bounded on the N. by the county of Sligo; on the E. by Leitrim, Longford, and Westmeath; on the S.E. by the King's County; on the S.W. by Galway; and on the W. by the same county and by Mayo. About two-thirds of the boundaries of the county are defined by water, the eastern side being entirely formed by the Shannon and its extensive lakes; and although the extreme length of the county

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from north to south does not exceed 60 statute miles, yet double that extent may be assigned to the frontier-line, if all the windings of the river, and all the sinuosities of the shores of the lake, are taken into account. It extends over a surface of 607,691 acres; of which 440,522 are arable, 130,299 uncultivated, mountain, or bog, 6732 in plantations, 768 occupied by towns or villages, and 29,370 under water. Of the uncultivated land, it is probable that 40,000 acres might be advantageously improved and cultivated, 80,000 acres might be drained for pasture, and 10,000 acres must remain unimprovable. According to Ptolemy, it was inhabited by the Auteri; afterwards the tribes or septa of the O'Conors, O'Kellys, M'Dermotts, O'Flanegans, O'Flyns, and O'Hanlys, were the chief possessors of it. Shortly after the arrival of the English in the reign of Henry II. it was seized upon by the new settlers, and their maintenance of it secured by the erection of several fortresses. For a long period afterwards the whole province was considered as consisting but of two counties, that of Roscommon being one, and all the remainder, with the county of Clare included, the other, under the name of the county of Connaught. This arrangement continued until the beginning of the reign of Elizabeth, when the whole province underwent a new classification, and the county of Roscommon was divided into the baronies of Athlone, Ballintober, Boyle, Moycarnon, and Roscommon. At the close of the war of 1641 nearly all the former proprietors were dispossessed for having espoused the royal cause, and their possessions transferred to the republican adventurers and soldiers; since which period that branch of the O'Conor family, once sovereigns of all Ireland, now known by the name of the O'Conor Don, is the only one of the former proprietors who holds any part of ancestral possessions in the country. The county is now divided into nine baronies,—Athlone, Ballintober (North and South), Ballymoe, Boyle, Castlerea, Frenchpark, Moycarn, and Roscommon; and subdivided into fifty-three parishes, and four parts of parishes, the remaining parts of which are in some of the adjoining counties. According to the ecclesiastical arrangements of the country, Roscommon contains fifty-seven parishes, of which fifty-one are in the diocese of Elphin, the remainder being in Tuam, Clonfert, and Ardagh. The bishopric of Elphin was suppressed, and the revenues vested in the Board of Ecclesiastical Commissioners by the Church Temporalities Act. The spiritual jurisdiction is exercised by the Bishop of Kilmore, Elphin, and Ardagh.

Roscommon is in shape long and narrow, extending sixty miles in a northern and southern direction, whilst its breadth from east to west, where greatest, is but thirty-two miles; and it decreases gradually until it terminates in a point in its southern extremity. The greatest part of the county is level, forming the western portion of the central flætz limestone field of Ireland; varied, however, by frequent inconsiderable elevations, and by long low ridges or escars formed of limestone gravel. In the north the country rises into rugged mountains, with abrupt, precipitous sides and flattened summits, the highest of which, Bracklieve and Slieve Corkagh, are upwards of 1000 feet above the level of the sea. The equally wild though less elevated range of the Curlew Mountains also forms part of the northern boundary. The great sandstone ridge of Slieve Bawn range along the middle part of the eastern boundary. Slieve Aluyn, in the west, rises to nearly 500 feet in height. No large river passes through the county, but both its eastern and western limits are watered by navigable streams. Along the whole length of the eastern side the Shannon rolls its immense volume of waters; and on the west the Suck, which is navigable for barges to Ballinasloe, unites with the Shannon at the extreme south point. The rivers in the interior, which are small and insignificant, are all tributaries to one or other of these main channels, chiefly

to the former, discharging themselves into their streams, either directly or through the medium of some of the numerous lakes dispersed throughout various parts. Of these smaller rivers, the Arigna, the Fiorish, and the Gara or Boyle river, are tributaries to the Shannon; the Bresgue and the Lung, the latter of which flows through a subterranean channel during part of its course, discharge their contents into Lough Gara. The most remarkable of the lakes, both for size and beauty, is Lough Kea, in the northern part, near the town of Boyle, from which place it also takes a name, as likewise that of Rockingham Lake, from the seat of Lord Lorton upon its shore. It is about 3 miles in length by 2 in breadth, and studded with several picturesque islands, amongst which Trinity Island is noted for its monastic ruins, and Castle Island for an ancient fortress of the M'Dermotts, now modernized into an elegant villa. The lake derives its supply from the neighbouring boundary lake of Lough Gara, upon the borders of Sligo, which, though larger, and still more irregular in its outline, is less attractive in appearance than that on which it bestows its redundant waters. To the north of Lough Kea the two smaller lakes, Lough Skeen and Lough Meelagh, are connected by a short channel with the Shannon. The lakes of Bodarrig, Boffin, and Reagh, on its eastern side, which are, strictly speaking, expansions of the Shannon, may also be considered as partially belonging to the county. The principal of the smaller lakes are Loughs Errit, Glynn, Funchleon, and Aluyn. There are several extensive furloughs or winter lakes, which, being generally dry in summer, afford rich pasturage for sheep. Between Frenchpark and Elphin, that of Mantua covers 700 acres; another, near Lough Glynn, in the extreme west of the county, is half a mile in length.

The limestone, which forms the base of all the level districts, is of various kinds; some gray, containing numerous fossil remains, chiefly madreporas; some of the formation called calp, which is often found blended with layers of Lydian stone; and some black, being susceptible of a high polish, as is a light gray marble found in the southern parts. Sandstone shows itself in the eminences that protrude through the limestone. Slieve Bawn is mostly composed of it; and in the neighbourhood of Frenchpark it is raised in laminae so thin as to be use for the covering of roofs. The northern district is of the coal formation, which extends also into the adjoining county of Leitrim; but the principal stores of this most valuable mineral, and of ironstone, are to be found on the Roscommon side. The entire area, which is divided into two parts by the Arigna, extends over 6500 acres, of which 2000 are to the north, and 4500 to the south of that river. The strata of coal rise into the mountains of Bracklieve and Slieve Corkagh, where the outcrop may be distinctly seen in several places in the precipitous sides of the declivities. The coal is of the blazing or bituminous character, less inflammable than that of Scotland, but more so than that of the north of England. The principal beds are the Rover, the Gubberother, and Aughabehy collieries, in the latter of which the chief seam, and the only one deemed sufficiently rich to defray the expense of working, is from one foot to two and a half feet thick, but subject to interruptions, or what the workmen call *faults*, occasioned by the strata of one part of a hill having slipped down to a depth of from twenty to fifty yards, and settled on a lower level. The principal beds of iron ore are also on the south side of the Arigna river, whence the workings derived their name. They exhibit decisive indications of having been in operation at an early period; but, most probably in consequence of the exhaustion of timber for fuel, they were latterly inoperative until 1788, when the pit-coal found in the neighbourhood led to a new speculation in them by three brothers of the name of O'Reilly, who, either for want of sufficient

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capital, or in consequence of the real unproductiveness of the concern, mortgaged the works and premises, which were then sold to Mr Peter Latouche, the banker, who, after a total expenditure of L.80,000, abandoned the speculation in 1808 as profitless and hopeless. The workings of the collieries were resumed in 1825 by three joint-stock companies—the Arigna Coal and Iron Company, the Irish Mining Company, and the Hibernian Mining Company; but only one of them, the Arigna company persevered in the experiment, and worked the mines of both coal and iron. The affairs of the company became the subject of parliamentary inquiry, and in the session 1826–27 a voluminous report was issued, containing an exposition of one of the most extraordinary instances of jobbing and fraud which even that period could produce. The iron-works have long been suspended, but the coal-pits are still worked occasionally. Potters' clay is found in several places, and is manufactured into the coarser kinds of wares; and along the shores of Lough Ree, and also more inland at Killymount, are several deposits of very pure clay, which has given rise to a local manufacture of tobacco-pipes, for which the material is well adapted. Fire-bricks were made at Arigna, of fire-clay, which forms some of the mineral strata there.

The soil varies nearly according to the nature of its substratum, that on the limestone being much the most productive; except in the hilly district between the Shannon and the Suck, in which the stone rises so near the surface that the superincumbent vegetable mould is scarcely of depth sufficient to admit the use of the plough. The borders of the rivers which flow through the level parts, and are therefore liable to overflow their banks during winter, become, on the return of dry weather, pastures and meadows of the richest quality. Bogs of every size, from an extent of a thousand acres to patches merely adequate for the domestic demands of the immediate neighbourhood in which they lie, are to be found in many parts. The most remarkable and extensive of these are in the neighbourhood of Athlone and Lanesborough. The mountains are mostly covered with bog and marsh, interspersed with dry patches on which heath grows most luxuriantly. In the southern part, large tracts of a very light sandy soil, lying on the low hill between the Suck and the Shannon, afford excellent pasturage for sheep. The borders of Lough Aluyn are in some parts formed of sand, apparently carried from the lake by the wind. Large deposits of gravel and different kinds of loam are often found between the surface-soil and the rock which forms the substratum.

The population, according to calculations made at different periods, was as follows:—

Year.	Authority.	Population.
1760.....	De Burgo.....	41,172
1792.....	Beaufort	86,000
1812.....	Parliamentary Return	158,111
1821.....	Ditto	208,729
1831.....	Ditto	249,613
1841.....	Ditto	253,591
1851.....	Ditto	173,417

The number of inhabitants to the square mile in 1841 was 267; in 1851 only 183, being a diminution in density of 84 persons in each square mile. In 1851 about 45,000 of the inhabitants could speak the Irish language, and 1300 of that number could speak Irish only. Fully nine-tenths of the population are supposed to be Roman Catholics.

This population was represented in the Irish Parliament by eight members—two for the county at large, and two for each of the boroughs of Boyle, Roscommon, and Tusk. The number was reduced to two at the Union, all the boroughs being deprived of the right of election. The number of registered electors for the county is about 2500.

The state of education, according to the parliamentary returns made in 1821 and 1824–26, was as follows:—

Year.	Boys.	Girls.	Sex not ascertained.	Total.
1821.....	6981	3306	...	10,287
1824-26	8937	4998	711	14,646

Of the numbers stated in the latter of these returns, 1041 were Episcopalian Protestants, and 13,262 Roman Catholics; the religious persuasion of the remaining 343 was not specified. The total number of schools in the county was 309; of which 17, containing 545 pupils, were maintained by grants of public money; 38, containing 1954 pupils, by the voluntary contributions of societies or individuals; and the remaining 254 schools, which afforded the means of instruction to 12,147 pupils, were maintained wholly by the pupils' fees. The number of schools, and of pupils attending them during the week ended 12th April 1851, was ascertained by the Census Commissioners to be as follows:—

Schools.	No. of Schools.	No. of Children.		
		Males.	Females.	Total.
National	70	2302	2006	4,308
Church Education	31	374	760	1,134
Diocesan	1	13	...	13
Endowed	2	55	19	74
Boarding	1	10	21	31
Private	116	2098	1310	3,408
Parochial	4	124	110	234
Free	5	63	216	279
Industrial	6	12	233	245
Mission	6	62	141	203
Military.....	1	7	9	16
Workhouse	9	975	1175	2,150
Gaol	1	36	...	36
Total	253	6131	6000	12,131

The habits and occupations of the population are so thoroughly rural that there are but three towns with a population exceeding 2000 souls. There are several fine mansions and demesnes in the hands of resident noblemen and gentlemen, and numerous villas and country-seats belonging to independent landed proprietors; but the appearance of the dwellings and homesteads of the small farmers and cottiers in many cases are far from showing those indications of internal comfort that might be expected in a district so highly favoured by nature. Agriculture is carried on with much spirit amongst the higher classes, by whom the latest improvements in tillage and the best constructed vehicles and implements have been introduced; but the greater portion of the county might be much improved by the judicious application of capital and labour to the cultivation of the land. The extent of land under each description of crop in 1855 and 1858 was—

	1855. Acres.	1858. Acres.
Wheat.....	4,159	4,832
Oats.....	59,257	56,909
Barley, bere, rye, beans, and pease...	488	685
Potatoes	36,793	42,468
Turnips	4,735	4,697
Other green crops	1,732	2,393
Flax.....	386	265
Meadow and clover	30,214	36,893
Total.....	137,764	149,142

In the mountainous districts the spade is frequently used instead of the plough. In these, also, the neighbouring landholders generally club their labour together, particularly in planting and raising potatoes, all uniting to complete the work of one farm, and then proceeding successively in a body to execute that of the other partners in the amicable joint-stock concern. The pastures are amongst the best in Ireland; and as their proprietors are almost fastidiously particular in the selection of live stock of every

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description, the best-fed beasts are to be met with here. This is peculiarly the case with respect to bullocks; the sheep also are of first-rate quality, both as to fleece and flavour of carcase. In prime grazing land an acre feeds a bullock and a sheep. Notwithstanding the superior capabilities of the soil for pasturage, there are not many large dairies. The annual fair of Ballinasloe, in October, is the principal mart at which cattle and sheep are disposed of. The quantity of live stock in the county in 1857 and 1858 was—

	1857.	1858.
Horses	10,939	10,754
Cattle	93,973	96,620
Sheep	145,969	152,466
Pigs	32,826	32,395

Fences in general are made of stone walls, raised to a considerable height, as they are considered to afford better shelter for cattle than those of timber. That the county was once well wooded appears not only from the evidence of history, but from the fact, that, wherever the impediments to its growth are removed, the soil spontaneously throws up shoots of those species of forest-trees with which the whole face of the country was once covered. The excessive clearing of the woods, without precautionary measures to secure a new growth, has left the surface very bare; but this defect, equally unsightly to the eye of taste and injurious to the progress of improvement, is annually diminishing, through the exertions of the landed gentry, many of whose mansions are surrounded with noble plantations. Manufactures, with the exception of those already noticed, and of coarse woollens and linens for domestic consumption, do not exist. The articles of export are confined to agricultural produce and live stock, for which the Shannon affords great facilities. The navigation of this fine river, which, as has already been said, skirts the county along the whole of its eastern verge, was formerly so much obstructed by several rapids as to render it useless as a channel of enlarged inland traffic. These impediments have been obviated by means of short canals along the side of the river in those parts where the rapids occur. The connection by water with the eastern counties to Dublin is maintained by the Royal and Grand canals, which communicate with the Shannon at Tarmonbarry and Shannon harbour. As all the great lines of land conveyance to Connaught from Leinster and Ulster (including the Midland Great Western Railway, from Dublin to Galway) pass through the county, the roads are numerous, and generally well kept up.

The monastic antiquities are very numerous. The ruins of the abbey of Boyle, founded in 1148, still exhibit a large part of its highly-ornamented church, with its tower rising from the middle of the building, and resting on four columns of colossal dimensions, enriched with a variety of sculptures; and the Dominican friary at Roscommon contains a monument of an ancient member of the O'Connor family, exhibiting an effigy of an armed warrior in a lying posture, with four other armed figures on the base. Derham Abbey, in the neighbourhood of Roscommon, is little more than a heap of stones. The others of which some relics still exist, are Trinity Abbey, on an island in Lough Kea, Tulsk, Clonshanvill, and Clontuskert, in which there are several monuments and inscriptions relating to the O'Kellys and other ancient families. In the parish of Oran, a few miles from Roscommon, are the remains of an ancient pillar-tower about 10 feet high; and in every part there are raths so numerous that nearly five hundred are still visible. The county contained a great number of small fortresses, evidently built when it was one of the marches or border districts, to repress the incursions of the Connaught Irish, besides which there were a few of great extent and strength, as is testified by that of Roscommon,

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forming a quadrangle of 220 by 180 feet, with towers at the angles and at the gateway, and containing the remains of a large building, supposed to be the residence of the governor. The most remarkable of the other castles are those of Athlone, Ballinasloe, Ballynafad, and Lough Glynn.

Roscommon, the county town, is built on the southern slope of a gently-rising hill, near the centre of the county. It consists but of one main street, with several minor avenues branching out into five main roads, in various directions. It was incorporated at a very early period, and was considered to be one of the chief places in these parts. Writs for the better defence of the town and castle are frequent among the earlier records. It returned two members to the Irish Parliament till the Union. Here are the buildings connected with the local administration of justice; the county court-house, the prison-house, the county infirmary, and fever hospital. The modern ecclesiastical buildings are not remarkable for architectural elegance. The parish church is a neat structure. The town is a place of very limited trade, except in that of grain, large quantities of which are sent to Lanesborough, to be exported thence by means of the Royal Canal or the Shannon. The population in 1851 was 3364. No other town wholly within the county has a population exceeding 2000, except Boyle, a neat and commercial town, with a population of 2767 souls. Part of the town of Athlone, on the Shannon, in which are the fortified magazines intended for the defence of the pass of the Shannon, is on the Roscommon side of the river. A small portion of the town of Ballinasloe, celebrated for its great annual fair for sheep and horned cattle, is also in this county. (H. S.—R.)

ROSCOMMON, WENTWORTH DILLON, *Earl of*, a celebrated poet of the seventeenth century, was the son of James Dillon, Earl of Roscommon, and was born in Ireland about 1634, under the administration of the Earl of Strafford, who was his uncle, and from whom he received the name of *Wentworth*. He passed his infancy in Ireland; after which the Earl of Strafford sent for him to England, and placed him at his own seat in Yorkshire, under the tuition of Dr Hall, who instructed him in Latin, without teaching him the common rules of grammar, which he could never retain in his memory, though he learned to write in that language with classical elegance and propriety. On the Earl of Strafford's being impeached, he went to complete his education at Caen in Normandy; and after some years he travelled to Rome, where he became well skilled in medals and in the Italian language. He returned to England soon after the Restoration, and was made captain of the band of pensioners; but a dispute with the lord privy-seal about a part of his estate obliged him to resign his post and revisit his native country, where the Duke of Ormond appointed him captain of the guards. He was unhappily very fond of gaming; and as he was returning to his lodgings from a gaming-table in Dublin, he was attacked in the dark by three ruffians who were employed to assassinate him. The earl defended himself with such resolution that he had despatched one of the aggressors, when a gentleman came up and disarmed another, on which the third took to flight. This generous assistant was rewarded for his bravery by Roscommon resigning to him his post of captain of the guards. His lordship at length returned to London, when he was made master of the horse to the Duchess of York, and married the Lady Frances, the eldest daughter of Richard, Earl of Burlington, and the widow of Colonel Courtney. Here he distinguished himself by his writings; and, in imitation of those learned and polite assemblies with which he had been acquainted abroad, he began to form a society for refining and fixing the standard of the English language, in which his great friend Dryden was a principal assistant. In 1683 he was seized with the

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gout, which, by improper medical treatment, led to his death, which happened in the month of January 1684. He was buried with great pomp in Westminster Abbey.

His poems, which are not numerous, are in the body of English poetry collected by Dr Johnson. His *Essay on Translated Verse* (1684), and his translation of Horace's *Art of Poetry* (1680), have been much commended. Upon the latter, Waller addressed a poem to his lordship when he was seventy-five years of age. "In the writings of this nobleman we view," says Fenton, "the image of a mind naturally serious and solid; richly furnished and adorned with all the ornaments of art and science; and these ornaments unaffectedly disposed in the most regular and elegant order. His imagination might probably have been more fruitful and sprightly, if his judgment had been less severe; but that severity (delivered in a masculine, clear, succinct style) contributed to make him so eminent in the didactical manner, that no man with justice can affirm he was equalled by any of our nation, without confessing at the same time that he is inferior to none. In some other kinds of writing his genius seems to have wanted fire to attain the point of perfection; but who can attain it? He was a man of an amiable disposition, as well as a good poet; as Pope, in his *Essay on Criticism*, has testified in the following lines:—

"Roscommon, not more learned than good,
With manners generous as his noble blood;
To him the wit of Greece and Rome was known,
And every author's merit but his own."

Roscommon enjoys the distinction of being the only correct writer in verse before the time of Addison; and if there are not so many or so great beauties in his composition as in those of some contemporaries, there are at least fewer faults. "Of Roscommon's works," says Johnson (*Lives of the Poets*), "the judgment of the public seems to be right. He is elegant, but not great; he never labours after exquisite beauties, and he seldom falls into gross faults. His versification is smooth, but rarely vigorous; and his rhymes are remarkably exact. He improved taste if he did not enlarge knowledge, and may be numbered among the benefactors to English literature."

ROSCREA, a market-town of Ireland, in the county of Tipperary, on an affluent of the Brosna, in a fertile country at the foot of the Slievebloom Mountains, 65 miles W.S.W. of Dublin. It is an old place, irregularly and not very well built; but has some broad streets and good houses. The most conspicuous object here is the ancient round tower, 80 feet high, which is one of the largest in the country; and, unlike most of the rest, built entirely of square stones. The parish church has a curious Gothic front at its west end, and the belfry of the Roman Catholic church consists of the steeple of an old Franciscan priory. The ancient castle of the Ormonde family is now used as a military storehouse. The other chief buildings in Roscrea are the court-house, market-house, jail, national school, hospitals, and workhouse. Coarse woollen cloth is manufactured here to some extent, and there is a considerable trade in grain. The town is of great antiquity, for it owes its origin to a monastery which was founded in 620. Pop. (1851) 3496.

ROSE. See BOTANY, § *Rosaceæ*.

ROSEAU, or CHARLOTTE TOWN, the capital of the island of Dominica, West Indies, on a tongue of land on the S.W. coast; N. Lat. 15. 19., Long. 61. 28. It is regularly laid out and well built, and has a fort and a safe roadstead. Pop. 5000.

ROSELLINI, IPOLITO, *Cavaliere*, a celebrated scholar, was born at Pisa in 1800. His taste for archæological studies was awakened under the tuition of a Servitan monk. He pursued them during his university career in his native city and in Bologna. The appointment in 1824 to the

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chair of oriental languages at Pisa increased his enthusiasm for his favourite subject. Taking up the particular branch of Egyptian hieroglyphics, he became a devoted disciple of Champollion. He accompanied that famous French orientalist in his exploration of Italy, and in his subsequent researches at Paris. He then, in 1828, went with him on a tour of discovery through Egypt and Nubia. He was also about to assist him in publishing the results of their common journey of investigation when Champollion died in 1832. Rosellini accordingly was left to conduct the great undertaking alone. The first volume of the work appeared in 1832, under the title of *I Monumenti dell'Egitto e della Nubia*. He had just published the eighth volume when he died in 1843. The two remaining volumes were conducted through the press by his friends in 1844.

ROSEN, FREDERICK AUGUSTUS, a profound orientalist, was born at Hanover in 1805. His taste for the eastern languages began to be cultivated at the universities of Leipsic and Berlin. The Sanscrit, in particular, captivated his attention. He first studied the elements of that tongue under his father. He then acquired further instruction from Professor Bopp. At length, in 1827, he arranged and developed his knowledge in a work entitled *Radices Sanscritæ*. So great progress, in fact, did he make, that at the age of twenty-two he was appointed professor of the oriental languages in the university of London. The young scholar now entered upon a career of great eminence. His wonderful erudition in languages soon won the general admiration. At the same time, the gentleness and honesty of his disposition disarmed all envious detraction. Honours from several quarters continued to be conferred upon him. University College translated him to their chair of Sanscrit. The Royal Asiatic Society made him their foreign secretary. The Oriental Translation Committee appointed him to a similar office. The learned men of the Continent, too, cultivated his acquaintance; and there was scarcely an oriental work undertaken in Europe for which his aid was not sought and given. Encouraged by this patronage, Dr Rosen devoted the latter part of his life to a thorough investigation of the character of the Indian language and literature. For this purpose, he commenced to elucidate the *Vedas*. His *Rig Veda Specimen*, published in 1830, was the first result of his labours. Another collection of the same kind, containing the Sanscrit text, a Latin translation, and explanatory notes, was in the press when he was prematurely cut off at the age of thirty-two. It was published under the title of *Rigveda-Sanhita Liber Primus*, London, 1844.

ROSENAU (Hung. *Rozsno banya*), a town of Hungary, in the county and 15 miles N.E. of Gömör, on the Sajó. It contains a large cathedral, episcopal palace, churches, convents, episcopal seminary, Roman Catholic and Protestant grammar schools. The scenery in the vicinity is very fine; and there are near the town mines of iron, copper, lead, and antimony. Rosenau has potteries, bleach-fields, tanneries, breweries, and manufactories of wax-candles. Some trade is carried on in honey, wax, and pease. Pop. 7000.

ROSENAU (Magyar *Rosnyo*), another town of the Austrian empire, Transylvania, in the circle and 7 miles S.W. of Kronstadt. It has a strong castle, where is a well 456 feet deep, hewn out of the rock. Flax, tobacco, and honey are produced here. Pop. 4000.

ROSES, ATTAR OF. See OILS.

ROSETTA (Arab. *Rasheed*), a seaport of Egypt, on the left bank of the most westerly mouth of the Nile, hence called the Rosetta Mouth, 40 miles N.E. of Alexandria. Along the bank of the river stretches a broad open space, forming a public walk; beyond this is the town, consisting of parallel streets running from N. to S., crossed by other shorter ones. As in most eastern towns, the streets are

Rosheim.
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Ross.

extremely narrow, sometimes not more than two yards across, while the upper storeys of the houses frequently meet. The buildings are for the most part of dull, red brick, two or three storeys high. The groves of palms, bananas, and orange trees about Rosetta, contrasting with the surrounding expanse of barren and dreary sand, give a beautiful appearance to the town; and the salubrity of the climate attracts many visitors. The public buildings comprise several mosques, a Greek and a Roman Catholic church, *khans*, and bazars. The town is inclosed by loop-holed walls. There are still some manufactures at Rosetta, especially weaving of cotton and linen fabrics; and the trade which was formerly carried on with Europe and the Levant, though now for the most part transferred to Alexandria, has not altogether deserted the place. It was here that the celebrated Rosetta stone was found, now in the British Museum, containing the trilingual inscription that furnished the key to the Egyptian hieroglyphics. Pop. probably about 15,000. (See EGYPT.)

ROSHEIM, a fortified town of France, in the department of Bas-Rhin, among the Vosges Mountains, 14 miles S.W. of Strasburg. It contains two handsome churches, a town-hall, and an hospital. Manufactures of cotton cloth are carried on. In the vicinity are mineral springs. Pop. 3971.

ROSICRUCIANS. See MYSTICISM.

ROSLIN, a village of Scotland, in the county and 7 miles S. of Edinburgh, on the Esk, among scenery which for beauty is inferior to few places in the country. It is chiefly remarkable for the ancient chapel and castle which stand here. The former is an exceedingly beautiful specimen of florid Gothic architecture; it was founded in 1446, and the plan was to have been in the form of a cross; but only the choir and east wall of the transept were completed when the building was stopped in 1484. The carving is very elaborate, especially on what is called the 'Prentice's Pillar. Of the castle which stood on the edge of a cliff overhanging the river, the triple row of vaults, the massive wall, and many scattered fragments, still remain. At Roslin is a paper manufactory, bleach-field, and gunpowder manufactory, the largest in Scotland. In this neighbourhood the Scots gained three victories over the English on the same day in 1302.

ROSS, a market-town of England, in the county of Hereford, on the left bank of the Wye, 14 miles S.S.E. of Hereford, and 120 W.S.W. of London. It is a pleasant-looking place, in a fine situation overlooking the river; but the streets are steep and narrow, though generally well paved. Near the centre stands an old and interesting town-hall; the parish church also is an ancient building in the perpendicular style, conspicuous for its lofty spire, which has repeatedly been struck by lightning. In the church are several ancient monuments, including one of Kyrle, the "man of Ross," eulogised by Pope. The other places of worship belong to Wesleyans, Baptists, Independents, and Quakers. The town contains national and other schools, a mechanics' institution, dispensary, savings-bank, &c. Once there was here a considerable trade in iron, but cider is now the chief article of commerce. Markets are held weekly, and fairs six times a year. Pop. (1851) 2674.

Ross, or *Roscarbery*, a market-town of Ireland, in the county of Cork, on a rocky hill at the head of Ross Bay, 39 miles S.W. of Cork, and 197 S.W. of Dublin. It has an old cathedral, which has been several times altered, and is now surmounted by a modern spire. A Roman Catholic church, court-house, market-house, jail, and dispensary are also in the town. A weekly market and two annual fairs are held here. Pop. (1851) 1044.

Ross, *New*, a parliamentary and municipal borough of Ireland, in the county of Wexford, on the left bank of the Barrow, here crossed by a wooden bridge leading to the

Ross.

suburb Rosbercon, 13 miles N.N.E. of Waterford. It consists chiefly of a long street extending along the summit of the high river-bank, with shorter ones rising steeply to it on either side; but there is a more modern portion built along the water's edge. The town was formerly inclosed by walls, but these were demolished by Cromwell in 1649. The parish church is a neat building on the site of an ancient abbey, of which there are still some remains. Rosbercon has also a parish church, this, too, partially consisting of an older building; and there are places of worship for Roman Catholics, Methodists, Presbyterians, Independents, and Quakers. Among the other buildings of the town are a market-house, court-house, bridewell, cavalry barracks, several hospitals, workhouse, and dispensary; and in addition to these, New Ross has a grammar school, news-room, and circulating library. The principal manufactures of the town are tanning and brewing; and the trade is very considerable,—grain, flour, wool, butter, &c., being exported. There are extensive quays, where vessels of 200 tons can lie at all tides, and those as large as 800 at spring-tides. The river is navigable for barges as far up as Athy, and from thence there is communication by canal with Dublin. The number of ships registered at the port 31st December 1857 was 14 sailing-vessels, tonnage 4219. In the year ending on that day there entered the harbour 297 sailing-vessels, tonnage 25,151; and there cleared 58, tonnage 5659; while the number of steam-vessels that entered and cleared was 324 each, tonnage 27,216. A great number of the inhabitants are employed in salmon-fishery on the river, both above and below the town. Markets are held here twice a week, and fairs monthly. During the rebellion in 1798 New Ross was attacked by the insurgents, but after ten hours' fighting, they were repulsed with great loss. The borough formerly sent two members to the Irish Parliament, and now one to that of the United Kingdom. Pop. (1851) 7941.

ROSS, SIR JOHN, the famous Arctic navigator, was a son of a minister of the Church of Scotland, and was born at Balsarroch in Wigtonshire in 1777. His nature was early inured to toil and hardship. He was no more than nine when he entered the navy. His services as a midshipman were immediately employed in the Mediterranean. So soon afterwards as 1806, he was engaged as a lieutenant in the French war, and received no less than thirteen wounds. It was in 1818 that Ross undertook to settle the disputed question about the North-West Passage. Setting sail in the *Isabella*, and attended by Lieutenant Parry in command of the *Alexander*, he left the Thames on the 25th of April. On reaching the American coast, his ships pressed on through Davis Straits and Baffin's Bay, and turned their prows into Lancaster Sound. He had not proceeded much farther before he imagined that he espied a line of high land sweeping across the breadth of the bay, and closing up the passage. Fancying that the object of his enterprise was accomplished, he immediately tacked about, and in spite of the remonstrance of Parry, sailed away homewards. His ships arrived in the Thames on the 14th December 1818, and in the following month he was rewarded with the rank of post-captain. The next expedition of Captain Ross to the same regions was undertaken in May 1829. His vessels were the steamer *Victory*, equipped at the expense of Felix Booth, sheriff of London, and the *Krusenstern*, furnished by the government. His design was to penetrate if possible through Prince Regent Inlet, recently discovered by Parry, into Barrow's Straits. Accordingly, on the 12th of August he entered into the former of these seas. He had not sailed far before he got blocked up in the ice, which detained him for many months. Year after year his course was intercepted. Towards the end of the fourth year it was found necessary to abandon the vessel and to

Ross and
Cromarty.

Ross and
Cromarty.

press northward with the boats. At length, on the 26th of August 1833, he and his crew were picked up in Lancaster Sound by his old ship the *Isabella*. The remainder of Ross's life was spent in the enjoyment of knighthood and other honours which his exertions had merited. His only other expedition was an unavailing attempt, which he made at his own expense in 1850, to discover and save Sir John Franklin. He died on the 30th August 1856. Ross published accounts of his first two voyages. He is also the author of *Letters to Young Sea-Officers*; *Memoirs of Admiral Lord de Saumarez*; *A Treatise on Navigation by Steam*; and other works.

ROSS AND CROMARTY, two shires of Scotland, so curiously mixed up in geographical position, and so closely united politically, as to render their description under one head a matter not merely of convenience, but even of necessity. They are bounded on the N. by Sutherlandshire, E. by the German Ocean, S. by Inverness-shire, and W. by the Atlantic; and lie between N. Lat. 57. 8. and 58. 6., W. Long. 3. 45. and 5. 50. Besides this portion of the mainland, the northern portion of the island of Lewis in the Hebrides is included in Ross-shire. The whole area is 3151 square miles, or 2,016,375 statute acres: length, from E. to W., 67 miles; average breadth, 58. Ross-shire, comprising the districts of Easter and Wester Ross, Ardmeanach, or the Black Isle, and the island of Lewis, is the third in size among the counties in Scotland. The county of Cromarty, on the other hand, is comparatively small. It is divided into eleven portions, which are whimsically inserted into various parts of the larger county of Ross, like fragments of a more ancient rock in some newer geological formation. One of these parts is the original county of Cromarty, anciently called *Crumbachty*,—that is, “Crooked Bay,” from the windings of its shores, consisting of that portion which lies in the peninsula to the S. of the Cromarty Firth, and which surrounds the county town. This part rises like a huge lump to a height of 470 feet above the level of the sea, which washes the base of its cliffs, and it is this space—containing a parish and a half—which still preserves for the county a separate lord-lieutenancy and commission of supply. As a county, it was originally very inconsiderable both in extent and in value; but by the straggling additions which were made to it towards the end of the seventeenth century, it was increased to fifteen times its former extent. Of these additions, one is a small district surrounding Tarbat House, on the northern shore of Cromarty Bay; and a second runs from the S. side of the Tain Firth to Moray Firth, cutting off that portion of the county of Ross which terminates in Tarbat Ness, the extremity of which also belongs to Cromarty. Two more fragments are found lying on the south of the River Carron, which has its embouchure near Bonar Bridge; a sixth is that which runs northward from the burgh of Dingwall, taking in Castle Leod and part of Ben Wyvis; the seventh lies to the N. of Loch Fannich, at some distance to the N.W. of which a triangular morsel is found to the N. of Loch Nid; the ninth is that which stretches along the southern shore of Little Loch Broom; and the tenth is the large district of Coygach, lying between the northern shore of Loch Broom and Sutherlandshire; to which may be added the Summer Islands, at the mouth of Loch Broom, which are about 60 miles distant from the town of Cromarty. This strange arrangement of territory was produced by the influence of that great and powerful proprietor, George, Viscount Tarbat, afterwards Earl of Cromarty, who, wishing to have all his various lands included in one shire, got them annexed to his own county in 1685 and 1698. But these were not all, nor the most extraordinary, annexations which he accomplished. For, as a part of the county of Cromarty, we are compelled to notice Royston, or Caroline Park, locally situated within

the county of Edinburgh, and but a couple of miles from the Scottish capital. But such arrangements were by no means singular. The district of Ferintosh, belonging locally to Ross-shire, is in fact a part of Nairnshire; and from similar causes many of the houses in the Canon-gate of Edinburgh belong to different counties in Scotland, from their having been the town residences of Scottish noblemen whose estates lay in those different shires. By the addition of all those portions which we have enumerated, the extent of Cromarty is calculated to be equal to an area of 345 square miles, or about 220,800 imperial acres.

The united county extends, as has already been stated, across the island from the German Ocean to the Atlantic. On the eastern coast, Cromarty Firth shoots inland from that of Moray through the narrow strait produced by those grand and picturesque headlands called the Sutors of Cromarty, and expands into a still and land-locked basin, capable of holding the whole navy of Great Britain. The headlands themselves are so lofty and precipitous that it is not uncommon during gales of wind from the north-eastward, to see waves breaking upon them to the height of 100 feet, whilst all within is smooth. The firth is rather more than 5 miles broad at the widest part, and its length is about 18. The depth averages from 9 to 12 fathoms, but in the entrance it in some places exceeds 30; a depth which nearly doubles that of Moray Firth, into which it opens. The western coast is indented by many bays and sea-lochs, which afford numerous havens of shelter from the storms of the Atlantic. From S. to N., these are Loch Alsh, with its two branches Loch Duich and Loch Ling; Loch Carron, with its branch Loch Keeshorn; Loch Torridon, Gairloch, Loch Ewe, Loch Greinord, Little Loch Broom, Loch Broom, and Loch Enard. All these exhibit magnificent scenery. That of Loch Torridon, for example, is of the grandest and wildest character; as is likewise that of Loch Duich, rendered peculiarly interesting by the remains of the castle of Eilan Donan, the ancient stronghold of the Mackenzies, the lords of Kintail. The outer headlands of the western coast of Ross-shire, N. of Loch Carron, are composed of sandstone, exhibiting the usual smooth and regular outline characteristic of that formation; and hence the promontories are tame, and of an unvaried reddish aspect, and the shores of the bays are for the most part covered over with brown heath. It is therefore more in the inner recesses of these inlets, and perhaps somewhat inland, that the most romantic scenery is to be found.

The general surface of Ross and Cromarty is wild and mountainous, the mountain chains and groups being interspersed with valleys, glens, lakes, and rivers, exhibiting nature in every variety of form and character.

Amongst the numerous fresh-water lakes and rivers to be found in Ross and Cromarty we may particularize the following:—The River Oikel, which divides Ross-shire from Sutherland, rises near the eastern side of the island, and after a course of 20 miles, finds its way into the upper end of the Tain or Dornoch Firth, a few miles above the fine iron-arched bridge of Bonar. Then, as we move southwards, we have the River Carron and the Water of Fearn, discharging themselves into the same firth. Cromarty Firth receives the large and important stream of the Conon, and its affluent the Raney or Blackwater. On the W. coast we have the rivers Sheil and Ling, the one tributary to Loch Duich, and the other to Loch Ling; the River Carron discharging into Loch Carron the waters of Lochs Doule and Scaven. The River Ewe, which is only 1 mile in length, discharges into Loch Ewe the waters of the grand Loch Maree, which is by far the largest and finest lake in Ross-shire. It is 12 miles long and about 2½ broad, and the greater part of it is full 60 fathoms deep; so that it has never been known to freeze even in the most intense frosts. It contains no less than twenty-four islands, its mountains

Ross and
Cromarty.

are magnificent, and it is now quite accessible. The only other fresh-water lakes of any size or importance are Loch Fannich, Loch Luichart, and Loch Glas, all near the centre of the county. The whole area occupied by water is estimated at 90 square miles.

The scenery on the River Conon and some of its tributaries is beautiful and interesting. The falls of Rogie are by many considered as inferior only to those of Foyers and Moness. We may indeed affirm that most of the valleys or river-courses in the united counties are more or less worth visiting, for the wild, the romantic, or the retired pastoral scenes which they contain. The waterfall of Glomach, in the parish of Kintail, is one of the highest and finest in the kingdom. The road from Keeshorn over the mountain to Applecross is like a Swiss pass, and is probably the only drive from which ptarmigan might be shot from a vehicle.

The mountain groups of Ross and Cromarty are very lofty. They rise gradually from the east coast, and more suddenly and boldly from the western sea, to which the summit-level of the country is more generally approximated. Granite and mica slate occupy the centre of the county; while for 10 or 15 miles inland from the coasts the substratum is generally old red sandstone. There are also argillaceous formations abounding in animal remains, with plates resembling those of the tortoise, pieces of rough skin like that of the shark, the scales and bones of fish; and in a ridge of bituminous shale near the Cromarty rocks we find ammonites, belemnites, scallops (plain and striated), pieces of wood, and a thick fleshy-looking leaf resembling that of the aloe. The mineralogical catalogue is large. Limestone and primitive limestone of the character of marble are very commonly to be met with. Ironstone is disseminated in great abundance. On the farm of Scorraig, on the Dundonnell estate, there is a prodigious quantity of bog-iron ore, which gives a strong and harsh chalybeate taste to all the springs in the neighbourhood. There are various mineral springs in the united shires of Ross and Cromarty, but those which have attained the greatest celebrity are the two wells of Strathpeffer, which have now for many years attracted numerous visitors to their neighbourhood in search of health and recreation. Both of these springs have the smell of sulphuretted hydrogen gas, but the upper spring is stronger than the lower.

Many of the mountains of Ross and Cromarty are among the highest in Britain. Ben Wyvis or Ben Uaish,—that is, the Mountain of Storm,—is one of the most remarkable mountains, not only in Ross and Cromarty, but in Scotland. Its height is 3422 feet; but it is most wonderful for its immense bulk, by which it stands prominently distinguished from the other hills around it, so as to be peculiarly striking from great distances. Ben Dearg, on Loch Broom, is 3551 feet in height. The chief other heights are Kea Cloch, near Loch Broom, 3600 feet; Ben Lair, near Loch Maree, 3000 feet; and Ben Attow, on the border of Inverness-shire, 4000.

The soil of Ross-shire varies in its character in different parts of the county. In the E. there are two peninsulas,—the Black Isle, between the Firths of Beaully and Cromarty; and Easter Ross between those of Cromarty and Dornoch,—which, along with some of the adjacent country, contain arable land of much fertility; but the great mass of the country, including the central and western portions, is rugged, mountainous, and unfit for the plough. The mountains, and particularly those towards the W., are covered with excellent pasture for sheep. Some of the sheep-farms are extensive, and possessed by farmers of capital, who have introduced the Cheviot breed of sheep, or a cross of that breed. The valleys and glens are also depastured for the most part by sheep. Although agriculture is found in patches in the valleys and on the shores of the W. coast, the great agricultural districts of Ross and Cromarty are

those extending from Dingwall along the northern shore of Cromarty Firth, and so onwards in a north-eastern direction along the Moray Firth and that of Dornoch, and the district of the Black Isle. All the grains and other agricultural produce of Britain are raised in perfection; and the farming is as well carried on here as in any part of Scotland. The roads made in Ross-shire by the parliamentary commissioners and the proprietors are extensive and excellent, and they are kept in the highest state of repair. Many of the wildest and most unapproachable districts have thus been opened; and though there are still many left hermetically sealed against all but the adventurous horseman or the unwearied pedestrian, there has been much done very recently.

The total number of acres under crops in 1857 was 72,851; and of these, 9715 were occupied with wheat, 6435 with barley, 16,256 with oats, 212 with rye, 289 with bere, 437 with beans, 360 with pease, 911 with vetches, 12,228 with turnips, 4471 with potatoes, 550 fallow, and 20,869 with grass and hay. The number of horses in the same year was 4759; of cattle, 17,610; of sheep, 304,444; of swine, 1761; in all, 331,381 head of live stock.

The natural woods in Ross and Cromarty, though much diminished, are still numerous, and widely scattered through the glens and over the mountain-sides. The trees are chiefly firs, oaks, ash, birch, and alder. The whole face of the wilder country bears evidence of its having been once covered with extensive forests, fragments of which only now remain in certain places. The climate is exceedingly variable, differing much on the two sea-boards, and in general rainy, though there are often long periods of dry weather, and sometimes the same day appears as if it belonged in succession to all the seasons. The annual mean temperature is 46°. In the arable districts the climate has been sensibly improved of late years by drainage and other improvements in agriculture and planting.

From the great extent and immense variety of elevation and of surface of Ross and Cromarty, it naturally contains by much the greater part, if not nearly all, the plants to be found in the *Flora Scotica*; and in the same way, speaking generally, almost all the animals to be found in the zoology of Scotland have been discovered to belong to it. The larger wild quadrupeds are red and roe deer, hares, alpine hares, foxes, badgers, wild cats, &c. Grouse, ptarmigan, black game, and partridges abound; and in some places pheasants have been introduced, and have amazingly increased. The golden eagle and the osprey are both common, as well as all the other birds of prey. Waterfowls of all kinds abound on the coasts; and the Firth of Cromarty is especially remarkable for the number and variety of sea-fowl which may be obtained by the skilful sportsmen. In severe winters it frequently happens that many wild swans are shot there. All the lochs and streams abound with fish, and salmon are particularly abundant in all the rivers, especially in the Oikel and in the Ewe. Short as is the course of this last-mentioned stream, it so swarms with salmon that twenty fish are no uncommon number for an expert angler to take in one day. The trouts of Loch Luichart and many other lakes are far-famed. The pearl-mussel is found in the stream of the River Conon, and frequently affords pearls of remarkable beauty.

The number of proprietors in the county is 117, and the valuation of rent for 1858-9 is L.175,355.

The introduction of steam navigation has done much to improve Ross and Cromarty, not only by making them more easily accessible, but by the opening which it has created for the export of cattle and sheep to the southern markets. The change in this respect may be readily conceived when we consider the immense land-journey which the animals had to undergo before they could be brought to the Edinburgh market. They were driven off in a lean

Ross and
Cromarty.

Ross and
Cromarty

state, and were fed in the south country, before they could be sold for food. Now, a Ross-shire farmer frequently imports lean cattle from the south, and returns them so fed as to be in a condition for immediate slaughter. On the east coast, the principal shipping port for cattle, sheep, and all kinds of farm produce by steam-vessels is Invergordon, a very thriving village on the Ross-shire side of the Cromarty Firth, midway between Tain and Dingwall. It has an excellent harbour and new piers, from which it is intended to have a steam ferry to some point of junction with the railway on the Moraysliire coast. The western coast is also connected with Glasgow by an admirable steam service. The effect of these facilities in raising the value of property in the northern counties may easily be imagined.

There are no important manufactures of any kind in the county, but a large proportion of the inhabitants are employed in fishing. The following table exhibits the number and tonnage of the boats, and the number of persons, employed in connection with the fishery in the several districts of the county in the year 1856:—

Districts.	Boats.		Crews.	Other persons employed.
	No.	Tonnage.		
Loch Carron	826	3001	3022	2272
Loch Shildag	310	1490	1088	527
Loch Broom	564	2763	2215	3511
Stornoway	568	5816	2357	4353
Cromarty	279	2167	817	2158
Total	2547	15,237	9499	12,821

In the same year the number of barrels of herring caught, cured, and exported in the several districts, was:—

	Caught, but not cured.	Cured.	Exported.
Loch Carron	8500	5517	1235
Loch Shildag	1670	2476	...
Loch Broom	390	296	...
Stornoway	2046	28,709	15,451
Cromarty	550	10,203	9524
Total	13,156	47,201	26,200

The number of barrels of cod, ling, and hake caught, cured, and exported in the same year is exhibited in the following table:—

	Caught, but not cured.	Cured.	Exported.
Loch Carron	3500	5370	...
Loch Shildag	1410	1363	...
Loch Broom	690	710	...
Stornoway	5322	17,970	800
Cromarty	1400	34	...
Total	12,323	25,447	800

In the above tables it must be observed that the column of persons employed comprehends the coopers, labourers, gutters, packers, and those engaged in cleaning and drying the fish. It is also to be noticed that the Loch Carron fishery district includes the Isle of Skye in Inverness-shire. Every kind of fish that frequents the northern seas may be taken on the coasts of Ross and Cromarty, particularly on those of the island of Lewis. The Broad Bay flounder of Stornoway is the finest in the world. The saithe is much more delicate than the whiting. The haddock is remarkably good on the east coast, and is a great branch of trade in its cured or smoked state. Turbot, lobsters, and even wilks, are now also exported to London.

The burghs of Cromarty, Dingwall, and Tain, along with Dornoch, Wick, and Kirkwall, return a member to Parliament. Fortrose and Rosemarkie, two small adjacent towns included in one burgh, return a member along with Inverness, Nairn, and Forres. Besides these burghs, the united county has several villages or small towns in it, such as

Rossano.

Invergordon, Alness, Evantown, Portmahomack, Conon, Shildag, Dornie, Plocktown, Jeantown, and Ullapool.

Ross-shire is divided into 33 parishes, of which 29 are on the mainland and 4 in the island of Lewis. The whole number of places of worship, according to the census of 1851, was 75, with 44,644 sittings. Of the former, 27 belonged to the Established Church, 40 to the Free Church, 3 to the Episcopalians, 2 to the United Presbyterians, and one each to the Independents, Baptists, and Roman Catholics. At the same period the county contained 148 public and 19 private schools, the former attended by 9379 and the latter by 600 scholars; 70 Sunday-schools, with 5243 scholars, and one evening school with 22.

In Ross and Cromarty there are many ancient and curious remains. In the parish of Nigg, the site of the castle of Dunskeath, built by William the Lion in the year 1179, is still to be distinguished. At Shandwick is the *Clach-a-Charridh*, or the "Stone of the Burial-place," an obelisk covered on all sides with curious Runic sculptures. There is a similar though smaller stone in the church-yard of Nigg. It originally stood near the gate, but it was thrown down by the fall of a belfry in 1725, and it is now fixed to the eastern gable. These obelisks or crosses are supposed to be of Scandinavian origin. Craigchenichan, or the Rock of Lamentation, in the parish of Kincardine, marks the place where the Marquis of Montrose was defeated by Colonel Strachan, after which he swam across the Kyle, and lay concealed in Assint until apprehended and sent prisoner to Inverness. The abbey and castle of Lochslin, in the parish of Fearn, are remarkable. Of the former, the chancel nave and two side chapels still remain, though greatly dilapidated. The castle of Lochslin is supposed to be more than five centuries old. It stands on an eminence about 4 miles to the eastward of Tain, but it is now very much gone. The castle of Cadboll, of which little remains, is supposed to be yet more ancient than that of Lochslin. Balone castle, in the parish of Tarbat, is also a very fine ruin. Near Ob-Inag, in the parish of Glenshiel, is to be found a fine specimen of what has been called the Pictish Tower. At Dingwall are the remains of the ancient castle of the earls of Ross. The hill of Knockfaril, in the parish of Fodderty, is crowned with one of those curious and puzzling morsels of antiquity usually known by the name of vitrified forts. There are many ancient single stones, and circles of stones, and cairns, in different parts of Ross and Cromarty, and many interesting antiquities have been discovered at various places in the county.

The principal seats of noblemen and gentlemen in Ross-shire are Brahan Castle, belonging to Mrs Stewart Mackenzie of Seaforth; Belmaduthy House, to Sir Evan Mackenzie of Kilcoy; Flowerdale and Conon, to Sir Kenneth-Smith Mackenzie of Gairloch; Coul, to Sir William Mackenzie; Rosehaugh, to Sir J. J. Randall Mackenzie of Scatwell; Foulis Castle, to Sir Charles Munro of Foulis; Balnagowan, to Sir Charles Ross; Redcastle, to Henry James Baillie, Esq.; Stornoway Castle, to Sir James Matheson of Lewis and Achany; Ardrross Castle, to Alexander Matheson, Esq.; Geanies House, to W. H. Murray, Esq.; besides Tarbat House, in Cromarty, belonging to the Marquis of Stafford. The two counties of Ross and Cromarty form one sheriffdom, and return one member to Parliament. Pop. (1801) 56,318; (1811) 60,853; (1821) 68,762; (1831) 74,820; (1841) 78,685; (1851) 82,707.

ROSSANO, a town of Naples, in the province of Calabria Citra, on a rocky eminence near the Gulf of Taranto, 29 miles N.E. of Cosenza. It is encircled by walls, and protected by a castle; and there are in the town a cathedral and numerous other churches, several convents, a diocesan seminary, and an hospital. In the vicinity are quarries of marble and alabaster. Capons and saffron are raised here, and there is a considerable trade in oil. Pop. 8500.

Rossi
||
Rostock.

ROSSI, PELLEGRINO, *Count*, an able diplomatist, was born at Carrara in 1787, and was educated for the bar. A shrewd and sagacious disposition fitted him to take a high place in the active business of life. Wherever he went his talents asserted his claim to influence and precedence. At Bologna he was one of the leaders of the patriotic party. At Geneva he became a professor of law, a member of the council, and a representative of the canton in the Diet. Nor did his ability fail to command preferment after he had settled in Paris in 1833. In no long time he was naturalized, and was made a peer of France. It was, however, at Rome, in 1848 that Count Rossi played his most important part. All his diplomacy was then employed to bring his country safe out of the complicated dangers of a revolution. As a member of the Roman cabinet, he strenuously endeavoured to effect reform in a constitutional way. So prominent, in fact, was his zeal in that line of policy, that he became the object of the deadly hatred of the republican party; and on the 15th November 1848 he fell by the dagger of an assassin.

ROSSIENY, a town of European Russia, capital of a circle in the government of Kovno, stands on the Kubisza, 100 miles W.N.W. of Vilna. It has two churches, a Piarist college, two schools, and two benevolent institutions. It was formerly the capital of the principality of Samogitia, which up to 1408 belonged to the Teutonic order, but was then joined to Lithuania. Pop. 6300.

ROSSWEIN, a town of the kingdom of Saxony, on the right bank of the Freiberg-Mulde, in the circle and 41 miles E.S.E. of Leipsic. It contains factories for weaving and wool-spinning, and has an important market for corn. Pop. 6067.

ROSTOCK, the largest and most important town in the grand duchy of Mecklenburg-Schwerin, on the left bank of the Warnow, about 9 miles above its mouth in the Baltic, 131 miles W. by N. of Hamburg; N. Lat. 54. 5., E. Long. 12. 20. It stands on a hill, and is surrounded by ancient walls and ditches, which form a very agreeable public walk. Besides the suburbs outside the walls, Rostock is divided into an old, a middle, and a new town, and has in general an antique and picturesque appearance, somewhat like that of Lübeck. The old town is the most irregular, and the middle town the handsomest portion. The principal square bears the name of Blücher, and contains a statue in brass of that hero, who was a native of the town. The church of St Mary, a Gothic building, contains a monument to the celebrated Grotius, who died here in 1645; and another in memory of the Mecklenburg soldiers, who fell in the campaign of 1812 against Russia. The church of St Peter has a tower 420 feet high, which is visible to navigators about 20 miles off the coast. Another notable edifice is the singular-looking town-hall, with its seven pinnacles. The university of Rostock, founded in 1419, is the national one of the duchy, and had in 1856, 32 professors and teachers, and 97 students, some of the former men of much celebrity. Attached to the university are a library of 80,000 volumes, a museum, an observatory, and various preparatory seminaries. Rostock has also a ducal palace, theatre, nunnery, &c. The manufactures of the town are many and various, as there are cotton factories, a paper-mill, a sugar-house, ship-building yards, &c.; and the trade and navigation are of the greatest importance. Warnemunde, on the Baltic, is the harbour of the town, and it admits vessels drawing 8 feet of water. Communication is kept up by steamers: and the place, though but a small village, is much frequented in summer for the sake of the sea-bathing. The number of vessels belonging to the port was, in 1857, 324. The number of ships that entered in 1855 was 501, and those that cleared 572. The total quantity, in cwt., of the exports and imports by sea, at Rostock, in 1852, is exhibited in the following table:—

	Imported.	Exported.
Articles of consumption.... cwt.	10,678	730,068
Raw materials..... „	235,850	36,036
Half-manufactured goods.... „	22,204	71
Manufactured goods..... „	395	1
Works of art and industry.. „	12,806	452
Total..... „	381,933	766,623

Rostopchin
||
Rota.

The transit trade of the town amounted in the same year to 31,379 cwt. in all. The most part of the goods exported from Rostock go to England, Sweden, and Holland; and the imports come from these countries, and from Denmark. Rostock is a place of much antiquity. It was raised to the rank of a city in 1030, and at a later period became a member of the Hanseatic League, but left that confederacy in 1492. It still retains the right of coining money, along with several other privileges; and is the seat of an exchange and a bank for the duchy. Pop (1855) 24,228.

ROSTOPCHIN, or RASTOPCHIN, FEDOR, *Count*, who was born in 1765 is celebrated from his having been the commander-in-chief of Moscow in 1812, when that city was burned. His connection with the conflagration has been the subject of much controversy. The point of dispute is, whether he was or was not the incendiary. In support of the former supposition there is the presumption that the flames were far too opportune in their outbreak, summary in their devastations, and successful in their results, to be the effect of anything else than one designing and overruling mind. In support of the latter there is the fact, that the governor himself, in 1823, while residing in Paris, published a pamphlet disclaiming the honour of being the author of such a pregnant event in the world's history, and attributing the fire to the patriotism of a few isolated Russians. Rostopchin died at Moscow in 1826. He left behind him, among other works, an autobiography, entitled *Memoirs written in Ten Minutes*.

ROSTOV, a town of European Russia, capital of a circle in the government and 40 miles S.S.W. of Jaroslav, on a lake of the same name. It is an ancient and extensive town, and consists of the city, encircled by a wall and moat, along with suburbs on the outside. There is an old citadel, a cathedral with many costly ornaments, 23 other churches, 5 convents, 6 poor-houses, and 2 schools. The Archbishop of Jaroslav resides here in a large palace, with a seminary attached to it. Various important manufactures are carried on, especially of linen cloth and candles. A much-frequented market is held annually for three weeks in February and March. Pop. 9598.

ROSTOV, a fortified town of European Russia, in the government and 223 miles E.S.E. of Jekaterinoslav, on the Don, about 22 miles above its mouth, in the Sea of Azov. It contains the fortress of St Demetrius, five churches, two schools, and two benevolent institutions. Several manufactures are carried on here, as well as ship-building and fishery. Two annual and much-frequented fairs are held here, and there is an extensive trade. Pop. 12,587.

ROSTRA. See FORUM.

ROTA, a seaport-town of Spain, Andalucia, in the province and 8 miles N.W. of Cadiz, at the N.W. extremity of the Bay of Cadiz. It has a castle, a town-hall, a fine church in the Gothic style, several schools, hermitages, and a cemetery. There is also a good anchorage, and an excellent pier, 145 feet long. The people are chiefly employed in farming: wine is exported; coals and oil imported. Pop. 7997.

ROTA, the name of an ecclesiastical court of Rome which takes cognisance of all suits in the territory of the church, is composed of twelve prelates, of whom there must be a German, a Frenchman, two Spaniards, eight Italians, (three of whom must be Roman, a Bolognese, a Ferraran, a Milanese, a Venetian, and a Tuscan).

ROTATION.

Rotation. ROTATION, in mechanical philosophy, denotes the motion of the different parts of a solid body about an axis, in contradistinction to the progressive motion of the body in a straight line, or in an orbit about a distant centre, of which the rotation is absolutely independent, although both motions may take place simultaneously. Thus the planets have a progressive motion, or a motion of translation, in the orbits which they describe about the sun, while at the same time each revolves about an axis which passes through its centre of gravity.

In consequence of this double motion of the planetary bodies, the two great problems in physical astronomy are, first, to determine the orbit described in space by each body under the influence of the sun's attraction, but disturbed by the attraction of every other body in the system; and, secondly, to determine the circumstances of the rotation of each body under the influence of the same disturbing forces. This last problem is not of less importance or difficulty than the first. In the case of the earth it includes the determination of the precession of the equinoxes and the nutation of the axis under the disturbing action of the sun and moon; and its analysis has led to the discovery of two important facts connected with the physical constitution of the universe, namely, the invariability of the length of the day, and the permanence of the poles of rotation on the earth's surface.

But the problem of determining the rotation of a solid body is not merely interesting in consequence of its forming a principal part of physical astronomy; it is also one of the highest importance in practical mechanics; for the principles to which we are led in considering the general theory of rotatory motion, enable us to determine the effect or performance of machines, and the proper relations and most advantageous disposition of their several parts, in order to accomplish the object in view with the smallest waste of force, and the least strain or injury to the machine itself.

In treating the subject, we shall first endeavour to demonstrate the fundamental propositions of rotatory motion in as elementary a manner as possible; secondly, we shall show the methods of computing the inertia of bodies of different forms, and the properties of principal axes; thirdly, we shall consider the motion of a body which revolves about a fixed axis, and the properties of the centres of gyration, percussion, and oscillation; and, lastly, we shall give the general equations which determine the rotation of a body acted upon by any number of forces, and which is at liberty to move in any direction.

General principles.

1. When a solid body, or system of material particles, so connected that their mutual distances remain invariable, turns round an axis, every particle describes a circle having its centre in the axis, and its plane perpendicular to the axis; and at every instant of the motion the particle is in the direction of a tangent to the circle, or in a straight line perpendicular to its radius vector. In order, therefore, to ascertain the direction of the motion of any particle of the system, we have only to draw a straight line from the particle perpendicular to the axis of rotation. This line will lie in the plane of the circle, and be its radius vector; and the perpendicular to the radius vector at its extremity gives the direction of the motion of the particle.

2. Since the system is supposed to be invariable in form, every particle describes the circumference of a circle in precisely the same instant of time; and as this is also true of any given portion of the circumference, it follows that the absolute velocities of the different particles are proportional to their distances from the axis of rotation. Hence,

if w denote the velocity of the particle whose radius vector or distance from the axis = 1, then rw is the velocity of the particle whose distance from the axis = r . The velocity denoted by w is called the *angular velocity* of the body; and the rotations of different bodies are compared in respect of velocity by comparing their angular velocities.

3. The nature of the forces which connect the different particles or atoms of a solid body, and render it impossible for any single particle to change its position without a corresponding change in the positions of all the other particles, is very obscurely known; but whatever their nature may be, there is one general fact or law, established by unexcepted experience, which affords a sufficient foundation for a dynamical theory, namely, that the forces by which the particles of a body act reciprocally on each other are equal. An immediate consequence of this law is, that when a solid body is in equilibrium between two external forces A and B, these forces are equal and opposite; for the force A being in immediate equilibrium with the opposite forces exerted by that particle of the solid body to which it is applied, must therefore be equal and opposite to the force resulting from the combination of all the forces which connect that particle with the series of particles immediately adjoining. In like manner, the compound force by which this first series of particles acts on that to which the external force A is applied, is equal and opposite to the compound force which connects this first series with the next series, and so on until we come to the particle to which the external force B is immediately applied. And this particle being in equilibrium, the external force applied to it must be equal and opposite to the compound force exerted on it by the series of contiguous particles on that side; therefore the two forces A and B are equal and opposite.

Hence it follows, that when any number of external forces are applied to a solid body, and it is in equilibrium between them, the forces are such as would be in equilibrium if they were all applied at one point.

4. If a body is maintained in equilibrium by the action of three forces, these forces lie in the same plane, and are either parallel, or meet in the same point. This follows immediately from the composition of forces; for the forces being in equilibrium, any one of the three must be equal and opposite to the equivalent, or *resultant*, as it is termed, of the other two; and this resultant is the diagonal of a parallelogram of which the other two *component* forces are the sides. But the diagonal and sides of a parallelogram are in the same plane, therefore the third force is in the plane of the other two; and, further, since it is equal and opposite to the resultant of the other two, it must be in the same straight line, and consequently pass through their point of concurrence. These simple propositions are the foundation of the theory of statics.

5. In applying these propositions to explain the motion of rotation, we must recollect a fundamental theorem in dynamics, that the force which produces any motion is equal and opposite to the force which would prevent it, if applied at the same point, and in the same straight line, or which would extinguish the motion in the same time in which we suppose it to be produced. The force therefore which, acting on any particle, causes the body to revolve about an axis with a given angular velocity, is equal to the force which, if applied at the same point in the opposite direction, would reduce the body to a state of rest in the same time as was necessary to produce the given velocity.

6. The only distinct notion we can form of the intensity of any moving force, is the quantity of motion which

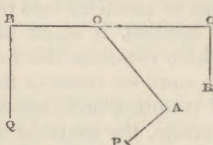
Rotation. it can produce by acting uniformly during a given time. This will be ascertained when we know the velocity impressed upon a body containing a given quantity of matter. Thus we know that terrestrial gravity acting on a body for a second, will cause it to fall sixteen feet with an uniformly accelerated motion, and will leave it in a state such that it would move on for ever at the rate of thirty-two feet per second. The force of gravity is therefore such as to communicate a velocity of thirty-two feet per second; and in this case the mass of the body is not considered, for gravity acts equally on every particle of which it is composed. In the same manner, the best way of acquiring a distinct conception of the rotatory effect of a moving force, is to determine the quantity of rotatory motion which it can generate by acting uniformly during some known time.

Rotation of a solid body about an axis.

7. If a solid body, or rigid system of invariable form, admit of a rotatory motion about an axis, and if at any point of the body a force P be applied, which acts in a plane perpendicular to the axis of rotation, and tends to turn the body in one direction; and to any other point in the same plane a force Q be applied, tending to turn the body in the opposite direction; then, if the two forces be to each other inversely as the distances of the lines of their directions respectively from the axis, the body will remain at rest, or the two forces will be in equilibrium.

For let O (fig. 1) be the axis of rotation, and suppose the force P to be applied at the point P in the direction PA , and tending to turn the solid body about the axis O perpendicular to the plane of the paper, and let the force Q act in the direction QB , and consequently tend to turn the body in the opposite direction, and draw OA perpendicular to PA , and OB perpendicular to QB . Then, in order that there may be equilibrium, we must have, by the principle of the lever, $P : Q :: OB : OA$, whence $P \cdot OA = Q \cdot OB$.

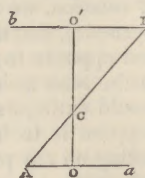
Fig. 1.



8. It is obviously indifferent at what point of the plane the force is applied, provided its distance from the axis remains the same. Let BO therefore be produced, and take OC equal to OA , and draw CR perpendicular to BC , or parallel to BQ . We may now suppose the force P to be replaced by an equal force R , acting in the direction RC ; then, since $R \cdot OC = P \cdot OA$, we have $R \cdot OR = Q \cdot OB$, and, consequently, the axis being supposed fixed, the body will remain in equilibrium between the two forces Q and R . These forces are therefore equivalent to a single force applied at O , equal to their sum, and acting in a parallel direction. Hence the resultant of two parallel forces applied to a straight line is a force parallel to the component forces, equal to their sum, and whose line of direction divides the straight line into parts reciprocally proportional to the forces themselves.

9. If two forces, which are inversely as the distances of their respective directions from the axis of rotation, be applied to a body, the equilibrium will still be maintained, although the two forces are not in the same plane. Let OO' be two points in the axis of rotation, through which let there be drawn two planes Aa and Bb at right angles to the axis. Suppose also these planes to be intersected by another plane (here supposed to be the plane of the figure) passing through the axis, and let OA , $O'B$ be the intersections, and let the straight line which joins A and B intersect the axis in C . Let P and Q be two forces applied respectively at A and B in the planes AOa and BOb , and at right angles to OA and $O'B$, or perpendicular to the plane of the paper, then these two forces are parallel; and because by hypothesis $P : Q :: O'B : OA$,

Fig. 2.



we have $P : Q :: CB : CA$; therefore (8) the two forces P and Q are equivalent to a single parallel force passing through C . But a force passing through the axis has no tendency to turn the body round the axis; consequently the body remains at rest.

10. Let $m, m', m'', \&c.$ (fig. 3) be a system of bodies immoveable in respect of each other, and suppose them to revolve about an axis passing through O ; also let $m, m', m'', \&c.$ denote the quantities of matter in the bodies respectively, and let $r, r', r'', \&c.$ denote their distances from the axis of rotation. Let the angular velocity of the system be w ; then (2) the absolute velocities of the bodies are respectively $wr, wr', wr'', \&c.$ Now let us suppose the system to be put in motion by an external force F applied at the point P , in the direction PA , which is contained in a plane perpendicular to the axis of rotation; then the relation between the force F and the velocity w may be found as follows. Considering, first, the body m ; since its velocity $= wr$, and its quantity of matter $= m$, its quantity of motion $= wrm$. But it is a principle in dynamics, that the quantity of motion of a moving body is proportional to the impressed force, and may be taken as a measure of that force; whence wrm is the measure of a force which, if applied at m , in a direction perpendicular to Om , would cause m to begin to move with the actual velocity wr . Let f be the force which, if applied at P in the direction PA , would make equilibrium with the force wrm at m ; draw OA perpendicular to PA , and make $OA = h$. We have then (7)

$$f : wrm :: Om : OA :: r : h,$$

whence $fh = wr^2m$. In like manner, the quantities of motion in the bodies $m', m'', \&c.$ are $wr'm', wr''m'', \&c.$; and if we denote by $f', f'', \&c.$ the forces which, if applied at P in the direction PA , would respectively make equilibrium with the forces $wr'm', wr''m'', \&c.$ we shall have $f'h = wr'^2m', f''h = wr''^2m'', \&c.$; therefore, if we assume

$$F = f + f' + f'' + \&c.$$

we shall have the equation

$$F \cdot h = w(r^2m + r'^2m' + r''^2m'' + \&c.).$$

If we suppose $m = m' = m'' = \&c.$ and take r to denote the distance of any particle from the axis of rotation, the equation becomes $F \cdot h = w \sum (r^2m)$; the summation denoted by $\sum$ extending to every particle in the system.

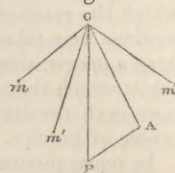
11. When the direction of the external force F is not in a plane parallel to the circles of rotation, it must be resolved into two forces, one of which lies in that plane, and the other is parallel to the axis. It is only the first of these forces which in the present case is regarded as the moving force; the second merely tends to push the body in the direction of the axis, and does not influence the rotation. When we come to consider the rotation of a body perfectly free, it will be necessary to attend particularly to this circumstance.

12. A solid body may be regarded as composed of molecules of a very small but finite magnitude, connected so as to form an invariable system; and although a solid, according to his view of the constitution of body, is formed of discrete elements, the sums relative to the molecules may be changed into definite integrals without sensible error; that is to say, for the sums $\sum r^2m$ we may substitute the definite integrals $\int r^2dm$, where dm is the element of the mass, and the integrals extend to the whole mass. We have then $F \cdot h = w \int r^2dm$.

13. The energy of a force applied to a lever, or its power Moment of producing motion round the fulcrum, is expressed by the product of the force into the perpendicular drawn from the fulcrum upon the line of its direction. This product (denoted above by $F \cdot h$) is called the *moment*, or *momentum*, or *rotatory effort*, of the force F . And because $\int r^2dm$ is

Rotation.

Fig. 3.



Rotation. the sum of the moments of all the particles of the body in actual motion, this integral expresses the energy or effort of all the resistances made to the rotation by the inertia of the particles, and is therefore called the *moment of inertia* of the moving body with respect to the axis from which the distances r are reckoned. We have therefore these definitions:

The *moment of a force* in respect of a given axis, is the product of the force into the perpendicular from the axis upon the line of its direction.

The *moment of inertia* of a body in respect of any axis is the sum of the products obtained by multiplying each particle of the body into the square of its distance from the axis.

14. From the equation $F \cdot h = wfr^2 dm$ (12), we have the following expression for the angular velocity, namely,

$$w = \frac{F \cdot h}{fr^2 dm};$$

that is to say, the angular velocity about any axis is equal to the moment of the external or applied force divided by the moment of inertia. This fraction expresses a number; for the force F may be represented by the product of a mass M into a certain velocity v , so that $F = Mv$; and therefore, since v represents a line, the numerator and denominator have both the same dimension. The fraction also expresses the part of the radius which is equal to the arc measuring the angle; and since the radius is equal to the arc of $57^\circ.2958$, if we make the radius = 1, we have only to multiply the fraction by 57.2958 in order to obtain the value of w in degrees.

15. Since the relation between the angular velocity and the external impelling force is expressed in terms of the moment of inertia, it is evident that this moment is an important element in the theory of rotation. We shall therefore now proceed to consider the subject under a more general view, and point out the method by which it is computed for bodies of any form revolving about given axes.

Let the different points of a solid body be referred to three rectangular co-ordinates x, y, z , and let dm be the differential element of the mass; then the distance of any particle from the axis x is $\sqrt{(y^2 + z^2)}$, and, by the definition, the moment of inertia relative to the axis x , is $\int (y^2 + z^2) dm$, the integral extending to the whole mass of the body. In like manner, the moments of inertia relative to the axes y and z are respectively $\int (x^2 + z^2) dm$ and $\int (x^2 + y^2) dm$. It is thus evident that the determination of the moments of inertia, with respect to any body whatever, consists in forming the analytical expression of the product of the differential element of the body into the square of its distance from the axis, and integrating for the whole extent of the body. The integration may always be effected by the method of quadratures.

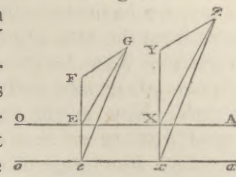
16. Since the same body may be referred to an infinite number of different axes, in respect of all of which the moments of inertia will have different values, it follows that the moment cannot be absolutely defined unless it be referred to a determinate axis. But when it is required to investigate the moments of inertia of a body in respect of several axes successively, it is not always necessary to compute the formula $\int r^2 dm$ for each case. For example, when the moment of inertia has been determined in respect of any one axis, we may find its value in respect of any other parallel axis without further calculation, if we know the mass of the body and the distances of both axes from the centre of gravity.

17. The moment of inertia of any body in respect of an axis AO (fig. 4) being given, to find the moment of inertia in respect of another axis oa parallel to OA .

Let the origin of the rectangular co-ordinates be at O , and let x be taken on the axis OA , and y in the plane of

OA and oa . Also let Z be the place of an element dm , and Y the projection of Z on the plane xy ; and from Y draw YX perpendicular to OA , meeting OA in X and oa in x ; then $OX = x$, $XY = y$, $YZ = z$. The moment of inertia in respect of the axis OA is $\int r^2 dm = \int (y^2 + z^2) dm$. But by hypothesis this is given; suppose it

Fig. 4.



$= Mh^2$ (M being the mass of the body), and we have $\int (y^2 + z^2) dm = Mh^2$. In like manner, if we assume the distance of oa from OA to be h , we have $ox = x$, $xY = h + y$, $YZ = z$, and the moment of inertia in respect of oa is $\int \{(h + y)^2 + z^2\} dm = h^2 \int dm + 2h \int y dm + \int (y^2 + z^2) dm$. But $\int k^2 dm = Mh^2$, and $\int (y^2 + z^2) dm = Mh^2$; therefore the moment in respect of the new axis is $Mh^2 + Mh^2 + 2h \int y dm$. Suppose the centre of gravity of the body to be at G ; let GF be perpendicular to the plane xy , and draw FE perpendicular to the axes, meeting OA in E and oa in e . From the nature of the centre of gravity $\int y dm = M \cdot EF$; therefore the moment in respect of oa becomes $Mh^2 + Mh^2 + 2h \cdot M \cdot EF$. But $h = eE$, and $2M \cdot k \cdot EF = 2M \cdot eE \cdot EF = M(eE^2 - k^2 - EF^2)$; whence we have finally for the moment of inertia in respect of the new axis oa ,

$$Mh^2 + M \cdot eE^2 - M \cdot EF^2.$$

Corollary 1. If the original axis OA passes through the centre of gravity G , then EF vanishes, and the moment in respect of the new axis oa becomes $Mh^2 + M \cdot eE^2$, or $Mh^2 + Mh^2$. And if oa passes through the centre of gravity, then eE vanishes, and the moment in respect of oa becomes $Mh^2 - M \cdot EF^2$. Hence we infer that the moment of inertia in respect of the axis which passes through the centre of gravity is less than the moment in respect of any other parallel axis.

Corol. 2. The moment of inertia is the same in respect of every axis parallel to that which passes through the centre of gravity, and is at the same distance from it; or the same in respect of every straight line which lies in the surface of a cylinder having the centre of gravity in its axis.

18. We shall now give a few examples of the application of the preceding formulæ.

I. Let it be proposed to find the moment of inertia of a very slender rod (the breadth and thickness of which may be neglected), in respect of an axis passing through its extremity and perpendicular to its length.

Let a = the length of the rod, and x = the distance of any point from the axis, then the element of the body is dx , and the moment of inertia $= \int x^2 dx$, the limits of the integral being $x = 0$ and $x = a$. For those limits we have $\int x^2 dx = \frac{1}{3} a^3$, which therefore is the moment of inertia.

II. To find the moment of inertia of a very thin rectangle, the thickness of which may be neglected, in respect of an axis coinciding with one of its sides.

Let the side which coincides with the axis = a , and the other side = b , and let x be taken in the axis. The co-ordinates of any point in the rectangle being x, y , the element of the body is xdy , and the distance from the axis = y , therefore the moment of inertia is $\int \int y^2 x dy dx$. The integral of this in respect of x is $\int xy^2 dy$, which from $x = 0$ to $x = a$ gives $a \int y^2 dy$. A second integration gives $\frac{1}{3} ay^3$, which from $y = 0$ to $y = b$, becomes $\frac{1}{3} ab^3$; therefore, since $M = ab$, $\int \int y^2 x dy dx = \frac{1}{3} ab^3 = \frac{1}{3} M \cdot b^2$.

III. To find the moment of inertia of a circle in respect of one of its diameters.

Let a be the radius of the given circle, r = the radius of a concentric circle passing through a point P whose co-ordinates are x and y , x being taken on the axis of rotation, and $r + dr$ the radius of a second concentric circle, very near the other. If we now assume $dz = \sqrt{(dx^2 + dy^2)}$, then $dz \cdot dr$ is the area of the elementary surface included between

Examples of the computation of moments of inertia.

Rotation. the circumferences of the two circles whose radii are respectively r and $r + dr$, and two straight lines drawn from the centre to the extremities of a very small arc at P; that is to say, we have $dm = dzdr$. But the distance of this element from the axis is y ; therefore the moment of inertia is $\iint y^2 dzdr$. Now, by the nature of the circle, $dz : dx :: r : y$, whence $yz = rdx$, and the double integral becomes $\int ydx \times \int rdr$. Now, on the supposition that r is constant, the integral $\int ydx = \pi r^2 =$ area of the circle whose radius is r ; therefore the integration in respect of dx gives $\pi r^3 dr$; and on integrating this from $r = 0$ to $r = a$, we get ultimately $\frac{1}{4} \pi a^4$ for the moment of the circle whose radius is a .

Since in this case the mass $M = \pi a^2 =$ the area, we have $\frac{1}{4} \pi a^4 = \frac{1}{4} Ma^2$, which is another expression for the moment of inertia of a circle in respect of one of its diameters.

IV. To find the moment of inertia of a circle in respect of an axis perpendicular to its plane, and passing through its centre.

Supposing, as in the last proposition, the surface to be composed of elementary rings, we have $dm = dzdr$, whence $\int r^2 dm = \int r^2 dr \times \int dz = 2\pi \int r^3 dr$ (since $\int dz = 2\pi r$), the integral of which, from $r = 0$ to $r = a$, gives $\int r^2 dm = \frac{1}{2} \pi a^4 = \frac{1}{2} Ma^2$.

V. To find the moment of inertia of a solid body generated by the revolution of a curve line in respect of the axis of rotation.

Let AB (fig. 5) be a section perpendicular to the axis of rotation OX, and meeting it in C, and make OC = x . Suppose the solid to be divided into thin slices by planes parallel to AB, and let ab be the section next to AB, so that Cc = dx . Let P be a point in the plane AB, and make CP = r , Cp = $r + dr$. The length of the circumference described by P in one revolution is $2\pi r$, therefore the mass of the ring comprised between AB and ab , and traced by the revolution of the points P and p, is $2\pi r dr dx$; and its distance from the axis is r , therefore the moment of inertia of the ring is $2\pi r^3 dr dx$. Integrating this in respect of r from $r = 0$ to $r = CA = y$, we get $\frac{1}{2} \pi y^4 dx$ for the moment of the slice comprised between the two sections of the solid, whose distances from O are x and $x + dx$. Hence the moment of inertia of all the slices, or of the solid body, is $\frac{1}{2} \pi \int y^4 dx$.

Applying this formula to a sphere whose radius = a , we get from the equation $y^2 = 2ax - x^2$, $y^4 = 4a^2 x^2 - 4ax^3 + x^4$, on substituting which, and integrating, we have $\frac{1}{2} \pi \int y^4 dx = \frac{2}{5} \pi a^2 x^3 - \frac{1}{2} \pi a x^4 + \frac{1}{10} \pi x^5$, which from $x = 0$ to $x = a$ gives $\frac{1}{2} \pi \int y^4 dx = \frac{8}{15} \pi a^5$ for the hemisphere, and consequently the moment of inertia of the whole sphere = $\frac{8}{15} \pi a^5 = \frac{2}{5} M \cdot a^2$, since $M = \frac{4}{3} \pi a^3$.

The moment of inertia of a spheroid revolving about its shorter axis is $\frac{1}{2} M (a^2 + b^2)$. See the calculation of $\int x^2 dm$ and $\int y^2 dm$ in this case in the article PRECESSION, vol. xviii. p. 508.

In all the preceding examples, the density of the body has been supposed uniform, and = 1. For bodies of different densities the formulæ must be multiplied in each case by the density. Thus, in the last example, the moment of inertia of a sphere whose radius = a , and density = ρ , the moment of inertia in respect of one of the diameters is $\frac{2}{5} \rho \pi a^5$.

19. The examples which have now been given will suffice to illustrate the method of computing the moments of inertia of bodies of any form in respect of particular axes; and they render it obvious that the computation will in general be greatly facilitated when the mass is symmetrically disposed about the axis for which the inertia is to be computed. It is likewise evident that the amount of rotatory inertia de-

pends on the position of the axis of rotation. Hence, for every point of a mass there must exist at least one axis in respect of which the inertia is less, or greater, than in respect of any other axis passing through that point. The axes for which the moments of inertia are the greatest or least possible are called *principal axes*; and they possess some very remarkable properties of great importance in the theory of rotation. We now proceed to investigate the position and properties of the principal axes.

20. The moments of inertia of a mass M being given in respect of three rectangular axes OX, OY, OZ (fig. 6) passing through O, to find the moment in respect of another axis OG given in position, and also passing through the origin O.

Let P be the position of a particle dm ; through P draw PQ parallel to the axis OZ, meeting the plane XOY in Q, and draw QR parallel to OY, meeting OX in R; then OR = x , RQ = y , QP = z . Also suppose the plane which passes through OG, and is perpendicular to XOY, to meet the plane XOY in OF, and let the angle XOY = ϕ , and the angle FOG = ψ . The axis OG is entirely determined by these two angles, and consequently, when OG is given in position, ϕ and ψ are also given. In order to compute the moment of inertia in respect of the axis OG, it is convenient to refer the different points of the mass, as P, to a new system of rectangular axes, of which one is OG. To effect this, in the first place let OY be drawn perpendicular to OF in the plane XOY, and let P be referred to the axes OF, OY', OZ, and draw QR' perpendicular to OF. We have then OR' = x' , R'Q = y' , QP = z' , and the new co-ordinates expressed in terms of the former, and the angles ϕ and ψ are

$$x' = x \cos. \phi + y \sin. \phi, \quad y' = y \cos. \phi - x \sin. \phi, \quad z' = z.$$

In the second place, we may pass in like manner from these to a third system of co-ordinates x'', y'', z'' , of which x'' is in the line OG, y'' remains parallel to OY', and z'' is perpendicular to OG in the plane FOG. We have, then, similarly,

$$x'' = x' \cos. \psi + z' \sin. \psi, \quad y'' = y', \quad z'' = z' \cos. \psi - x' \sin. \psi.$$

Substituting in these last equations the values of x' , y' , and z' , given by the three former, we have

$$x'' = x \cos. \phi \cos. \psi + y \sin. \phi \cos. \psi + z \sin. \psi,$$

$$y'' = y \cos. \phi - x \sin. \phi,$$

$$z'' = z \cos. \psi - x \cos. \phi \sin. \psi - y \sin. \phi \sin. \psi.$$

If we now assume the distance of P from the axis OG to be r , we shall have $r^2 = y''^2 + z''^2$; whence, on forming from the two last equations the expression for $\int r^2 dm = \int (y''^2 + z''^2) dm$, and, for the sake of abridging, putting

$$\int x^2 dm = A, \quad \int y^2 dm = B, \quad \int z^2 dm = C,$$

$$\int xy dm = D, \quad \int xz dm = E, \quad \int yz dm = F,$$

the expression for the moment of inertia in respect of the axis OG becomes

$$\begin{aligned} \int r^2 dm &= A (\sin.^2 \phi + \cos.^2 \phi \sin.^2 \psi) \\ &+ B (\cos.^2 \phi + \sin.^2 \phi \sin.^2 \psi) + C \cos.^2 \psi \\ &- 2 D \cos. \phi \sin. \phi \cos. \psi - 2 E \cos. \phi \cos. \psi \sin. \psi \\ &- 2 F \sin. \phi \cos. \psi \sin. \psi. \end{aligned}$$

This expression for the moment of inertia in respect of the axis OG is given by Euler (*Theoria Motus Corporum Solidorum*, p. 169).

21. The values of the angles ϕ and ψ , which give the position of the axis for which the moment $\int r^2 dm$ is a maximum or minimum, may be deduced from the above equation in the usual manner, that is to say, by differentiating successively for each of the variables, and making the differential co-efficient = 0. The differentiation in respect of ϕ (supposing ψ constant) gives the equation

$$\tan. \psi = \frac{-(A - B) \sin. \phi \cos. \phi + D (\cos.^2 \phi - \sin.^2 \phi)}{E \sin. \phi - F \cos. \phi}$$

Rotation. and the differentiation in respect of ψ (supposing ϕ constant) gives

$$\begin{aligned} \tan. 2\psi &= \frac{2 \tan. \psi}{1 - \tan.^2 \psi} \\ &= \frac{2 E \cos. \phi + 2 F \sin. \phi}{A \cos.^2 \phi + B \sin.^2 \phi - C + 2 D \cos. \phi \sin. \phi} \end{aligned}$$

On eliminating ψ from these two equations, there results an equation of the following form, in which $u = \tan. \phi$, and e, f, g, h , are co-efficients depending upon the quantities A, B, C, D, E, F , viz.

$$0 = e + fu + gu^2 + hu^3.$$

This being a cubic equation, must have at least one real root. But it is easy to see, from the nature of the thing, that all the roots are real; for if there be one axis for which the moment of inertia is a *maximum*, there must evidently be a second, in respect of which it is a *minimum*, and *vice versa*. Hence the equation must have two real roots, and therefore, by the theory of cubic equations, all the roots are real. We are therefore led to this very important conclusion, that through any point of every solid body, however irregular in its form, there may be drawn a system of three axes, such that the differential co-efficient of the moment of inertia in respect of each of them is nothing. In respect of one of these, the moment is a maximum, in respect of another, it is a minimum, and though, in respect of the third it is neither a maximum nor a minimum, it is still such that its value is not altered by a small change in the position of the axis. According to the definition in (19), these are the *principal axes* of the body.

22. It would be difficult, in general, to determine the position of the principal axes from the cubic equation found above; but they possess certain properties, by means of which they may be readily found in almost every case of practical application. On comparing the two equations for $\tan. \psi$ and $\tan. 2\psi$ (21), with the expressions for x'', y'', z'' (20), it will be seen that the first is identical with $2 \cos. \psi \int x'' y'' dm$, and the second with $-2 \int x'' z'' dm$; whence $\int x'' y'' dm = 0$, and $\int x'' z'' dm = 0$; and it follows, that if x be taken in one of the principal axes, we have, in respect of that axis, $\int x y dm = 0$, $\int x z dm = 0$, or the quantities denoted by D and E respectively vanish.

23. From this it follows, that if all the matter in a body of uniform density be symmetrically disposed about any line, that line is one of the principal axes of rotation (for if x be taken in the axis of symmetry, then to every element whose co-ordinates are x, y , there corresponds another element whose co-ordinates are $x, -y$, whence $\int x y dm = 0$); therefore, in the case of symmetrical figures, the position of one of the principal axes is known, and the positions of the other two are thence readily determined by means of the two equations (21). On making $D = 0, E = 0$, the first of these equations gives

$$(A - B) \sin. \phi \cos. \phi - F \cos. \phi \tan. \psi = 0,$$

whence $\cos. \phi = 0$, and $\sin. \phi = 1$; or $\phi = 90^\circ$. Substituting this value of ϕ in the second of the equations (21), and making at the same time $D = 0, E = 0$, we get $\tan. 2\psi = 2F \div (B - C)$; or 2ψ is the angle which has $2F \div (B - C)$ for its tangent. Hence the angle ψ has a double value, one corresponding to FOG , and the other to $FOG + 90^\circ$.

24. Hence also it appears, that when one principal axis OX is determined, two others may be found having the same property of maximum or minimum, and, by reason of $\phi = 90^\circ$, these axes are both in a plane perpendicular to OX . As this conclusion holds good with respect to each of the three axes, it follows that the three principal axes are at right angles to each other, and also, since $\int x y dm = 0$, and $\int x z dm = 0$, that $\int y z dm = 0$. We have therefore, in respect of the principal axes, the three equations

$$D = \int x y dm = 0, E = \int x z dm = 0, F = \int y z dm = 0.$$

VOL. XIX.

If the origin of the co-ordinates is placed at the centre of gravity, we have likewise

$$\int x dm = 0, \int y dm = 0, \int z dm = 0,$$

by the well-known property of the centre of gravity.

25. By means of these equations, the proposition in (20) is considerably simplified when the three axes for which the momenta are respectively given are principal axes. Let OX, OY, OZ (fig. 6) be the three principal axes passing through O , then $D = 0, E = 0, F = 0$, and the equation (20) for the moment, in respect of the axis OG , becomes

$$\begin{aligned} \int r^2 dm &= A (\sin.^2 \phi + \cos.^2 \phi \sin.^2 \psi) \\ &+ B (\cos.^2 \phi + \sin.^2 \phi \sin.^2 \psi) + C \cos.^2 \psi. \end{aligned}$$

Suppose the given moments in respect of the principal axes to be respectively $M \cdot a^2, M \cdot b^2, M \cdot c^2$; then, from the values of A, B, C (20) we have $M \cdot a^2 = B + C, M \cdot b^2 = A + C, M \cdot c^2 = A + B$, whence

$$\begin{aligned} A &= \frac{1}{2} M (b^2 + c^2 - a^2), B = \frac{1}{2} M (a^2 + b^2 - c^2), \\ C &= \frac{1}{2} M (a^2 + c^2 - b^2), \end{aligned}$$

on substituting which in the above equation, we get $\int r^2 dm = M (a^2 \cos.^2 \phi \cos.^2 \psi + b^2 \sin.^2 \phi \cos.^2 \psi + c^2 \sin.^2 \psi)$. If we now refer the new axis OG to the co-ordinates OX, OY, OZ , and make the angle $XOG = \alpha, YOG = \beta, ZOG = \gamma$, and observe that because the two planes XOF and FOG are at right angles, $\cos. \alpha = \cos. \phi \cos. \psi, \cos. \beta = \sin. \phi \cos. \psi, \cos. \gamma = \sin. \psi$, the equation becomes

$$\int r^2 dm = M (a^2 \cos.^2 \alpha + b^2 \cos.^2 \beta + c^2 \cos.^2 \gamma).$$

It is to be remarked, that as the co-ordinates are rectangular, $\cos.^2 \alpha + \cos.^2 \beta + \cos.^2 \gamma = 1$, so that the position of OG is determined by any two of these angles. If we therefore suppose the moments in respect of two of the principal axes to be equal, for example, if $a^2 = b^2$, the formula for the moment in respect of OG becomes

$$\int r^2 dm = M \cdot a^2 (1 - \cos.^2 \gamma) + M \cdot c^2 \cos.^2 \gamma.$$

Now when $\gamma = 90^\circ$, that is, when OG lies in the plane XOY , then $\int r^2 dm = M \cdot a^2$. Hence, if the moments in respect of the axes OX and OY be equal, the moment will be the same for every axis passing through O , contained in the plane XOY .

When the moments in respect of the three principal axes are equal, that is, when $a^2 = b^2 = c^2$, then

$$\int r^2 dm = M \cdot a^2 (\cos.^2 \alpha + \cos.^2 \beta + \cos.^2 \gamma) = M \cdot a^2,$$

so that the moment is the same in respect of any axis whatever which passes through O . Thus it appears, that for every point of a solid body there are either three principal axes of rotation only, or else an infinite number.

26. These conclusions are obviously true in the case of some simple figures. Thus, in the spheroid of revolution, the moments are equal in respect of every diameter which lies in the plane of the equator; and in the sphere they are the same in respect of any diameter whatever, the bodies being always supposed homogeneous. The existence of three principal axes in every body was first noticed by Segner in 1755, but demonstrated for the first time by Albert Euler, in a memoir which received the prize of the Academy of Sciences of Paris in 1760.

27. Having established these general propositions respecting the moments of inertia and principal axes of bodies endowed with a rotatory motion, we now proceed to consider more particularly the rotation of a solid body about a fixed axis.

When a force is impressed on a body which can only move round a fixed axis, the difference between the motion which actually takes place, and that which would take place if the body were free, is evidently owing to the connexion which its parts have with the axis, and to the action of the points of support upon the axis. This action must be viewed in the light of another external force, such that, if combined with the force impressed on the body, it would produce in the body unconnected with any fixed points the motion which actually takes place.

Rotation.

28. In order to determine the strain on the axis, let OY (fig. 7) be the axis of rotation, retained in a fixed position by the two pivots S, T, and suppose a force $= F$ applied to the body at P, in the direction PQ, which is supposed to lie in a plane perpendicular to OZ. In the plane perpendicular to the axis, and containing PQ, let the rectangular axes OX, OY be drawn, and let x, y, z be the co-ordinates of a particle dm , the projection of which on the plane XY is at A, and let r denote its distance from the axis of rotation, so that $r = OA = \sqrt{x^2 + y^2}$; also let ϕ = the angle which OA makes with OX. If we now suppose ω to be the angular velocity communicated to the body, then ωr is the velocity with which the point A revolves, and the direction of this velocity is in the perpendicular to OA, and from OX towards OY, whence the velocity of A in the direction OX is $-\omega r \sin. \phi$, and $\omega r \cos. \phi$ in the direction OY. But $r \sin. \phi = y$, and $r \cos. \phi = x$; therefore the velocity of A in the direction OX is $-wy$, and in the direction OY it is $+wx$. The quantities of motion in these directions are therefore respectively $-wydm$ and $+wx dm$; and the integrals of those expressions extended to the whole mass of the moving body give the whole quantities of motion in those directions, namely, $-w \int y dm$, and $+w \int x dm$. On denoting the mass by M, and the co-ordinates of its centre of gravity by x_1 and y_1 , we have (from the well-known expressions for these co-ordinates) $\int y dm = My_1$, and $\int x dm = Mx_1$, therefore $-w \int y dm = -wMy_1$, and $+w \int x dm = +wMx_1$.

29. Now, since the body is supposed to be put in motion by a force F acting in a plane parallel to XOY, let α and β be the angles which its direction makes with parallels to OX and OY respectively; then the components of F in those directions are $F \cos. \alpha$ and $F \cos. \beta$. But these two forces are evidently equal respectively to the two former, together with the pressures on the pivots estimated in the same directions; therefore, calling p and q the pressures sustained by the point S in the directions OX and OY, and p', q' the pressures sustained by T in the same directions, we shall have

$$p + p' = F \cos. \alpha + wMy_1, \quad q + q' = F \cos. \beta - wMx_1.$$

In order to determine p, p', q, q' , it is still necessary to find two other equations. These will be obtained by considering, that in respect of the plane XOY, the moments of the forces acting on the two pivots, resolved in the directions x and y , must be equal to the moments of the resultants of all the forces or quantities of motion due to the rotation estimated in the same directions. Let $k = OS$, and $k' = OT$, the moments of the resolved forces which act on the pivots in the directions parallel to OX and OY are $pk + p'k'$ and $qk + q'k'$; and the resultants of the quantities of motion in the same two directions being $-w \int y dm$ and $+w \int x dm$, their moments in respect of the plane XOY are respectively $-w \int yz dm$ and $+w \int xz dm$; therefore

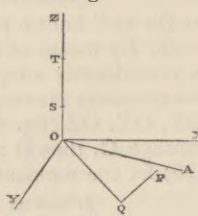
$$pk + p'k' = -w \int yz dm, \quad qk + q'k' = +w \int xz dm.$$

Combining these with the preceding two equations, p, p', q, q' are obtained in terms of known quantities.

30. If the axis of rotation OZ be one of the principal axes of the system which intersect at O, then, by (24), $\int yz dm = 0$ and $\int xz dm = 0$, whence $pk + p'k' = 0$, and $qk + q'k' = 0$, and consequently k and k' both vanish, and the percussions sustained by the axis pass through the origin O. Let R represent the single force or shock which the axis supports in this case, and ϕ the angle which its direction makes with the axis OX; then, by (29), $R \cos. \phi = F \cos. \alpha + wMy_1$, $R \sin. \phi = F \cos. \beta - wMx_1$, from which two equations R and ϕ are both determined.

31. It would be a desirable thing in machines which

Fig. 7.



derive their efficacy from a rotatory motion, to apply the pressures arising from the power and from the resistance opposed by the work in such a manner as to annihilate or diminish this pressure on the supports of the axis of motion. Attention to this theorem will point out what may be done; and it is at all times proper, nay necessary, to know what are the pressures in the points of support. If we are ignorant of this, we shall run the risk of our machine failing in those parts; and our anxiety to prevent this will make us load it with needless and ill-disposed strength. In the ordinary theories of machines, deduced entirely from the principles of equilibrium, the pressure on the points of support (exclusive of what proceeds from the weight of the machine itself) is stated to be the same as if the moving and resisting forces were applied immediately to these points in their own directions. But this is in all cases erroneous; and, in cases of swift motions, it is greatly so. We may be convinced of this by a very simple instance. Suppose a line laid over a pulley, and a pound weight at one end of it, and ten pounds at the other; the pressure of the axis on its support is eleven pounds, according to the usual rule; whereas we shall find it only $3\frac{7}{11}$. For the direction of the pressure R being in this case parallel to the axis y, and the force F also acting in the same direction, we have $\cos. \phi = 0 \cos. \alpha = 0$, $\sin. \phi = 1$, $\cos. \beta = 1$, $y_1 = 0$, and the two equations of (30) give the single equation

$$R = F - wMx_1.$$

If we now call the radius of the pulley 1, the moment of the moving force is $10 \times 1 - 1 \times 1 = 9$; and the moment of inertia (13) is $10 \times 1^2 + 1 \times 1^2 = 11$; therefore (14) the angular velocity $\omega = \frac{9}{11}$. But the distance of the centre of gravity from the axis of motion is also $\frac{9}{11}$, because the two weights may be supposed in contact with the circumference of the pulley; therefore, since $M = 11$, $wMx_1 = \frac{9}{11} \times 1 \times \frac{9}{11} = \frac{81}{11}$. Now $F = 10 + 1 = 11$, therefore $R = 11 - \frac{81}{11} = \frac{40}{11} = 3\frac{7}{11}$ pounds, which is the pressure sustained by the axis.

32. If we suppose $R = 0$, the two equations (30) will express the conditions that must be fulfilled in order that the axis may receive no shock from the action of the impressed force F. This supposition gives the equations

$$F \cos. \alpha = -wMy_1, \quad F \cos. \beta = wMx_1,$$

from which, since $\cos. \beta = \sin. \alpha$, we deduce

$$-y_1 \sin. \alpha = x_1 \cos. \alpha, \text{ or } -y_1 \tan. \alpha = x_1.$$

Now, if a plane be conceived to pass through the axis OZ and the centre of gravity of the body, and if we denote by ψ the angle which it makes with the plane XOZ, we shall have $x_1 = y_1 \tan. \psi$; and therefore, since $x_1 = -y_1 \tan. \alpha$, $\tan. \psi = -\tan. \alpha$. From this equation it follows that the direction PQ of the impressed force is perpendicular to the plane which passes through the axis and the centre of gravity. It now remains only to find the distance of the point of impulse P from the axis. Let h = this distance, and r_1 = distance of centre of gravity from the axis; the above equations give $F^2 \cos.^2 \alpha = w^2 M^2 y_1^2$, $F^2 \sin.^2 \alpha = w^2 M^2 x_1^2$, whence $F^2 = w^2 M^2 (x_1^2 + y_1^2) = w^2 M^2 r_1^2$, and $F = wMr_1$. But (14) $w = F \cdot h \div \int r^2 dm$; therefore, by substitution,

$$F = F \cdot h Mr_1 \div \int r^2 dm, \text{ and consequently } h = \frac{\int r^2 dm}{Mr_1}.$$

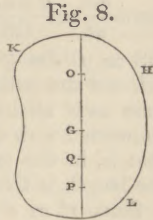
33. Hence it appears that the conditions which must be fulfilled in order that the axis may receive no shock when the body is struck, are, 1st, that the direction of the force be in the plane of the two axes which make with the axis of rotation a system of principal axes; 2d, that its direction be perpendicular to the plane which passes through the axis and the centre of gravity; and, 3d, that the distance of the point of its application from the axis be $\int r^2 dm \div Mr_1$.

34. The point determined by these conditions is called Centre of the centre of percussion of the system. The centre of per- percussion.

Rotation.
Application to machines.

Rotation. cussion is therefore the point at which, if an obstacle were opposed sufficient to resist the rotation of the system, no motion would be communicated to the axis; or, which is the same thing, if the axis were not fixed, the system would acquire from the shock no tendency to turn, the effect being the same as if the whole rotatory effort had been accumulated at that point.

Let HKL (fig. 8) be a section of the body perpendicular to the axis, and containing the centre of gravity G. Let O be the axis, and in the line OG take $OP = h = \frac{\int r^2 dm}{M \cdot OG}$, then P is the centre of percussion, and a force applied at P, in the plane HKL, and in the direction perpendicular to OP, will produce the same initial velocity of the centre of gravity G as if the body were free; for as the force exerts no pressure on the axis or points of support, the initial velocity will be the same as if they were not there.



35. The distance of the centre of percussion from the axis is always greater than the distance of the centre of gravity from the axis; for the moment of inertia in respect of the axis passing through O being $\int r^2 dm$, by (17) the moment of inertia in respect of the parallel axis passing through G is $\int r^2 dm - M \cdot OG^2$; therefore, since the moment of inertia is necessarily positive, $\int r^2 dm > M \cdot OG^2$. But by the definition $\int r^2 dm = M \cdot OG \cdot OP$, therefore $M \cdot OG \cdot GP > M \cdot OG^2$, or $OP > OG$.

36. The property of the centre of percussion, that a force applied there produces no strain on the axis, may be rendered sensible by a simple experiment. If a straight line, or rod of uniform thickness, be suspended from one extremity, the centre of percussion is at the distance of two thirds of its length from the axis; for the centre of gravity being at the middle of the line, $OG = \frac{l}{2}$, so that if we call its mass $M = 1$, the formula $OP = \frac{\int r^2 dm}{M \cdot OG}$ becomes $OP = \frac{2 \int x^2 dx}{l}$, which, on taking the integral from $x = 0$ to $x = l$, gives $GP = \frac{2}{3}l$. Now if the rod be held in the hand, and we give it a motion round the joint of the wrist only, and strike smartly against an obstacle with a point considerably nearer or more remote than two thirds of its length, we feel a painful shock or wrench in the hand; but if we strike with that point which is exactly at two thirds of its length, we feel no such disagreeable strain.

37. It is sometimes said that the point P, considered as the centre of percussion, is that with which the most violent blow is struck. But this is by no means true. P is that point of a body turning round O which gives a blow precisely equal to the progressive motion of the body, and in the same direction. As we have already said, it is the point where we may suppose the whole rotatory momentum of the body accumulated. Every particle of the body is moving in a particular direction, with a velocity proportional to its distance from the axis of rotation; and if the body were stopped in any point, each particle tending to continue its motion endeavours to drag the rest along with it. Whatever point we call the centre of percussion should have this property, that when it is stopped by a sufficient force, the whole motion and tendency to motion of every kind should be stopped; so that if at that instant the supports of the axis were annihilated, the body would remain in absolute rest.

38. The expressions in (29) for the stress on the axis have reference only to the initial movement of the body, and the forces which they represent are soon destroyed by the resistance of the axis. But when a body is in permanent rotation about a fixed axis, there is a strain exerted on the axis which depends only upon the centrifugal force of rotation, and which therefore continues as long as the rotation continues. This constant pressure is determined as follows: Since ω is the angular velocity, and r the distance

of a particle dm from the axis, the velocity of the particle $= r\omega$; and, by mechanics, the centrifugal force of a body moving in a circle is proportional to the square of the velocity divided by the radius; therefore the centrifugal force of the particle dm , in the direction of the radius r , is $\omega^2 r dm$. The resolved parts of this force in the directions OX and OY (fig. 7) are $\omega^2 x dm$ and $\omega^2 y dm$; therefore, denoting the pressures in those directions on the pivot S by p and q , and those on the pivot T by p' and q' , we shall have, as in (29), the following equations (in which x_1 and y_1 are the co-ordinates of the centre of gravity, and h, h' the distances of the pivots S and T respectively from O) to determine p, p', q, q' , viz.

$$p + p' = \omega^2 \int x dm = \omega^2 M x_1, \quad q + q' = \omega^2 \int y dm = \omega^2 M y_1, \\ pk + p'k' = \omega^2 \int x x_1 dm, \quad qk + q'k' = \omega^2 \int y y_1 dm.$$

If we suppose OZ to be one of the three principal axes passing through O, then (22) $\int x x_1 dm = 0$ and $\int y y_1 dm = 0$; whence $pk + p'k' = 0, qk + q'k' = 0$. If, therefore, we further suppose $h = 0$, or that the origin of the co-ordinates is placed at S, we shall also have $p' = 0, q' = 0$, whence the pivot T sustains no pressure, the whole being exerted on S.

If OZ, besides being a principal axis, also passes through the centre of gravity, then $x_1 = 0, y_1 = 0$, whence $p + p' = 0, q + q' = 0$; and since p' and q' vanish when OZ is a principal axis, therefore $p = 0, q = 0$, so that no pressure is exerted on either of the pivots; and if they were removed, the body would still continue to revolve about the same axis.

The forces thus determined are in some sort the inverse of those arising from the percussions found in (29), the values of $p + p'$ being in this case expressed in terms of x , and in the former in terms of y ; and the value of $q + q'$, which in the case of the percussions was expressed in terms of x , is here given in terms of y .

39. In computing the effect of machines, it is often convenient to determine the situation of a point in which the whole mass of the machine might be concentrated without altering the rotatory effort. In the straight line OG (fig. 8) suppose a point Q to be taken, such that $OQ^2 = \frac{\int r^2 dm}{M}$ = moment of inertia in respect of the axis O; then, if the whole matter in the body were collected at Q, a force applied at any point P in the line OG, would produce exactly the same angular velocity as if applied to the same point of the body having its natural form. For if the whole mass M were concentrated at Q, the moment of inertia would become $M \cdot OQ^2$ (13), and the moment of the force F applied at P is $F \cdot OP$; therefore the angular velocity (14) would be

$$\frac{F \cdot OP}{M \cdot OQ^2}. \quad \text{But the angular velocity produced by the force F applied at P, the body having its natural form, is } \frac{F \cdot OP}{\int r^2 dm};$$

therefore, since $M \cdot OQ^2 = \int r^2 dm$, the two expressions are equal, and the angular velocity is not altered by supposing the whole mass concentrated at Q.

40. The point Q is called the *centre of gyration* of the revolving mass; and since $OQ = \sqrt{\frac{\int r^2 dm}{M}}$, its distance from the axis O is found by extracting the square root of the quotient which is obtained by dividing the moment of inertia by the mass of the body. It is also connected with the centres of gravity and percussion by a simple relation. Suppose P to be the centre of percussion, then (34) $OP = \frac{\int r^2 dm}{M \cdot OG}$, therefore $OG \cdot OP = \frac{\int r^2 dm}{M} = OQ^2$; whence the distance of the centre of gyration from the axis of rotation is a mean proportional between the distances of the centre of gravity and percussion from the axis.

In a straight line or slender rod, as a working beam, or the spoke of a wheel in a machine, OQ is $\sqrt{\frac{1}{3}}$ of its length; for in this case $\int r^2 dm = \int r^2 dr = \frac{1}{3} r^3$; and r being the whole length, $M = r$; therefore $\sqrt{\frac{\int r^2 dm}{M}} = r \sqrt{\frac{1}{3}}$.

Rotation.

Rotation. In a circle or cylinder turning about its axis, $OQ = \frac{1}{2}$ the radius; for by (18) we have in this case $\int r^2 dm = \frac{1}{2} Mr^2$; therefore $\sqrt{\int r^2 dm} \div M = r \sqrt{\frac{1}{2}}$. But if the circle turns round one of its diameters, then $OQ = \frac{1}{2}$ the radius; for in this case $\int r^2 dm = \frac{1}{4} Mr^2$; therefore $\sqrt{\int r^2 dm} \div M = \frac{1}{2} r$.

In the periphery of a circle, or rim of a wheel, turning about a diameter perpendicular to its plane, $OQ =$ radius; for $\int r^2 dm = r^2 \times 2\pi r = 2\pi r^3$, and $M = 2\pi r$; therefore $\sqrt{\int r^2 dm} \div M = r$.

A solid sphere turning round a diameter has $OQ = r\sqrt{\frac{2}{5}}$; for (18) the moment of inertia of the sphere is $\frac{8}{15} \pi r^5$; and the mass $M = \frac{4}{3} \pi r^3$; therefore $OQ = \sqrt{\frac{6}{15}} r = r\sqrt{\frac{2}{5}}$.

Formulae
for accelerating
forces.

41. In what precedes, we have supposed that the force applied to a rigid system produces its effect by instantaneous impact, and then ceases to act, so that the motion communicated to the system is uniform. But if the action of the external force continues after the first impact, like the force of gravity on a falling body, the motion of the system will be accelerated. In the case of uniform velocity, it has been shown (14) that the angular velocity is equal to the moment of the applied force divided by the moment of inertia; that is, assuming F to denote the force, and P the perpendicular from the axis on the line of its direction, $w = P \cdot F \div \int r^2 dm$. Suppose now the body to be subjected to the action of an accelerating force, and let dw be the increment of the angular velocity in the very small time dt . The increment of the actual velocity of the particle dm , the distance of which from the axis is r , is then rdw , and its accelerating force (the ratio of the increment of the velocity to the increment of the time) is $r \frac{dw}{dt}$. Its moving

force is consequently $\frac{dw}{dt} \cdot r dm$; and since the direction of this force is perpendicular to r , its moment $= \frac{dw}{dt} \cdot r^2 dm$.

But the sum of all these moments, in respect of every particle dm , must be equal to the moment of the impressed force, continuing to act during the same instant of time, therefore $\frac{dw}{dt} \int r^2 dm = P \cdot F$, whence $\frac{dw}{dt} = \frac{P \cdot F}{\int r^2 dm}$.

42. In the case of a heavy body oscillating about an axis by the force of gravity, let HKL be a section of the body passing through the centre of gravity G , and let the axis of suspension be at O , and perpendicular to the plane HKL . Also, let OX be horizontal, and OY vertical. Then the accelerating force being denoted by g ($g = 32$ feet in a second of time), the moving force in respect of a particle dm at A is $g dm$; and the direction of this force being parallel to OY , the distance of its direction from the axis is x ; therefore its moment $= g x dm$. The sum of all these moments is the moment of the whole gravitating force of the body, that is, $g \int x dm = P \cdot F$, and we have consequently, since $\int x dm = M x_1$,

$$\frac{dw}{dt} \int r^2 dm = g M x_1, \text{ whence } \frac{dw}{dt} = \frac{g M x_1}{\int r^2 dm}.$$

When the centre of gravity is in the straight line OY , or in the vertical passing through the axis, then $x_1 = 0$, and the angular velocity is uniform, and the body, if it rest in that position, would have no tendency to turn. But suppose the centre of gravity to be drawn aside from the vertical, and let $OG = h$, and the angle $GOY = \theta$, then $x_1 = h \sin. \theta$, and we have

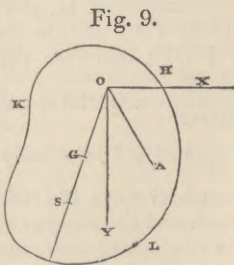


Fig. 9.

$$\frac{dw}{dt} = \frac{g M h \sin. \theta}{\int r^2 dm},$$

whence the acceleration of the angular velocity is proportional to the sine of the angle which the line OG makes with the vertical.

43. Suppose the whole mass of the body to be concentrated at a point S in the straight line OG ; we shall then have $r = OS$, $\int r^2 dm = M \cdot OS^2$, and the formula will become $\frac{dw}{dt} = \frac{g \sin. \theta}{OS}$. Now, if the point S be chosen such that

$OS = \int r^2 dm \div M \cdot h$, then the two formulæ will be identical, and the solid body will oscillate exactly in the same time as if all its matter were united at the point S , and connected with the axis by an inflexible rod without weight, that is, in the same time as a simple pendulum, of which the length is OS .

Since $r^2 = x^2 + y^2$, and $M \cdot h = \int x dm$, this expression for OS may be put under the following form, in which it is usually exhibited, namely,

$$OS = \frac{\int (x^2 + y^2) dm}{\int x dm}.$$

44. The point S is called the *centre of oscillation*. On comparing the expression for OS with that for OP in (34), it will be seen that it is at the same distance from the axis as the centre of percussion. But the centre of oscillation is not, strictly speaking, limited to a single point; for it through S a line be drawn perpendicular to the plane HKL , or parallel to the axis of rotation, every point in this line will move with the same angular velocity as if it were entirely unconnected with the other points of the oscillating body, and the line itself is denominated the *axis of oscillation*. It is usual, however, to understand by the term *centre of oscillation*, the point S which is situated in the straight line, perpendicular to the axis, which contains the centre of gravity.

45. If we denote the moment of inertia of the body in respect of the axis which passes through G the centre of gravity, perpendicular to the plane HKL , by $M \cdot k^2$, then h is a given line; and if we also make $OG = h$, then (17) the moment of inertia in respect of the axis passing through O is $M(h^2 + k^2)$. Hence we find $OS = \frac{M(h^2 + k^2)}{M \cdot h} = h + \frac{k^2}{h}$; and consequently $GS = \frac{h^2}{h}$. This formula

gives the distance of the centre of oscillation below the centre of gravity.

46. The point S possesses several very remarkable properties, one of which is, that as S is the centre of oscillation of the body turning about O , so O is the centre of oscillation of the body turning about the parallel axis passing through S ; in other words, the centres of oscillation and suspension are

convertible. For it has been shown (45) that $GS = \frac{h^2}{h} = \frac{h^2}{OG}$; therefore $OG = \frac{h^2}{GS}$, that is to say, if the body

oscillates about the axis passing through S , then O is the centre of oscillation. This curious property, which was first demonstrated by Huygens in his *Horologium Oscillatorium*, was ingeniously applied by Captain Kater as a practical means of determining the length of the seconds pendulum. Two axes being assumed in a bar or rod of metal, the bar is adjusted by filing away one of its ends until the oscillations about each axis are performed exactly in the same time; and when this equality has been established, the distance between the axes is the length of the synchronous simple pendulum. See PENDULUM.

47. We shall now determine the centre of oscillation in a few particular cases.

Rotation.
Computation
of centres of os-
cillation.

If the body is a heavy straight line suspended by one extremity, the OS = $\frac{2}{3}$ of its length; for making a = the length of the rod, we have (18) $\int r^2 dm = \frac{1}{3} a^3$, and in this case the mass $M = a$, and the centre of gravity is at the middle of the line, or $h = \frac{1}{2} a$, whence $Mh = \frac{1}{2} a^2$, and OS = $\frac{\int r^2 dm}{Mh} = \frac{\frac{1}{3} a^3}{\frac{1}{2} a^2} = \frac{2}{3} a$.

This is nearly the case of a slender rod of a cylindrical or prismatic shape, and it would be accurately so if all the points of a transverse section were equally distant from the axis of suspension.

If the oscillating body is an isosceles triangle suspended by its apex, and vibrating perpendicularly to its plane, O = $\frac{2}{3}$ of its height. For let a = the height, na = the base, y = a section parallel to the base, then $y = nx$, $r = x$, and $dm = y dx$; whence $\int r^2 dm = \int nx^3 dx = \frac{1}{4} na^4$ (when $x = a$). But in this case M = area = $\frac{1}{2} a \times na = \frac{1}{2} na^2$; and the distance of the centre of gravity from the vertex being two thirds of the height, we have $h = \frac{2}{3} a$, whence $Mh = \frac{1}{3} na^3$, and consequently OS = $\frac{\int r^2 dm}{Mh} = \frac{\frac{1}{4} na^4}{\frac{1}{3} na^3} = \frac{3}{4} a$.

48. The problem to find the centre of oscillation of a sphere suspended by a thread or an inflexible rod, is important on account of its application to the measurement of the seconds pendulum. Let us first suppose that the weight of the thread is insensible in comparison of that of the ball. Let r = radius of ball, l = length of thread from the point of suspension to the ball, and $a = l + r$ = distance from the point of suspension to the centre of the ball. The moment of inertia of the sphere in respect of an axis passing through its centre (18) is $\frac{2}{5} Mr^2$; therefore (17) the moment in respect of a parallel axis at the distance a is $M(a^2 + \frac{2}{5} r^2)$; and on dividing this by $Mh (= Ma)$, we get the distance from the point of suspension to the centre of oscillation = $a + \frac{2r^2}{5a}$, or the centre of oscillation is below the centre of gravity by the distance $\frac{2r^2}{5a}$.

49. Let us now suppose the weight of the thread or rod to be taken into account. Let C (fig. 10) be the centre of the ball, G the centre of gravity of the ball and rod OA, S the centre of oscillation; also let b = weight of ball, and b' = weight of rod. The moment of the sphere, oscillating about O, supposing the weight of the rod insensible, is found above = $M(a^2 + \frac{2}{5} r^2)$; and (18) the moment of the rod alone is $\frac{1}{3} OA^3 = \frac{1}{3} l^3 = \frac{1}{3} M'l^2$ (putting M' = mass of the rod); therefore, substituting the weights for the masses, that is, making $M = b$, and $M' = b'$, the moment of the compound body is $b(a^2 + \frac{2}{5} r^2) + \frac{1}{3} b'l^2$. Now, to find the position of G the centre of gravity, we have this theorem in statics, that the product of the whole mass multiplied into the distance of its centre of gravity from the axis, is equal to the sum of the products of the masses of the several parts into the respective distances of their centres of gravity; that is, putting OG = h , we have $(M + M')h = ba + \frac{1}{2} b'l$, and consequently (45),

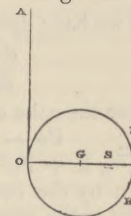
$$OS = \frac{b(a^2 + \frac{2}{5} r^2) + \frac{1}{3} b'l^2}{ba + \frac{1}{2} b'l}.$$

50. Hitherto we have supposed the axes of rotation to be absolutely fixed; but the rotation may be performed about axes which are themselves in motion, as in the case of a ball or cylinder rolling down an inclined plane. When a ball rolls down an inclined plane, the point of the ball which rests on the plane is hindered from sliding down by friction; and therefore the ball tumbles, as it were, over this point of contact, and is instantly caught by another point of contact, over which it tumbles in the same manner. A cylinder rolls down in the very same way; and its motion is nearly the same as if a fine thread had been lapped round it, and one end of it made fast at the head of the

inclined plane. The cylinder rolls down by unwinding this thread.

The mechanism of all such motions (and some of them are important) may be understood by considering them as follows: Let a body of any shape be connected with a cylinder HOK (fig. 11), whose axis passes through G, the centre of gravity of the body. Suppose the body suspended from a fixed point A by a thread wound round the cylinder. The body will descend by the action of gravity, and it will also turn round, unwinding the thread. Draw the horizontal line SGO; this will pass through the point of contact O of the thread and cylinder, and O is the point round which the cylinder begins to turn in descending. Let S be its centre of oscillation corresponding to the momentary centre of rotation O. The body will begin to descend in the same manner as if all its matter were collected in S; for it may be considered, in this instant, as a pendulum suspended at O. But in this case S will descend in the same manner as if the body were falling freely. Therefore the velocity of G (that is, the velocity of descent) will be to the velocity with which a heavy body would fall as OG to OS. Now since the points O, G, S, are always in a horizontal line, and the radius OG is given, as also OS (43), the velocity of a body falling freely, and of the body unwinding from this thread, will always be in the same proportion of OS to OG, and so will the spaces described in any given time. And thus we can compare their motions in every case when we know the place of the centre of oscillation.

Fig. 11.



It follows from this that the weight of the descending body will be to the tension of the thread as OS to GS; for the tension of the thread is the difference between the moment of the rolling body and that of the body falling freely. It is to be remarked, that this proportion between the weight of the body and the tension of the thread will be always the same; for it has been demonstrated (46), that if O be in the circumference of a circle whose centre is G, S will be in the circumference of another circle round the same centre, and therefore the ratio of OG to OS is constant.

If a circular body HOK roll down an inclined plane by unfolding a thread, or by friction which prevents all sliding, the space described will be to that which the body would describe freely as OG to OS; for the tendency down the inclined plane is a determined proportion of the weight of the body. The motion of rotation in these cases, both progressive and whirling, is uniformly accelerated.

51. In order to give an example of the application of the Inertia of preceding formulæ for the rotation of bodies about fixed machines, axes to the theory of machines actually performing work, we shall suppose the machine to be the wheel and axle, and that a weight W, attached to a chain passing over the cylinder, is to be raised by means of a power acting on another chain which passes over the wheel. Let the radius of the wheel = a , the radius of the cylinder = b , and suppose the moving power to be another weight P, or a mass of matter descending by the accelerating force of gravity.

Since the machine is in this case impelled by an accelerating force, the angular velocity w is obtained from the equation (41), namely,

$$\frac{dw}{dt} = \frac{\text{moment of impelling force}}{\text{moment of inertia}}.$$

Now, because the weight P acts in a straight line whose distance from the axis = a , the moment of its force is Pa ; and in like manner the moment of the force exerted by W is Wb . But this last moment retards the motion, and must be taken as negative; therefore the moment of the impelling force is $Pa - Wb$. Again, the moment of inertia is made up of three parts: first, the moment of inertia of the

Rotation.

Rotation. 58. As it is not necessary that the progressive motion of the centre of gravity be in a straight line, this formula enables us to determine the distances from the centre at which the planets may have received the single impulses which gave them at the same time their motions of revolution in their orbits, and of rotation round their axes. Thus, taking the case of the earth, and making R = the radius of its orbit, the circumference of the orbit is $2\pi R$, and the part of this which is described by the centre of gravity, while the earth revolves once about its axis, is $\frac{2\pi R}{365} = s$; and by (18)

$$\int r^2 dm \div M = \frac{2}{3} r^2; \text{ therefore } l = \frac{365 \times 2r^2}{5R}. \text{ If we assume}$$

$r = 4000$ miles, and $R = 95,000,000$ miles, this formula gives $l = 24\frac{1}{2}$ miles nearly.

Centre of spontaneous rotation.

59. The direction of the force being PA (fig. 12), if a point be taken in the line AG between A and G , the motion of the point arising from the rotation of the body about the axis is in the first instant of time parallel to the direction of the progressive motion, and if r be its distance from G , the velocity due to both motions will be $V + rw$. But if the point be taken on the other side of G , the direction of the rotatory motion will be opposite to that of the progressive motion, and the velocity of the point will be $V - rw$. If therefore the point T be taken such that making $GT = r$, we have the equation $V = rw$; then, for a single instant, every point in the straight line passing through T perpendicular to HKL is at rest, or is carried as far back by the rotatory motion in the first instant of time, as it is carried forward by the progressive motion; and, for a single instant, the double motion of the body may be regarded as a simple rotatory motion about that straight line. This point T is called the *centre of spontaneous rotation*, and the straight line passing through T , perpendicular to the plane HKL , is called the *axis of spontaneous rotation*.

Progressive motion of centre of gravity.

60. The preceding formulæ enable us to determine completely the two motions of translation and rotation when a force is applied to a single point of the free body; we have now to determine what the effect will be when any number of forces given in magnitude and direction are applied to different points of the body; and as it appears from what precedes, that during the first instant the two motions take place independently of each other, we shall first give the equations which fix the position of the centre of gravity of the moving body, and then those which define the rotatory motion, or determine the position of any point of the body with reference to its centre of gravity.

Let G be the centre of gravity of the body, M its mass, and let the motion be referred to three rectangular axes OX, OY, OZ . Let us now suppose forces given in magnitude and direction to be applied at the points $A, A', A'', \&c.$ of the body, and that each of them is resolved into three others respectively parallel to the directions of the axis, and let p, q, r , be the resolved forces applied at A ; p', q', r' , the resolved forces applied at A' , and so on; also let $P = p + p' + p'' + \&c.$, $Q = q + q' + q'' + \&c.$, $R = r + r' + r'' + \&c.$; then, since the moving force is equal to the product of the mass into the velocity, and since by (56) the progressive motion resulting from the force applied at A is the same as if it had been applied to the centre of gravity, the velocity of the centre of gravity from the joint action of all the forces, in the directions OX, OY, OZ , will be respectively

$\frac{P}{M}, \frac{Q}{M}, \frac{R}{M}$. But the resulting velocity is the diagonal of the parallelepiped of which these component velocities are the sides; therefore, denoting it by V , we have

$$V = \frac{1}{M} \sqrt{(P^2 + Q^2 + R^2)}.$$

To determine the direction of this velocity, let α, β, γ , be

the angles which its direction makes with the axis x, y, z ; **Rotation.** then, since the forces P, Q, R meet in a point (the centre of gravity), we have

$$\cos. \alpha = \frac{P}{MV}, \cos. \beta = \frac{Q}{MV}, \cos. \gamma = \frac{R}{MV}.$$

These equations give the direction of the velocity; hence, since V has already been found, the initial velocity of the centre of gravity and its direction are both completely determined.

61. When the forces applied to the body are simply percussions, which cease to act after the first impact, and there is no resistance, no change will take place in the velocity or its direction during the second and succeeding instants, and the centre of gravity will describe a straight line with a uniform motion; but if the forces continue to act after the motion has commenced, we must have recourse to the formulæ given by the principles of dynamics, which express the varied motion of a body subjected to the action of accelerating forces. At the end of the time t , reckoned from the commencement of the motion, let x, y, z be the co-ordinates of the element of the body dm , referred to the rectangular axes OX, OY, OZ ; then the velocity at that instant being expressed by the differential of the space described divided by the element of the time, the components

of the velocity at the same instant will be $\frac{dx}{dt}, \frac{dy}{dt}, \frac{dz}{dt}$. Now

the forces acting on the body, whatever be their nature, may always be decomposed into others parallel to the three axes; suppose therefore P, Q, R to be the components of the accelerating forces in those directions acting on the point dm , then the increment of velocity being equal to the force into the element of the time, if the particle dm

were entirely free, the velocities $\frac{dx}{dt}, \frac{dy}{dt}, \frac{dz}{dt}$ would acquire the increments Pdt, Qdt, Rdt in the instant dt . But the increments of velocity actually acquired in the instant dt are the differentials of the velocities, or $d \cdot \frac{dx}{dt}, d \cdot \frac{dy}{dt}, d \cdot \frac{dz}{dt}$, and therefore the velocities lost in consequence of the mutual connection of the particles are respectively

$$Pdt - d \cdot \frac{dx}{dt}, Qdt - d \cdot \frac{dy}{dt}, Rdt - d \cdot \frac{dz}{dt}.$$

Multiplying each of these expressions by dm , we get the quantities of motion due to the respective velocities. Now, according to a well-known principle of dynamics, the discovery of which is due to D'Alembert, the infinitely small quantities of motion lost in every instant by all the particles in consequence of their mutual connection must make equilibrium; the integrals of the preceding expressions multiplied by dm must therefore be severally equal to zero, and we have accordingly (on effecting the operations indicated, and dividing by dt) the three equations

$$\int P dm = \int \frac{d^2x}{dt^2} dm, \int Q dm = \int \frac{d^2y}{dt^2} dm, \int R dm = \int \frac{d^2z}{dt^2} dm.$$

62. In order to find the place of the centre of gravity at the end of the time t , let its co-ordinates at that instant be x_1, y_1, z_1 ; then from the property of the centre of gravity we have

$$Mx_1 = \int x dm, My_1 = \int y dm, Mz_1 = \int z dm.$$

Regarding the variables as functions of the time t , differentiating twice, and dividing each time by dt , we obtain

$$M \frac{d^2x_1}{dt^2} = \int \frac{d^2x}{dt^2} dm, M \frac{d^2y_1}{dt^2} = \int \frac{d^2y}{dt^2} dm,$$

$$M \frac{d^2z_1}{dt^2} = \int \frac{d^2z}{dt^2} dm.$$

Rotation. Comparing these with the above equations, we have

$$M \frac{d^2 x_1}{dt^2} = \int P dm, \quad M \frac{d^2 y_1}{dt^2} = \int Q dm, \quad M \frac{d^2 z_1}{dt^2} = \int R dm.$$

Now, the first members of these equations denote respectively the quantities of motion in the direction of the axes x, y, z , of a material point whose mass = M , and the integrals $\int P dm, \int Q dm, \int R dm$ denote the quantities of motion of the body or rigid system under consideration, subjected to the accelerating forces P, Q, R ; it follows, therefore, that during the whole continuance of the motion the centre of gravity moves as if the whole of the matter of the body were concentrated there, and the forces which act on the body were all applied at that point.

63. Having thus given the equations which enable us to determine the motion of the centre of gravity of a free system under the action of given forces, we now proceed to consider the rotatory movement of the system, and to investigate the position of any point of it with respect to the centre of gravity at the end of any given interval of time. The investigation of this problem is greatly facilitated by means of the following elegant theorem respecting the composition of rotatory motion, discovered by Frisi.

Composition of rotatory motion.

PROPOSITION. If a solid body revolve round an axis OA (fig. 13) passing through its centre of gravity with an angular velocity = w , and if a force be impressed upon it which alone would cause it to revolve about an axis OB also passing through its centre of gravity with an angular velocity = w' , then the body will not revolve about either OA or OB , but about a third axis OC lying in the plane of the other two, and inclined to each of the former axes in angles whose sines are inversely as the angular velocities round those axes, or so that $\sin. AOC : \sin. BOC :: w' : w$; and the angular velocity u round the new axis is to that round one of the primitive axes as the sine of inclination of the two primitive axes is to the sine of the inclination of the new axis to the other primitive axis, that is, $u : w :: \sin. AOB : \sin. COB$, or $u : w' :: \sin. AOB : \sin. AOC$.

64. In order to prove this proposition, it is necessary to show, 1st, that any point in the line OC is at rest while the two motions are taking place; 2d, that every particle of the body not situated in AC revolves about the axis AC ; and 3d, to assign the velocity of rotation.

(1.) Let the angular motion about the axis OA be supposed to be in the direction by which every point in the angle AOB would be raised above the plane of the paper, and that about OB to be in the direction by which every point within the same angle would be depressed below the plane of the paper, and take any point E in OC , and draw EH and EK respectively perpendicular to OA and OB . The absolute velocity with which the point E moves in consequence of the rotation about OA is $HE \cdot w$, and the absolute velocity with which it moves about OB is $KE \cdot w'$. But $HF = OE \sin. AOC$, and $KE = OE \sin. BOC$; and by hypothesis $w' : w :: \sin. AOC : \sin. BOC$, whence $w' \sin. BOC = w \sin. AOC$, therefore the two velocities $HE \cdot w$ and $KE \cdot w'$ are equal; and they are in opposite directions, consequently the point E remains at rest. In the same manner, it is shown that every other point in OC remains at rest.

(2.) Let P be the place of any particle of the body, and conceive the surface of a sphere to pass through P , intersecting the axes in A and B , and join PA and PB by arcs of great circles. Draw PM perpendicular to AP , and make $PM = w \cdot \sin. AP$ = absolute velocity of the particle P about the axis OA in 1" of time; also draw PN perpendicular to BP , and make $PN = w' \cdot \sin. BP$ = absolute velocity of P about OB in 1" (the radius being unity), and complete the parallelogram $PMRN$.

city of P about OB in 1" (the radius being unity), and complete the parallelogram $PMRN$.

Since the particle dm , in virtue of the rotation about OA , has a motion which would cause it to describe the line PM in a second, and in virtue of the rotation about OB has also a motion which would cause it to describe PN in a second, the particle will describe PR the diagonal of the parallelogram $PMRN$. Through P let an arc of a great circle be described perpendicular to PR , and produced to meet the plane AOB in the point C , which at present we suppose indeterminate, and join OC ; then OC is the straight line in which a plane passing through P , perpendicular to PR , intersects the plane AOB .

Because APM and CPR are equal, being right angles, take from each the common angle APR , and there remains $RPM = APC$; and because BNP and CPR are right angles, add to each NPC , and we have $RPN = BPC$. Now $PM = w \sin. AP$, and $PN = RM = w' \sin. BP$, therefore

$$PM : RM :: w \sin. AP : w' \sin. BP;$$

$$\text{but } PM : RM :: \sin. MRP (= \sin. RPN) : \sin. RPM, \\ \text{or } PM : RM :: \sin. BPC : \sin. APC;$$

therefore $\sin. BPC : \sin. APC :: w \sin. AP : w' \sin. BP$, whence $w' \sin. BP \cdot \sin. BPC = w \sin. AP \cdot \sin. APC$.

Now in the spherical triangles BPC and APC we have $\sin. BP \cdot \sin. BPC = \sin. CB \cdot \sin. PCB$, and $\sin. AP \cdot \sin. APC = \sin. AC \cdot \sin. ACP$; therefore

$$w' \sin. CB \cdot \sin. PCB = w \sin. AC \cdot \sin. ACP.$$

But $\sin. PCB = \sin. ACP$ (the one angle being the supplement of the other); also $\sin. CB = \sin. BOC$, $\sin. AC = \sin. AOC$, therefore $w' \sin. BOC = w \sin. AOC$, and consequently

$$w : w' :: \sin. BOC : \sin. AOC.$$

From this it follows that OC divides the angle AOB into parts having a given ratio, and is therefore given in position; and as it may be shown in like manner that the plane passing through every other particle of the body perpendicular to the direction of the motion of that point intersects the plane AOB in OC , OC is therefore the axis of rotation.

(3.) To find u , the angular velocity about OC . In the triangle RPM we have $RP : PM :: \sin. RMP : \sin. MRP$; but $\sin. RMP = \sin. MPN = \sin. APB$, and $\sin. MRP = \sin. RPN = \sin. CPB$, therefore $RP : PM :: \sin. APB : \sin. CPD$. Now $RP = u \sin. CP$ = absolute velocity about OC in 1", and $PM = w \sin. AP$ = absolute velocity about OA in 1". Substituting these expressions therefore in the last proportion, and multiplying extremes and means, we get

$$u \sin. CP \cdot \sin. CPB = w \sin. AP \cdot \sin. APB.$$

But the spherical triangles CPB and APB give $\sin. CP \sin. CPB = \sin. CB \sin. CBP$, and $\sin. AP \sin. APB = \sin. AB \sin. ABP$. Therefore, substituting, and leaving out the common term, we have $u \sin. CB = w \sin. AB$, or $u \sin. COB = w \sin. AOB$, that is,

$$u : w :: \sin. AOB : \sin. COB.$$

In like manner, it may be shown that

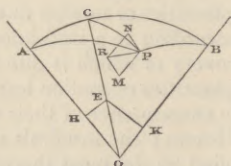
$$u : w' :: \sin. AOB : \sin. AOC,$$

whence the proposition is demonstrated.

65. When the two primitive axes OA and OB are at right angles, $\sin. AOB = 1$, $\sin. COB = \cos. AOC$, and the above two proportions give $u : w :: 1 : \cos. AOC$, $u : w' :: 1 : \sin. AOC$, whence $u \cos. AOC = w$, and $u \sin. AOC = w'$, and consequently $u^2 = w^2 + w'^2$, or $u = \sqrt{(w^2 + w'^2)}$.

66. Suppose a third axis OD at right angles to OA and OB , and that a force is impressed on the body, which alone would cause it to revolve about OD with an angular velocity = w'' ; then, as the body is revolving about OC with the velocity u , the effect of this new force will be to cause it to revolve about an axis in the plane DOC ; and if we make ψ = the angle which this new axis makes with the line OC , and W = the velocity about the new axis, we

Fig. 13.



Rotation. shall have from the preceding formulæ $W \cos. \psi = u$, and $W \sin. \psi = w''$, whence $W = \sqrt{(u^2 + w'^2)}$, or, substituting for u its value found above, $W = \sqrt{(w^2 + w'^2 + w''^2)}$. The position of the new axis is, however, more conveniently defined by the angles which it makes with the three primitive axes. Let α, β, γ be the angles which it makes respectively with the primitive axes OA, OB, OD, then the three spherical triangles which it forms with the three axes give $\cos. \alpha = \cos. AOC \cos. \psi$, $\cos. \beta = \cos. BOC \cos. \psi$, $\cos. \gamma = \sin. \psi$. Now, from the preceding equations (65), we have $\cos. AOC = \frac{w}{u}$, $\cos. BOC = \sin. AOC = \frac{w'}{u}$, $\cos. \psi = \frac{u}{W}$, $\sin. \psi = \frac{w''}{W}$. Therefore, substituting and writing for W its value $\sqrt{(w^2 + w'^2 + w''^2)}$, we obtain

$$\cos. \alpha = \frac{w}{\sqrt{(w^2 + w'^2 + w''^2)}}, \cos. \beta = \frac{w'}{\sqrt{(w^2 + w'^2 + w''^2)}}, \cos. \gamma = \frac{w''}{\sqrt{(w^2 + w'^2 + w''^2)}}.$$

Hence it follows that the change of position of any point in consequence of the rotation Wdt , in the element of time dt , is equivalent to the change that would be effected by three simultaneous and independent rotations $Wdt \cos. \alpha$, $Wdt \cos. \beta$, $Wdt \cos. \gamma$, about three rectangular axes, with which the axis corresponding to the velocity W makes respectively the angles α, β, γ .

67. In determining the rotation of a body about a fixed centre, it is most convenient to refer every point of the body to a system of three principal axes passing through the centre of gravity; there are therefore two distinct steps in the investigation, the first being to find the situation of the principal axes in respect of absolute space at the end of any given time, and the second to find the position of any point of the body referred to these axes, whose positions have been determined. To accomplish the first of these, the following proposition is required.

68. If at the end of any time t the position of the axis about which the body is revolving be known in respect of the three principal axes supposed to be fixed in the system, together with the angular velocity of rotation; to determine the change of situation of the principal axes in respect of absolute space, in the element of time dt .

Imagine a sphere, whose radius = 1, to be described about O the centre of gravity of the body; let KTL (fig. 14) be a great circle, and in KTL assume a point T as that to which the position of the principal axes is to be referred. At the end of the time t , let X, Y, Z be the points in which the three principal axes passing through O meet the surface of the sphere; then, on joining these points by arcs of great circles, the three arcs XY, YZ, ZX will be quadrantal arcs, since the principal axes are at right angles to each other. Join also X, Y, Z with T by arcs of great circles, and assume

$$TX = l, TY = m, TZ = n,$$

$$KTX = \lambda, KTY = \mu, KTZ = \nu.$$

Let U be the point in which the axis about which the body is revolving at the end of the time t meets the surface of the sphere, and let U be joined by arcs of great circles with X, Y, Z . Put W = angular velocity of rotation about OU (which we suppose to be in the direction XYZ), and let α, β, γ be the angles which OU makes with the principal axes, namely, $\alpha = UX, \beta = UY, \gamma = UZ$.

To investigate the motion of the point X , let Xe be the small arc described by X in the instant dt ; then this arc

being perpendicular to UX , we have the angle $YXe = UXZ$, and $\sin. YXe = \cos. YXU$; also, since YXZ is a right angle; $\sin. TXY = \cos. TXZ$. Hence the formulæ of spherical trigonometry give the following equations,

$$\sin. YXe = \frac{\cos. \beta}{\sin. \alpha}, \cos. YXe = \frac{\cos. \gamma}{\sin. \alpha},$$

$$\cos. TXY = \frac{\cos. m}{\sin. l}, \sin. TXY = \frac{-\cos. n}{\sin. l};$$

from which, since $TXe = YXe - TXY$, we deduce

$$\sin. TXe = \frac{\cos. \beta \cos. m + \cos. \gamma \cos. n}{\sin. \alpha \sin. l},$$

$$\cos. TXe = \frac{\cos. \gamma \cos. m - \cos. \beta \cos. n}{\sin. \alpha \sin. l}.$$

Draw ef perpendicular to TX ; then, because $Xe = Wdt \sin. \alpha$, we have $Xf = Wdt \sin. \alpha \cos. TXe$, $ef = Wdt \sin. \alpha \sin. TXe$. But $Xf = -dl, ef = -\sin. l d\lambda$; therefore, by reason of the above values of $\sin. TXe$ and $\cos. TXe$, and because $W \cos. \beta = w'$, $W \cos. \gamma = w''$, we have

$$\sin. l dl = dt (w' \cos. n - w'' \cos. m),$$

$$\sin.^2 l d\lambda = -dt (w' \cos. m + w'' \cos. n).$$

It is evident that the consideration of the motion of each of the other two points Y and Z will lead to expressions entirely similar, and which may be concluded from analogy: we have therefore the following six equations to determine $l, m, n, \lambda, \mu, \nu$, namely,

$$\sin. l dl = dt (w' \cos. n - w'' \cos. m),$$

$$\sin. m dm = dt (w'' \cos. l - w \cos. n),$$

$$\sin. n dn = dt (w \cos. m - w' \cos. l),$$

$$\sin.^2 l d\lambda = -dt (w' \cos. m + w'' \cos. n),$$

$$\sin.^2 m d\mu = -dt (w'' \cos. n + w \cos. l),$$

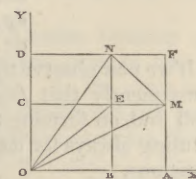
$$\sin.^2 n d\nu = -dt (w \cos. l + w' \cos. m).$$

Because $\cos.^2 l + \cos.^2 m + \cos.^2 n = 1$, it is only necessary to solve two of the first three equations, in order to find the arcs l, m, n ; and when the values of l, m, n have been obtained, it is only necessary to compute one of the three angles λ, μ, ν , in order to have the other two; for when one is known, the others are obtained from the equations $\cos. (\mu - \lambda) = -\cot. l \cot. m$, $\cos. (\nu - \mu) = -\cot. m \cot. n$, given by the triangles TYX and TYZ , of which the sides XY and YZ are arcs of 90° .

69. By means of the preceding propositions, we are enabled to determine the motion of a body which is at liberty about a fixed point. The statical principle on which the determination must be made is, that a body so circumstanced will be in a state of equilibrium, when the sums of the moments of the forces with reference to three rectangular axes drawn through the fixed point are nothing relatively to each of the three axes. It is therefore necessary in the first place to find expressions for these moments.

70. Suppose a material point whose co-ordinates are x and y to be urged by two forces, namely, a force = X , in the direction OX (fig. 15), and another force = Y in the direction OY , perpendicular to OX ; then the efficacy of the two forces to turn the particle about the axis OZ perpendicular to the plane XOY , in the direction from X towards Y , is equal to $Yx - Xy$. For let M be the situation of the particle, and take MN to represent the intensity and direction of the single force into which X and Y may be compounded; through M and N draw MA, NB perpendicular to OX and MC, ND perpendicular to OY ; let E be the point in which MC and NB intersect; join OM, ON, OE , and complete the parallelogram OF . Now the force represented by MN is compounded of the two forces represented by ME and EN ; we have therefore, by construction,

Fig. 15.



Rotation.

$$\begin{aligned} \text{ME} &= -X = \text{force in direction } -OX, \\ \text{EN} &= +Y = \text{force in direction } OY. \end{aligned}$$

But the moment of the force MN in respect of the axis OZ is equal to MN multiplied into the line drawn from O perpendicular to MN, that is, equal to twice the triangle OMN, or to twice the sum of the triangles MOE, EON, MEN, or to the parallelograms MB, NC, EF, or to MB and CF. Now MB = AM · ME = -Xy, and CF = CD · CM = Yx; therefore, the moment of the force MN, or of the two forces X and Y, is expressed by Yx - Xy.

71. If we put Z = a force acting in the direction OZ perpendicular to the plane XOY, we shall evidently obtain similar expressions for the moments in respect of the other axes OX and OY; so that if we suppose the motion about OX to be in the direction from Z towards Y, and that about OY to be from X towards Z, and that about OZ to be from Y towards X, we shall have the three expressions,

$$\begin{aligned} \text{moment about OX} &= Yz - Zy, \\ \text{about OY} &= Zx - Xz, \\ \text{about OZ} &= Xy - Yx. \end{aligned}$$

72. If we now suppose P, Q, R to be the accelerating forces acting on a particle dm , in the directions of the three axes respectively, then (61) the quantities of motion lost by the particle at each instant, in consequence of the connexion of the parts of the system, or the differences between the impressed and effective forces, are

$$dm \left(Pdt - \frac{ddx}{dt} \right), dm \left(Qdt - \frac{ddy}{dt} \right), dm \left(Rdt - \frac{ddz}{dt} \right).$$

Substituting these differences for X, Y, Z respectively in the above expressions (71) for the moments of rotation, and forming the integrals in respect of dm , we shall get the sums of the moments in respect of all the particles about each of the three axes. But by the principle of D'Alembert (61), these sums must be severally = 0; therefore, if for brevity we put

$$\begin{aligned} F &= \int (Qz - Ry) dm, \quad G = \int (Rx - Pz) dm, \\ H &= \int (Py - Qx) dm, \end{aligned}$$

there will result the three equations

$$\begin{aligned} Fdt &= \int y dm \frac{ddz}{dt} - \int z dm \frac{ddy}{dt} \\ Gdt &= \int z dm \frac{ddx}{dt} - \int x dm \frac{ddz}{dt}, \\ Hdt &= \int x dm \frac{ddy}{dt} - \int y dm \frac{ddx}{dt}. \end{aligned}$$

73. We have now to express these formulæ in terms of the angular velocities about the axes. Referring to fig. 14, let $x = \cos. l$, $y = \cos. m$, $z = \cos. n$, then x, y, z will be the co-ordinates of the point T referred to the rectangular axes OX, OY, OZ; and we shall have $dx = -\sin. l dt$, $dy = -\sin. m dt$, $dz = -\sin. n dt$. Substituting these values of x, y, z , and their differentials, in the three first of the system of equations in (68), and supposing the direction of the motion to be changed (namely, the rotation about OX to be in the direction from Z towards Y, and so with the other as in (71)), those three equations will become

$$\begin{aligned} dx &= dt (w'z - w''y), \\ dy &= dt (w''x - wz), \\ dz &= dt (wy - w'x). \end{aligned} \quad (A)$$

If we now observe that OX, OY, OZ are principal axes, and consequently that $\int x y dm = 0$, $\int x z dm = 0$, $\int y z dm = 0$, we shall find, on forming the expressions for ddx , ddy , and substituting always for dx, dy, dz their values as given by these equations,

$$\begin{aligned} \int y dm \frac{ddx}{dt} &= \int y^2 dm \cdot dw + w'w'' \int y^2 dm \cdot dt, \\ \int z dm \frac{ddy}{dt} &= -\int z^2 dm \cdot dw + w''w' \int z^2 dm \cdot dt, \end{aligned}$$

and consequently

$$Fdt = \int (y^2 + z^2) dm \cdot dw + w'w'' \int (y^2 - z^2) dm \cdot dt.$$

Similar expressions are obtained in the same manner for Gdt and Hdt . Now it is to be observed that $\int (y^2 + z^2) dm$ is the moment of inertia with respect to the axis OX; if therefore we assume A, B, C to denote the moments of inertia in respect of the three axes respectively, that is, if we put

$A = \int (y^2 + z^2) dm$, $B = \int (x^2 + z^2) dm$, $C = \int (x^2 + y^2) dm$, the three equations of the last number will be transformed into the following:

$$\begin{aligned} Fdt &= Adw + (C - B) w'w'' dt, \\ Gdt &= Bdw' + (A - C) ww'' dt, \\ Hdt &= Cdw'' + (B - A) ww' dt. \end{aligned} \quad (B)$$

74. These three equations enable us to determine the angular velocities of rotation about each of the principal axes when the forces F, G, H are known, and consequently suffice, when joined to the equations of (68) and the equations (A), for the determination of any point of the revolving body at any given instant of time reckoned from the commencement of the motion; for the values of w, w', w'' being supposed to be found in terms of t , and substituted in the two sets of equations of (68), the integrals of these equations will give the situation of the three principal axes at that instant, and the situation of the instantaneous axis of rotation, in respect of the principal axes, will be found by integrating the equations (A) after substituting in them the same values of w, w', w'' .

75. When the body is subject to no accelerating forces, or the origin of the co-ordinates is placed at the centre of gravity, the integrations indicated in the last paragraph are obtained without difficulty; for in this case the quantities denoted by F, G, H, respectively vanish, and the equations (B) become

$$\begin{aligned} 0 &= Adw + (C - B) w'w'' dt, \\ 0 &= Bdw' + (A - C) ww'' dt, \\ 0 &= Cdw'' + (B - A) ww' dt. \end{aligned} \quad (a)$$

Now if we multiply the first of these by w , the second by w' , and the third by w'' , and add the products, we shall have

$$0 = Awdw + Bw'dw' + Cw''dw'',$$

the integral of which is

$$K = Aw^2 + Bw'^2 + Cw''^2, \quad (b)$$

K being an arbitrary constant, and always positive. Again, let the same equations (a) be multiplied respectively by Aw , Bw' , Cw'' , and the products added and integrated; we shall then have, in like manner,

$$L^2 = A^2w^2 + B^2w'^2 + C^2w''^2, \quad (c)$$

L^2 being another arbitrary constant, and always positive. From these two last equations we deduce

$$\begin{aligned} w'^2 &= \frac{CK - L^2 + A(A - C)w^2}{B(C - B)}, \\ w''^2 &= \frac{L^2 - BK - A(A - B)w^2}{C(C - B)}; \end{aligned}$$

and on substituting the values of w' and w'' thus found in the first of the equations (a), and resolving the equations in respect of dt , we get

$$dt = \frac{\pm \sqrt{(BC) \cdot Adw}}{\sqrt{\{CK - L^2 + A(A - C)w^2\} \cdot \{L^2 - BK - A(A - B)w^2\}}},$$

an equation of which the integral will be obtained in a finite form when any two of the three quantities A, B, C are equal (as in the case of a solid of revolution), or when L^2 is equal to any one of the three quantities AK, BK, CK. In any case, the relation between t and w is expressed by a single differential equation of the first order, the integral of which gives the value of w in terms of t , whence the values of w' and w'' are also given by the preceding formulæ.

76. From the two equations (b) and (c) of last para-Mechanical graph, a conclusion is deduced of considerable interest in properties of the physical theory of the universe respecting the stability of the rotation about the axes of greatest and least of rotation.

Rotation. moment. Let the first of those equations be multiplied by C, and subtracted from the second; we shall have, on making $L^2 - CK = D$,

$$D = A(A - C)w^2 + B(B - C)w'^2.$$

Now, if we suppose the axis of instantaneous rotation to be situated at the commencement of the motion, very near the axis OZ, the angular velocity about which $= w'$, then the angle γ which it makes with that axis being very small,

and since (66) $\sin. \gamma = \frac{\sqrt{w^2 + w'^2}}{\sqrt{w^2 + w'^2 + w'^2/2}}$, it follows that

the angular velocities w and w' will be very small in comparison of w' , and consequently D must be a very small quantity. Now D is constant; and therefore if the two differences $A - C$ and $B - C$ have the same sign, which will be the case when the value of B is intermediate between A and C, the two velocities w and w' must always be very small; and hence (64) the instantaneous axis will never deviate much from OZ when this is the axis of greatest or of least moment. But if $A - C$ and $B - C$ have opposite signs, as will be the case when the value of C lies between the values of A and B, then D may be a very small quantity, and the equation still be satisfied, although the values of w and w' be large; and hence, although the axis of instantaneous rotation may have been very near the axis C at the commencement of the motion, it may deviate to any extent from that axis during the motion. Hence we infer that the rotation about the axes, both of greatest and least moment, is permanent, but that the rotation about the intermediate axis is not permanent.

77. The same conclusions may also be obtained by the direct integration of the equations (a) of (75), if we neglect, as insensible, the squares and products of the small velocities w and w' . Restricting the calculus to this approximation, the third equation (a) becomes $dw'' = 0$, whence $w'' = h$, h being an assured arbitrary constant. Substituting this value of w'' in the first two equations (a) we get

$$\begin{aligned} 0 &= A dw + (C - B) h w' dt, \\ 0 &= B dw' + (A - C) h w dt. \end{aligned} \quad (d)$$

In order to integrate these, assume

$$w = \beta \sin. (qt + i), w' = \gamma \cos. (qt + i), \quad (e)$$

the quantities β, γ, q, i being indeterminate constants. We have then

$$dw = q\beta \cos. (qt + i), dw' = -q\gamma \sin. (qt + i).$$

On substituting these values of w, w', dw, dw' , and rejecting the common factors, the equations (d) become

$$\begin{aligned} 0 &= Aq\beta - (B - C)h\gamma, \\ 0 &= Bq\gamma - (A - C)h\beta, \end{aligned}$$

from which we deduce $q = h \sqrt{(A - C)(B - C)} \div \sqrt{AB}$; and also, on assuming another indeterminate constant α , $\beta = \alpha \sqrt{B(B - C)}$, $\gamma = \alpha \sqrt{A(A - C)}$. Put $\lambda = \sqrt{(A - C)(B - C)} \div \sqrt{AB}$, then $q = \lambda h$; and the substitution of these values of q, β, γ in the equations (e) gives

$$w = \alpha \sqrt{B(B - C)} \sin. (\lambda ht + i),$$

$$w' = \alpha \sqrt{A(A - C)} \cos. (\lambda ht + i),$$

which are the complete integrals of the equations (d).

If in these expressions the quantity denoted by λ is real, which will be the case when C is the least or the greatest of the three moments, the values of w and w' must always continue small, because they are proportional to the sines and cosines of a real angle; but if C be intermediate between A and B, the λ will be an impossible quantity, and the sine and cosine of the arc $\lambda ht + i$ will be changed into exponentials which increase continually with the time t , whence the velocities w and w' will also increase indefinitely; and consequently, by Frisi's theorem, the deviation of the instantaneous axis of rotation from the original axis will increase indefinitely.

If we suppose that at the commencement of the motion

the axis of instantaneous rotation coincided accurately with the principal axis OZ, we should have $w = 0, w' = 0$, when $t = 0$; and as in this case we have also $\alpha = 0, w$ and w' will always be zero, or the body will continue for ever to revolve uniformly about OZ. We have therefore, from what precedes, these mechanical properties relative to the rotation of solid bodies: 1. If a body begins to revolve about any one of the three principal axes, and is affected by no external force, it will continue always to revolve about that axis; 2. If it begins to revolve about an axis which is very near the axis of the greatest or least moment, then, although the motion is disturbed a little by the action of an extraneous force, the instantaneous axis of rotation will continue very near the original axis; 3. If the rotation commences about the axis of the mean moment of inertia, then, if the smallest disturbance takes place, the effect will increase indefinitely with the time, and the poles of rotation will entirely change their position on the surface of the body. These properties establish an essential difference between the three principal axes.

78. Our limits will not permit us to enter further into the discussion of this subject, nor is it within the scope of the present article to apply the formulæ to the rotation of the planets, an example of which application has already been given in the article PRECESSION OF THE EQUINOXES. It has now been shown that every circumstance relative to the motion of a solid body, acted upon by any number of forces, is expressed by means of two systems of equations (each containing three differential equations of the first order), the first system (62) defining the motion in space of the centre of gravity, and the second (73) the rotation about that centre. At the commencement of the motion these two systems are independent of each other; but it is important to remark, that this independence does not necessarily continue during the motion. If we suppose the moving forces to act upon different points of the body, and to be functions of the co-ordinates of those points, that is, to vary with their distance from the origin, then the co-ordinates enter at the same time into both systems of equations, which therefore cannot be integrated separately, the two motions affecting each other. The integrals can then only be obtained by approximation. There are, however, two important cases in which the two motions continue to be permanently independent of each other. The first is that of a projectile which, during its motion, is acted upon by no other force than gravity; for in this case the equations (62) will be those of an isolated material point, and the weight of the body, acting as a single force applied to the centre of gravity, will have no influence on the rotation, which will be the same as if the centre of gravity were fixed. The second is the case of a sphere, either homogeneous or composed of concentric strata of different densities, the density of each stratum being constant; for in this case the resultant of all the attractive forces, as was shown by Newton, passes through the centre of gravity, which will therefore move as an isolated point, and the motion of rotation will be the same as if the centre of gravity were fixed.

The theory of the rotation of solid bodies forming an important branch of mechanics, is treated more or less in every systematic work on that science. As the more important works in which it is especially considered, we may refer the reader to Euler's *Theoria Motus Corporum Solidorum*, 1765; D'Alembert, *Opuscula*, tom. v. and vii.; Vince *On the Principles of Progressive and Rotatory Motion*, Phil. Trans. 1780; Frisii *Opera*, tom. ii. 1783; Atwood's *Treatise on the Rectilinear Motion and Rotation of Bodies*, 1784; Landen's *Mathematical Memoirs*, vol. ii. 1789; Laplace, *Mécanique Céleste*, tom. i.; Lagrange, *Mécanique Analytique*; Poisson, *Traité de Mécanique*; Venturoli's *Mechanics*, translated by Cresswell; and the article MECHANICS. (T. G.)

Rotation.

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Rothesay.

ROTHENBURG, a town of Bavaria, in the circle of Middle Franconia, in a beautiful situation on the ridge of a hill on the Tauber, 29 miles S.S.E. of Würzburg. It is encircled with a turreted wall and a moat, and contains in the market-place a fine old town-hall in various architectural styles. The principal church of St James is an old and fine specimen of pure pointed Gothic, containing some interesting works of art. The town is supplied with water by a forcing-pump, which raises it from the river to the summit of a tower. Weaving is carried on here, and there are many vineyards in the vicinity. Rothenburg is a place of great antiquity, and it was one of the head-quarters of the insurgents in the Peasants' War of 1525. Pop. 5650.

ROTHERHAM, a market-town of England, in the West Riding of Yorkshire, on a rising ground on the right bank of the Don, 48 miles S. by W. of York, and 159 N.N.W. of London. Many of the streets are steep and irregular, lined with houses of a mean appearance, although the recently-built portion of the town exhibits quite an opposite aspect. The parish church was built by Archbishop Rotherham in the fifteenth century, and is considered to be one of the finest buildings of its class in the north of England. It is cruciform, in the perpendicular style, and has a richly-carved tower and spire rising from the centre. Wesleyan and Primitive Methodists, Independents, Baptists, Roman Catholics, and Unitarians have also places of worship in the town. The educational establishments include an Independent theological college, containing thirteen students in 1854; a grammar school, with forty pupils; national schools, &c. There are a library and news-room, a literary institution, and a dispensary. In the vicinity great quantities of coal and iron-ore are obtained, and thus facilitate the conducting of manufacturing operations. There is a large factory for cast-iron, a brass foundry, and manufactories of starch, soap, naphtha, glass, and other articles. There are ship-building yards on the Don, where vessels as large as 50 tons burden are constructed. The most of the manufactures are carried on at Masborough, a suburb on the other side of the river, connected with Rotherham by a bridge of five arches. Markets are held here twice a week, and fairs for horses and cattle three times a year. Rotherham is a place of considerable antiquity. The Roman station *Ad Fines* probably stood about a mile off; and the town seems to have been founded by the Saxons. Even before the Norman conquest it had attained some importance, possessing a corn-mill and being the seat of a market and fair. A college was founded here in 1482 by Archbishop Rotherham, but suppressed in the reign of Edward VI. Pop. (1851) 6325.

ROTHESAY, a royal burgh of Scotland, capital of the county of Bute, stands at the head of a deep bay in the island of Bute, near the entrance of the strait called the Kyles of Bute, between that island and Argyleshire, 52 miles W. of Glasgow. A range of elegant villas stretches along the shore for some distance from E. to W., and in the centre the town extends somewhat farther to the south, and has several transverse streets. Near the centre of the town stands the ruins of the old royal castle of Rothesay, burned by a brother of the Duke of Argyle in the year 1685. One of the chief edifices in Rothesay is that which contains the town-hall and county buildings, a castellated structure with a handsome tower. Besides this, the only buildings deserving notice are the churches, of which there are two, one a chapel of ease, belonging to the Established Church; three, two of which have elegant spires, to the Free Church; one each to the United Presbyterians, Reformed Presbyterians, Baptists, and Episcopalians. Abundant means of education are supplied by several schools; and there are a news-room and more than one library. The town contains

cotton factories, power-loom factories, boat-building yards, Rothschild and cooperages. But the principal occupation of the inhabitants is fishing, especially for herring, but also in a less degree for salmon, haddocks, whittings, and soles. The harbour has a good stone pier, which is used by the steamers that ply from Glasgow to Inverary and the West Highlands. The burgh is governed by a provost and seventeen councillors; it formerly joined with some others in electing a member of Parliament, but was disfranchised by the Reform Act of 1832. Rothesay and the neighbouring village of Port Bannatyne are much frequented during the summer as watering-places. The climate is very mild, as the bay is almost land-locked. Rothesay Castle is supposed to have been founded about the end of the eleventh century. It was besieged in 1263 by Heulbec, King of the Isles, taken by the English in the reign of Baliol, and by the Scotch under Bruce in 1311. Robert II. built a palace here; and Robert III. granted a charter to the burgh in 1400. The former monarch created his eldest son Duke of Rothesay, a title still borne by the Prince of Wales. Pop. (1851) 7014. (See BUTESHIRE.)

ROTHSCHILD, the name of the greatest commercial house either in ancient or in modern times. The founder of the firm, *Mayer Anselm Rothschild*, was born at Frankfort-on-the-Maine in 1743. The destiny of his early days was anything but propitious. His parents were poor, and of the despised Jewish race. They died when he was no older than eleven. After receiving a scanty education, he was set adrift in the world. The best position that he could for some time attain was a menial office in the employment of an Israelitish trader. But the commercial genius of Rothschild soon worked its own way. His mind took to the congenial study of the coins of different nations. He grew thoroughly versed in the relative value of the various monies. A banker of Hanover became impressed with his aptitude for business, and gave him a place in his office. There he succeeded so well that in 1780 he set up a bank in his native city. Rothschild now began to rise in his profession. His shrewdness, punctuality, and uprightness soon came to be remarked. Many matters of importance were entrusted to his care. In particular, William, Landgrave (afterwards Elector) of Hesse, made him his banker. In that office he won general esteem by the able way in which he saved his patron's funds during the invasion of the French. Thus he laid the foundations of a great firm; and at his death in 1812 left to his sons a large fortune and a European fame. Of Rothschild's five sons, Anselm settled at Frankfort, Salomon at Vienna, Nathan Mayer at London, Charles at Naples, and James at Paris.

Nathan Mayer Rothschild, who was born in 1777, was the great continuer of the family reputation. About the time of his father's death he was fast extending the influence of the firm. The several branches of the house throughout Europe gave him a broad and secure basis for his operations. On this foundation his shrewd tact and prompt management erected a stupendous business. The whole Continent became pervaded with his financial transactions. Among other enterprises, he supplied with loans that great coalition of powers which overthrew Bonaparte. For such services Nathan Rothschild might have been rewarded with several honours and dignities; but he was modest, and till his death, in 1836, he remained content with the untitled name and honourable position of a merchant prince. His eldest son, Lionel Nathan, Baron de Rothschild, is at present one of the representatives for the city of London.

ROTTECK, **KARL WENCESLAUS RODECKER VON**, a historian and politician, was born at Freiburg in 1775, and was educated for the law. At first he was known only as a young and eloquent professor in the university of his

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native town. But it was not very long before Rotteck appeared as a liberal politician. In that capacity he soon became prominent. Many of the periodicals of his party were established and maintained by his aid. Many of the abuses of the constitution were attacked by his pen. Among others, his pamphlets against standing armies, against the proposal to abolish the university of Freiburg, and on representative bodies, won for him the gratitude of his faction. He received the honour in 1819 of being the representative of his university in the first chamber of the states of Baden. Nor when the government began to persecute him did his popularity decline. His expulsion from the representativeship of the university was retrieved by his being made in 1831 the member for the city of Freiburg. His loss of his professorship was more than compensated by the presents and addresses that came to him from the most distant provinces of Germany. He even gained the respect of his opponents; and just before his death in 1840 he was restored to his chair. The work on which the fame of Rotteck now rests is his *Allgemeine Weltgeschichte* (German Universal History), originally published in 9 vols. in 1813-27. Its popularity has been very great. Almost every German family possesses a copy. There are few European languages into which it has not been translated. So long ago as 1841 the fifteenth edition was called for; and it was published, with a continuation by K. H. Hermes, in 11 vols. 8vo, 1841-45.

ROTTENBURG, a town of Würtemberg, in the circle of Schwarzwald, stands in a picturesque situation on the left bank of the Neckar, 7 miles W. of Tübingen. It is walled, and entered by eight gates; while the suburb Elungen, on the other side of the river, is joined to the town proper by a bridge. Among the handsome houses which line its broad thoroughfares rise many ancient and interesting buildings; as the old castle of the counts of Hohenberg (now used as a prison), several former convents, a Jesuit college (now the episcopal palace), the cathedral of St Martin, and several other churches of much beauty. The manufactures of the place comprise musical instruments, glass, leather, paper, and other articles. Pop. 6610.

ROTUNDA, or ROTUNDO, a term applied to a building which is circular in its plan, both externally and internally. The technical application of the word is restricted to circular buildings whose height does not greatly exceed their diameter. The most celebrated rotunda of the ancients is the Pantheon at Rome, of which the external diameter is 188 feet; internal, 142; internal height, 142. The Radcliffe Library at Oxford is a polygon of sixteen sides and 104 feet in diameter; exterior height, 140 feet; interior diameter, 88 feet; interior height, 90 feet.

ROTTERDAM, a city of Holland, in size and commercial importance the second in the kingdom, capital of the province of South Holland, on the right bank of the Meuse, where it receives the Rotte, about 20 miles above its mouth, and 36 S.W. of Amsterdam. In form it is triangular, one side being formed by the river, which is lined for the distance of a mile and a quarter by the fine quay called the *Boompjes* ("little trees"), shaded with a row of fine elms, planted in 1615, and now no longer "little." Along this quay stands a range of some of the best houses in the town, four or five storeys high, and built of dark brick. The High Street (*Hoogstraat*) of Rotterdam extends along the great dyke or dam erected for the protection of the adjacent country against the overflowing of the Meuse. The ground between this dam and the Boompjes has been gained from the river since the building of the dam, and is now occupied by the most modern part of the town. Except the High Street, all the other thoroughfares of the place are traversed by canals in the centre, which intersect one another, and communicate with the river and with the

moat that surrounds the city. These canals are crossed by numerous draw-bridges, and at the wider parts by ferry-boats. The ebb and flow of the tide, which rises 10 or 12 feet, keeps the water in the canals always fresh, and prevents it from stagnating. To a stranger the appearance of Rotterdam is very quaint and striking, presenting, as it does, a confused mixture of lofty gables, trees, and masts of the shipping in the middle of the city. The houses, which have in general their gables turned towards the street, and project in the upper storeys some distance beyond their base, are in many cases large, lofty, and handsome. Those which belong to merchants generally comprise in one building both the place of business and the private residence of the owner; the former surrounding an inner court on the ground floor, and the latter approached in many of the houses by a marble staircase. The principal market-place of Rotterdam consists of a broad bridge across one of the canals, and contains a bronze statue of Erasmus, the most illustrious native of the town. The house where he was born, now a gin-shop, is pointed out, in the vicinity of the Great Church. This church, dedicated to St Lawrence, and completed in 1472, is built of brick, and though much defaced, is yet very beautiful in its architectural ornaments. Its tower commands an extensive view over the flat country, intersected with canals and avenues of trees, and dotted with farms, spires, and windmills. In the church are monuments to Admirals de Witt and Cortenaer, and Vice-Admiral van Brakel. The organ of this church is said by some to be superior even to the famous one at Haarlem; it is 90 feet high, has 90 stops, and 6500 pipes, the largest of which is 36 feet long, and 17 inches in diameter. The numerous other churches in the town are not very remarkable. The exchange is a very fine building, with a library and collection of philosophical instruments. The town-hall, however, is not nearly so fine as that of Amsterdam; and the dockyard, too, is inferior to that in the capital. In the vicinity is a botanic garden and several places of public resort and entertainment. The manufactures of Rotterdam are extensive and of much importance. Ship-building is one of the chief branches of industry; the total number of vessels built in 1856 being 227, tonnage 58,768. There are also sugar-houses, salt refineries, and manufactories of needles, pins, tobacco, and chemical substances. The trade of the port is very great. The following table exhibits the number and tonnage of the vessels that entered and cleared with cargoes for six years:—

Year.	Entered.		Cleared.	
	No.	Tonnage.	No.	Tonnage.
1850.....	1818	379,543	1818	366,950
1851.....	1981	420,835	1655	369,992
1852.....	2039	476,485	1759	406,628
1853.....	1751	408,609	1687	367,231
1854.....	1962	454,187	1714	399,167
1855.....	2112	488,912	1602	392,153

The number of merchant ships and steamers belonging to the port in 1856 was 2372, tonnage 588,620. The commerce of Rotterdam is carried on by three channels: by sea, by land, and by the Rhine. The first of these is the most important; and indeed the prosperity of Rotterdam is owing in a great measure to its foreign trade. Antwerp formerly rivalled it in this respect; but since the separation of Holland and Belgium in 1830, the Dutch city has completely outstripped its competitor. Goods are imported from the Dutch possessions in the East and West Indies, from America, and from various countries in the north of Europe. The Netherlands Trading Company carries on an extensive commerce, especially with India, and until the end of 1859 enjoys many privileges. The

Roubaix value of their importations for 1855 and 1856 was as follows :—

Articles.	1855.	1856.
Coffee.....	L.3,561,675	L.3,539,000
Sugar.....	1,348,810	2,171,500
Spices.....	90,990	83,075
Pepper.....	11,740	24,125
Indigo.....	252,500	184,750
Cochineal.....	18,330	30,220
Banca tin.....	538,625	624,900
Cinnamon.....	8,450	4,889
Tea.....	77,560	105,740
Hides.....	...	10,520
Rattans.....	18,520	19,980
Total.....	L.5,927,200	L.6,798,699

Wheat, rye, wines, pottery, &c., are imported by the Rhine from Germany, and grain and timber from the Baltic. Rotterdam is connected by railway with Amsterdam and the other chief cities of Holland. Steamers ply from this port to London, Hull, Bristol, Liverpool, Newcastle, Leith, Glasgow, Hamburg, Dunkirk, Havre, Bordeaux, Marseilles, Leghorn, Cronstadt, and Stettin. Pop. (1855) 96,000.

ROUBAIX, a town of France, in the department of Nord, 6 miles N.E. of Lille. It is well and regularly built, though it has no striking public buildings. Its chief importance is derived from the manufactures that are carried on here, especially those of cotton goods, for which it is second only to Lille among the towns in the department. Besides these, woollen articles, table-linen, furniture, leather, &c., are made, and dyeing is also carried on. The trade of the place is very considerable, not only in these manufactured articles, but in corn, wine, and colonial produce. Roubaix is the seat of a court of commerce and a council of *prud'hommes*. Pop. 31,038.

ROUBILIAC, LOUIS FRANÇOIS, an eminent sculptor, was born at Lyons in France about 1695, and after studying under Balthazar of Dresden, came to London in 1720 to practise his profession. It was not long before the bustling little Frenchman began to exhibit in his calling all his national vivacity of temperament. His artistic enthusiasm knew no bounds. At dinner he would drop his knife and fork, and stare in wrapt attention at some new conception that had risen before the eye of his imagination. In company he would suddenly seize a lady's hand, and implore her to allow him to model it. Nor did his ardour cool when he took up the chisel. His figures were fashioned in the most excited attitudes. An intensity of expression, amounting even to grimace, was put into their faces. The very robes seemed instinct with tremor and agitation. These striking characteristics soon ensured to Roubiliac a very wide success. On the recommendation of Sir Edward Walpole, he was employed to erect a monument to John, Duke of Argyle and Greenwich, in Westminster Abbey. The ability with which he finished this undertaking gave publicity to his name. Other tombs in the same place were entrusted to his execution. Several of the aristocracy gave him commissions for busts. He was also honoured to execute the likenesses of some men of genius. So high, indeed, was his standing, that at his death in 1762 he left many works which must always be objects of national interest. There are his monuments in Westminster Abbey, including, besides the one already mentioned, "Joseph Gascoigne Nightingale and his Lady," "Sir Gilbert Lort," "Admiral Sir Peter Warren," "Field-Marshal Wade," "General Fleming," and "General Hargrave." There are also his busts of Milton, Dryden, Pope, and Sir Robert Walpole; and his statues of Shakespeare and Newton,—the former in the British Museum, and the latter in Trinity College, Cambridge. (See Cunningham's *British Painters*, &c.)

ROUEN (anc. *Rotomagus*), one of the principal towns

of France, anciently the capital of Normandy, and now of the department of Seine-Inférieure, on the Seine, 44 miles in a direct line, but twice as much by the river, above its mouth, and 70 N.N.W. of Paris. It stands on the right bank of the river, but has a suburb, St Sever, on the opposite side, connected with the main town by a suspension-bridge and by two others of stone, which meet in the middle on the island *de la Croix*, just above the town. Towards the land Rouen is encircled with hills; and viewed from these, it has an appearance such as few other cities can boast of. Over the roofs of the houses rise several vast Gothic ecclesiastical edifices; the cathedral in the midst sending up a spire that towers as high above the others in the town as they do over the house-tops. And with all this mediæval and romantic splendour there are not wanting the factory chimneys and masts of vessels in the Seine, which tell of the modern prosperity of the place. The same combination of different epochs is apparent on a nearer view of the town; the streets are narrow, crooked, and dirty, lined with houses built mostly of wood, and presenting generally their gables to the street. But these streets swarm with busy crowds, and a range of fine new buildings stretches along the quays on the bank of the Seine. The line of the old fortifications is occupied by a *boulevard* stretching in a semicircle round the town, and inclosing within it all the historical and architectural monuments of Rouen; while without are suburbs occupied chiefly by the working-classes. The cathedral of Notre Dame is one of the most conspicuous objects in the town, and is calculated at the first sight to excite the wonder and admiration of the spectator; but its decorations, though rich and profuse, are not always in good taste. The vast western front is flanked by two elegant and stately towers, and the centre surmounted by a spire, not in harmony with the rest of the building, 436 feet high. The interior, 435 feet in length and 89½ in height, is in the early pointed style, and has three beautiful rose windows in the nave and transepts. The principal monuments in the church are an ancient statue of Richard Cœur de Lion, whose heart was buried here; the tomb of Cardinal George d'Amboise, who was Archbishop of Rouen; and that of the Duc de Brégé, husband of Diana of Poitiers. The church of St Ouen, though inferior to the cathedral in the number of its monuments and historical associations, is larger and more elegant, being one of the finest Gothic buildings in the world, and executed almost entirely on a single plan, though its erection extended over nearly two centuries from its foundation in 1318. It is cruciform, and has in the centre a very beautiful octagonal tower 260 feet high. The interior, which is 443 feet long and 106½ high, is chiefly remarkable for its light and graceful character, which is enhanced by the great size of the windows, which are all filled with painted glass. Another fine church is that of St Maclou, chiefly remarkable for its triple porch in the florid style of the fifteenth century. Many of the other churches possess much interest: those of St Godard, St Patrice, and St Vincent contain greatly-admired specimens of stained glass; and that of St Gervais, in one of the suburbs, is one of the oldest Christian churches in France. The town-hall, standing close to the church of St Ouen, is a fine building in the Italian style, containing, besides the public offices, a library of 33,000 volumes and 1200 MSS., and a museum of paintings, of which some are good and a great many bad. The museum of antiquities, which occupies a suppressed convent, is exceedingly interesting, especially for its rich collection of mediæval remains. A fine specimen of the Gothic architecture of the end of the fifteenth century is furnished by the Palais de Justice, which contains the hall of the ancient Parliament of Normandy. There are several public squares in Rouen, the most memorable of which is that called the Place de la Pucelle, containing an indifferent

Roulers statue of Joan of Arc, on the spot where her wonderful and eventful career was brought to an end. The site of the old castle of Rouen is occupied by a building called the Halles, or covered markets, consisting of a series of large halls for the sale of various kinds of merchandise, forming three sides of a square. As a manufacturing town, Rouen ranks next to Lyons, and is the chief seat of the cotton manufacture in France. The factories are driven either by water or by steam-power. Dyeing, bleaching, and printing of woollen and cotton fabrics are also carried on. Besides these, there are manufactures of muslin, lace, hosiery, handkerchiefs, ropes, blankets, paper, sugar, soap, and many other articles; as well as tanneries, breweries, ship-building yards, copper and iron foundries. The town is very favourably situated for commercial purposes, as it is connected both by railway and by the river with Paris on the one hand, and Havre on the other. Vessels of 250 or 300 tons come up to the stone bridge, above which there are large boats to convey the cargoes to the capital. The number of vessels belonging to the port is more than 100. The number that entered with cargoes in 1854 was 681, tonnage 68,274; in 1855 the number was 1060, tonnage 108,852. Those that cleared with cargoes in the former year were 341, tonnage 34,288; in the latter 380, tonnage 38,288. The chief articles of trade are corn, flour, wine, brandy, cider, oil, salt provisions, colonial produce, and manufactured articles. Rouen is the seat of an archbishop, of a high court of justice, and other tribunals, and contains a mint, custom-house, two clerical seminaries, a school of medicine, college, and other schools, four hospitals, two theatres, and several banks. The town is of great antiquity, having been under the Romans the capital of the province of Lugdunensis Secunda. About the middle of the ninth century it was taken by the Normans, and from that time till their conquest of England was the capital and residence of their dukes. In 1204 Philip II. of France wrested the duchy with its capital from the feeble hands of King John, and annexed it to the French crown. But in 1419 Henry V. besieged and took the town, which remained in English hands till 1449. In 1562 the Huguenots took possession of Rouen, but the Duke of Guise recovered it in the same year; and in 1593 it was taken by Henri IV. The most celebrated native of Rouen was Pierre Corneille; Fontenelle and other men of note were also born here. Pop. (1856) 94,645.

ROULERS (Flem. *Rousselaer*), a town of Belgium, in the province of West Flanders, in the midst of beautiful meadows, on a small affluent of the Lys, 17 miles S. of Bruges. The streets are broad and regular, lined with good houses; and in the centre is a market-place, where stand the long ancient town-hall, with its tower and elegant spire, and the small plain church of St Michael. The college of the town is a fine edifice, and the other schools are numerous. The people are mostly employed in making and bleaching linen; and there are also tanneries, breweries, distilleries, soap-works, &c. There is an active trade in flax, linen, and cattle. Pop. 10,770.

ROUNDELAY, **RONDEAU**, or **RONDO**, a sort of old poem, deriving its name, according to Ménage, from its form, and because it still turns back again to the first verse, and thus goes round. The common roundelay consists of thirteen verses, eight of which are in one rhyme and five in another. It is divided into couplets, at the end of the second and third of which the beginning of the roundelay is repeated, and that, if possible, in an equivocal or a punning sense. The roundelay is a popular poem in France, but is little known amongst us. Marrot and Voiture have succeeded the best in it. Rapin remarks, that if the roundelay be not very exquisite, it is intolerably bad. In all the ancient ones, observes Ménage, the verse preceding has a less complete sense, and yet joins agreeably with

that of the close, without depending necessarily thereon. Rousseau. This rule, well observed, makes the roundelay more ingenious, and is one of the artifices of the poem. Some of the older writers speak of the roundelay or rondel as a kind of air appropriated to dancing.

ROUSSEAU, **JACQUES**, an eminent French painter, was born at Paris in the year 1630. He studied first under Swanevelt, who had married one of his relations; after which he improved himself by travelling into Italy, practising perspective, architecture, and landscape. On his return home, he was employed at Marly. He distinguished himself very much in painting buildings. Louis XIV. employed him to decorate his hall of devices at St Germain-en-Laie, where he represented the operas of Lulli; but being a Protestant, he quitted France on the persecution of his brethren, and retired to Switzerland. Louis invited him back. He refused, but sent his designs, and recommended a proper person to execute them. After a short stay in Switzerland, he went to Holland, whence he was invited to England by Ralph, Duke of Montague, to adorn his new house in Bloomsbury. Here he painted a great deal. Some of his pictures, both in landscape and architecture, are over doors at Hampton Court; and he etched several of his own designs. His perspectives having been most commonly applied to decorate courts or gardens, have suffered much from the weather. Such of them as remain are monuments of an excellent genius. The colours are bright and durable, and the choice of them most judicious. He died in Soho Square in 1693 or 1694, at the age of sixty-four.

ROUSSEAU, *Jean Baptiste*, a French lyric poet, of very great merit, was born at Paris in April 1670. His father, who was a shoemaker in good circumstances, made him study in the best colleges of Paris, where he distinguished himself by his abilities. He at length applied entirely to poetry, and soon made himself known by several short pieces that were filled with lively and agreeable images, which made him sought for by persons of the first rank and men of the brightest genius. He was admitted as a pupil to the Academy of Inscriptions and Belles Lettres in 1701, and almost all the rest of his life he attached himself to some great men. He attended Marshal Tallard into England in the capacity of secretary, and there contracted a friendship with St Evremond. On his return to Paris, he was admitted into the politest company, lived amongst the courtiers, and seemed perfectly satisfied with his situation; when, in 1708, he was prosecuted for being the author of some couplets in which the characters of several persons of wit and merit were blackened by the most atrocious calumnies. This prosecution made much noise; and Rousseau was in 1712, by a decree of the Parliament of Paris, banished out of the kingdom, to which he was never more to return. However, he always steadily denied, even on his death-bed, his being the author of these couplets. From the date of this sentence he lived in foreign countries, where he found illustrious protectors. The Count de Luc, ambassador of France in Switzerland, took him into his family, and studied to render his life agreeable. At the treaty of Baden in 1714, he was one of the plenipotentiaries, and was presented to Prince Eugene, who, entertaining a particular esteem for him, took him to Vienna, and introduced him to the emperor's court. Rousseau lived about three years with Prince Eugene; but having lost his favour by satirizing one of his mistresses, he retired to Brussels, where he afterwards usually resided. It was there that he commenced his disputes with Voltaire, with whom he had become acquainted at the college of Louis the Great, and who then much admired his turn for poetry. Rousseau, from the period of their dispute, always represented Voltaire as a buffoon, and as a writer possessing neither taste nor judgment, who owed all his success to a

Rousseau. particular mode which he pursued. As a poet Rousseau considered him as inferior to Lucan, and little superior to Pradon. Voltaire treated him still worse. Rousseau, according to him, was nothing better than a plagiarist, who had nothing but the talent of arranging words. He came over in 1721 to London, where he printed his *Œuvres Diverses*, in two volumes 12mo. This edition, published in 1723, brought him near ten thousand crowns, the whole of which he placed in the hands of the Ostend Company. The affairs of this company, however, soon getting into confusion, those who had any money in their hands lost the whole of it; by which unfortunate event Rousseau, when arrived at that age when he stood most in need of the comforts of fortune, had nothing to depend upon but the generosity of his friends. He died at Brussels in February 1740. A very beautiful edition of his works was published in 1743 at Paris, in three volumes 4to, and in four volumes 12mo, containing nothing but what was acknowledged by the author as his own. His works, which contained odes, epistles, cantatas, allegories, epigrams, and comedies have been published at Paris by Amar, preceded by an essay on his life and writings, entitled *Œuvres Complètes*, 5 vols., 1820. His poetical works have likewise been published in the *Collection des Classiques Français*.

ROUSSEAU, Jean-Jacques, one of the most distinguished writers of the eighteenth century, was born at Geneva on the 28th of June 1712. His father was by profession a clock and watch maker. At his birth, which, he says, was the first of his misfortunes, he endangered the life of his mother; and he himself was for a long time afterwards in a very weak and languishing state of health. But as his bodily strength increased, his mental powers gradually opened, and afforded the happiest presages of future distinction. His father, a citizen of Geneva, was a well-informed tradesman; and in the place where he wrought he kept a Plutarch and a Tacitus, authors which, of course, soon became familiar to his son. Some acts of youthful misconduct compelled him to leave his native city. "Finding himself a fugitive in a strange country, and without money or friends, he changed his religion in order to procure a subsistence." Bornex, Bishop of Anneci, from whom he sought an asylum, committed the care of his education to Madame Warens, whose history and life were from this time identified with his, and whose benevolence Rousseau requited basely in his revelations of criminal conduct for which he was himself greatly if not chiefly to blame.

He possessed more than ordinary talents for music; and the Abbé Blanchard, to whom his education had been entrusted, flattered his hopes of a place in the royal chapel, which he, however, failed in obtaining for him. He was therefore under the necessity of teaching music at Chamberi. In this place he remained till 1741, in which year he went to Paris, where he was long in very destitute circumstances. But he at length began to emerge from that obscurity in which he had hitherto been buried; and his friends placed him with M. de Montaigne, French ambassador at Venice. According to his own confession, a proud misanthropy, and a peculiar contempt for the riches and pleasures of this world, constituted the chief traits in his character; and a misunderstanding soon took place between him and his employer. The place of depute, under M. Dupin, a wealthy farmer-general, gave him some temporary relief, and enabled him to show some kindness to Madame de Warens, his former benefactress. The year 1750 witnessed the commencement of his literary career. The academy of Dijon had proposed the following question: "Whether the revival of the arts and sciences has contributed to the refinement of manners?" Rousseau at first inclined to support the affirmative. "Take the negative side of the question," said Diderot, who was at that time his friend, "and I'll promise you the greatest

success." His discourse against the sciences having been found to be the best written, and replete with brilliant reasoning, was publicly crowned with the approbation of that learned body. Never was a paradox supported with greater eloquence. It was not, however, a new one; but he enriched it with all the advantages which either knowledge or genius could confer upon it. Immediately after its appearance he met with several opponents of his tenets, which he defended; and, from one dispute to another, he found himself involved in a formidable train of correspondence, without having ever almost dreamed of such opposition. From that period he decreased in happiness as he increased in celebrity. His *Discourse on the Causes of Inequality amongst Mankind*, and on the *Origin of Social Compacts*, was written with a view to prove that mankind are equal; that they were born to live apart from each other; and that they have perverted the order of nature in forming societies. He bestows the highest praise on the State of Nature, and deprecates the idea of every social compact. By presenting this performance to the magistrates of Geneva he was received again into his native country, and re-instated in all the privileges and rights of a citizen, after having with much difficulty prevailed on himself to abjure the Catholic religion. He soon returned to France, however, and lived for some time in Paris. He afterwards gave himself up to retirement, partly to escape the shafts of criticism, and partly to follow the regimen rendered necessary by the painful disease under which he laboured. This is an important epoch in the history of his life, as it was owing to this circumstance, perhaps, that we have the most eloquent works that have proceeded from his pen. His Letter to M. D'Alembert on the design of erecting a theatre at Geneva, written in his retirement, and published in the year 1757, contains, along with some paradoxes, some very important and well-handled truths. Although so great an enemy to theatrical representations, he caused a comedy to be printed; and in 1752 he gave to the theatre a pastoral, called *Le Devin du Village*, of which he composed the poetry and the music, both of them abounding with sentiment and elegance, and full of innocent rural simplicity. His *Dictionary of Music* contains some good but many more indifferent articles. Soon after the rapid success of his *Village Conjuror*, he published a Letter on French Music, or rather against French Music, written with equal freedom and liveliness. The exasperated partisans of French comedy treated him with as much fury as if he had conspired against the state; and a crowd of enthusiasts spent their strength in loud and open menaces against him.

That interesting and tender style which is so conspicuous throughout the *Devin du Village* marks many of the letters in the *Nouvelle Héloïse*, which was published in 1761. This epistolary romance, of which the plot is ill managed, and the arrangement bad, has great beauties as well as great faults. Some of the letters are indeed admirable, from their force and warmth of expression as well as their intensity of passion, from an effervescence of sentiment, and from the irregularity of ideas which always characterises a passion carried to its height. In the *Héloïse* Rousseau's unlucky talent of rendering everything problematical appears very conspicuous. This is the case in his arguments in favour of and against duelling, which afford an apology for suicide, and a just condemnation of it; his facility in palliating the crime of adultery, and his strong reasons to make it abhorred; his declamations against social happiness, and transports in favour of humanity; his violent rhapsodies against philosophers, and his rage for adopting their opinions; the existence of God attacked by sophistry, and atheists confuted by the most irrefragable arguments; the Christian religion combated by the most specious objections, and celebrated by the most sublime eulogies.

Rousseau.

His next work, *Emile*, made more noise than its predecessor. This moral romance, which was published in the year 1762, treats chiefly of education. Rousseau wished to follow nature in everything; and though much of his system was quite impracticable, yet many of his hints and suggestions have been followed out, and with good effect, by practical teachers. His precepts are expressed with the force and dignity of a mind full of the leading truths of morality. If he has not always been virtuous, nobody at least has felt virtue more, or made it appear to greater advantage. What is most to be lamented is, that in wishing to educate a young man as a Christian, he has filled a volume with objections against Christianity. On the other hand, it must be confessed that he has given a very sublime eulogium on the gospel, and an affecting portrait of its divine Author; but the miracles and the prophecies which serve to establish his mission he attacks without reserve. Admitting only natural religion, he weighs everything in the balance of reason; and this reason being false, leads him into dilemmas which are very unfavourable to his own repose and happiness. The French Parliament condemned this book in 1762, and by instituting a criminal prosecution against the author forced him to make a precipitate retreat from France. He directed his steps towards his native town, but it shut its gates upon him. Proscribed in the place where he had first drawn breath, he sought an asylum in Switzerland, and found one in the principality of Neuchâtel. But the protection of the King of Prussia, to whom the principality belonged, was not sufficient to rescue him from that obloquy which the minister of Moutiers-Travers, the village to which he had retired, had excited against him. He preached against Rousseau, and his sermons produced an uproar amongst the people. One night some fanatics, inspired by wine and the declamations of their minister, threw stones at the windows of the Genevese philosopher, who, fearing new insults, sought an asylum in the canton of Berne. As this canton was connected with the republic of Geneva, the authorities did not think proper to allow him to remain in their city. Neither his broken health nor the approach of winter could soften their hearts. To relieve them from all anxiety about the spread of his opinions, he besought them to shut him up in prison till the spring. But even this favour was denied him. Obligated to set out on a journey in the beginning of a most inclement season, he reached Strasbourg in a very destitute condition. From Strasbourg he proceeded in the autumn of 1765 to Paris, where the protection of the Prince de Conti, and his own eccentricities of life and opinions, made him once more the lion of the hour. Among the notable men whose acquaintance he formed in the course of this winter was the philosopher David Hume, on whose invitation he visited England in the spring of 1766. Hume's conduct to his guest was marked by a delicacy and good sense beyond all praise. The new friends settled at Wootton in Derbyshire, where, however, they had not resided three months when the morbid vanity and diseased imagination of the Frenchman discovered in some very innocent acts of "ce bon David" a deep-laid scheme for ruining his peace and hopes of literary glory. A letter of Horace Walpole, written under the name of the King of Prussia, and in which Rousseau's mania of believing himself persecuted by the whole world was held up to ridicule, led to an irreparable breach between the two philosophers. In his celebrated *Letter to a Member of the National Assembly* Burke alludes to this period of Rousseau's life in the following terms:—"We have had the great professor and founder of the philosophy of vanity in England. As I had good opportunity of knowing his proceedings almost from day to day, he left no doubt on my mind that he entertained no principle either to influence his heart or to guide his understanding but *vanity*. With this vice he was pos-

essed to a degree little short of madness." Rousseau accordingly returned to France, spited with the world, and particularly offended with the English philosopher. In July 1770 he appeared for the first time at the Café de la Régence dressed in ordinary attire, having laid aside the Armenian dress in which he is generally represented in the best portraits of him that now exist. He was loaded with praises by the surrounding multitude. "It was somewhat singular," says M. Sennebier, "to see a man so haughty as he returning to the very place from whence he had been banished so often. Nor is it one of the smallest inconsistencies of this extraordinary character, that he preferred a retreat in that place of which he had spoken so much ill." It is as singular that a person under sentence of imprisonment should wish to live in so public a manner in the very place where his sentence was in force against him. His friends, however, procured for him the liberty of staying, on condition that he should write neither on religion nor on politics; and he kept his word, for he ceased to write altogether. He was contented with living in quiet seclusion in the society of a few tried friends, shunning the company of the great, and giving up all his old eccentricities. He died of apoplexy at Ermenonville, about ten leagues from Paris, July 2, 1778, at the age of sixty-six years.

Much of the unhappiness of Rousseau's life is to be attributed to the marriage which he contracted while living in the neighbourhood of Lyons with a woman named Thérèse Levasseur, who, though poor, ugly, and ill-tempered, exercised over her husband the empire of a nurse over a child. Her conduct and influence had the effect of driving away from his house the few friends whose society was either useful or agreeable to him, and of confirming him in those vices and eccentricities to which he was naturally prone. He sent his children into orphan hospitals as soon as they were born, rather than take upon himself the charge of their maintenance and education. It is to this part of his conduct Burke alludes in the *Letter* already quoted:—"He melts with tenderness for those only who touch him by the remotest relation, and then without one natural pang casts away, as a sort of offal and excrement, the spawn of his disgusting amours, and sends his children to the hospital of foundlings. The bear loves, licks, and forms her young; but bears are not philosophers. Vanity, however, finds its account in reversing the train of our natural feelings. Thousands admire the sentimental writer; the affectionate father is hardly known in his parish." The unsocial habits of Rousseau, and his strange ways, both of living and thinking, which can only be explained and may be partly, at least, excused by the plea of insanity, made him an object of curiosity, and helped to procure him a name. Like Diogenes of old, he united simplicity of manners with pride of genius; and a very large stock of indolence, with an extreme sensibility, served to render his character still more uncommon. "An indolent mind," says he, "terrified at every application, a warm, bilious, and irritable temperament, sensible also in a high degree to every thing that can affect it, appear not possible to be united in the same person; and yet these two contrarieties compose the chief of mine. An active life has no charms for me. I would an hundred times rather consent to be idle than to do anything against my will; and I have an hundred times thought that I would not live amiss in the Bastille, provided I had nothing to do but just continue there. In my younger days I made several attempts to get in there; but as they were only with the view of procuring a refuge and rest in my old age, and, like the exertions of an indolent person, only by fits and starts, they were never attended with the smallest success. When misfortunes came, they afforded me a pretext for giving myself up to my ruling passion."

His ideas on politics were as eccentric as his paradoxes

Rousseau.

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about religion. Some reckon his *Social Compact*, which Voltaire calls the Unsocial Compact, the greatest effort of his genius; whilst others find it full of contradictions, errors, and cynical passages, obscure, ill arranged, and by no means worthy of his pen. There were found in his portfolio his *Confessions*, in twelve books; the first six of which were published. "His *Confessions*," says Sennebier, in his *Literary History of Geneva*, "appear to me to be a very dangerous book, and paint Rousseau in such colours as we would never have ventured to apply to him. The excellent analysis which we meet with of some sentiments, and the delicate anatomy which he makes of some actions, are not sufficient to counterbalance the detestable matter which is found in them, and the unceasing obloquies everywhere to be met with." Amongst his other posthumous pieces are the following:—*The Reveries of a Solitary Wanderer*, being a journal of the latter part of his life; *Considerations upon the Government of Poland*; *The Adventures of Lord Edward*, a novel, being a kind of supplement to the *New Heloise*; various memoirs and fugitive pieces, with a great number of letters, containing some eloquent passages and deep thoughts; *Emilia and Sophia*; *The Levite of Ephraim*, a poem in prose, in four cantos, written in a style of ancient simplicity; *Letters to Sara*; an Opera and a Comedy; translations of the first book of Tacitus's *History*, of the episode of *Olinda and Sophronia*, from Tasso, &c. Like all the other writings of Rousseau, we find in these posthumous pieces many admirable and some useful things; but they also abound with contradictions, paradoxes, and ideas very unfavourable to religion. In his letters, especially, we see a man chagrined at misfortunes which he never attributes to himself; suspicious of everybody about him, calling and believing himself a lamb in the midst of wolves. Viewing him solely as a writer, his character is perhaps described with truth and accuracy in the following words of Hume:—"Though I see some tincture of extravagance in all his writings, I also think I see so much eloquence and force of imagination, such an energy of expression, and such a boldness of conception, as entitle him to a place amongst the first writers of his age." A complete edition of his works was published in 1788 and the following years, extending to thirty-seven volumes octavo. The best edition, however, is that published by Musset-Pathay, his biographer, Paris, 1823-25, 20 vols. 8vo. M. Villemain has given an analysis and criticism of the works of Rousseau in his recent *Cours de Littérature Française au 18th siècle*.

ROUSSILLON, an ancient province of France, bounded on the N. by that of Languedoc, W. by that of Foix, S. by Spain, and E. by the Mediterranean. It is now wholly comprised in the department of Pyrenées Orientales.

ROVEREDO, (Germ. *Rovereith*), a town of the Austrian empire, in the Tyrol, on the left bank of the Adige, 34 miles N. of Verona. It is handsomely built, many of the houses being of marble. The most conspicuous building in the place is the old castle, on the summit of a rock, towering above the public square. The principal church is a building of the fifteenth century; and another, now used as a warehouse, is said to be of greater antiquity. Roveredo is the chief seat of the silk manufacture in the Tyrol; and there are more than 50 mills in the town and vicinity. Upwards of 120,000 lb. of silk are exported annually. Leather and pottery are also made, and there are dye-works. Abundance of fruit and excellent wine is obtained in the vicinity. Pop. (1854) 11,115.

ROVIGNO, or TREVIGNO, a town of the Austrian empire, in the circle of Istria, on a rocky promontory on the Adriatic shore, 40 miles S. of Trieste. It has a cathedral, after the model of St Mark's at Venice, numerous other churches, courts of law, schools, and hospitals. There

Rovigo
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Rowe.

are two harbours, one of which is pretty safe. The inhabitants are chiefly employed in seafaring pursuits, and in fishing, especially for sardines, which produce a profit of about L.15,000 annually. Ship-building is carried on here; cables, sail-cloth, &c., are manufactured; and there is a considerable coasting trade. Pop. 10,920.

ROVIGO, a province of Austrian Italy, in the crown-land of Venice, forming a sort of peninsula between the Adige, the Po, and the Adriatic; bounded on the N. by the provinces of Padua and Vicenza, W. by those of Verona and Mantua, S. by the Papal States, and E. by the Adriatic: length, from E. to W., 35 miles; breadth, about 15; area, 428 square miles. It is flat and fertile, traversed by several canals, and covered with vineyards and fields of wheat, maize, rice, hay, &c. Cattle are raised in large numbers. The province is divided into eight districts. Pop. (1853) 176,814. The capital is Rovigo, a town on both sides of the Adigetto, an arm of the Adige, 36 miles S.W. of Venice. It has a castle, and is fortified after the old fashion, with walls, towers, and a moat. Among the chief buildings are a fine cathedral, and the palace of the Bishop of Adria, who generally resides here on account of the unhealthy climate of Adria. There are also a gymnasium, episcopal seminary, theatre, picture gallery, government-house, and courts of law. Tanneries and saltpetre works are the chief manufactories; and corn is the principal article of trade. The wine of Rovigo was anciently celebrated, but is not now above mediocrity. Pop. 12,600.

ROWANDIZ, or RAWANDIZ, a town of Asiatic Turkey, in the pashalic and 230 miles N. of Bagdad, among the mountains which separate the plains of Assyria from those of Media, on an affluent of the Great Zab. Its position is extremely striking and picturesque. Amid lofty and steep limestone cliffs, it occupies a sloping tongue of rock, with a ravine on the east, and another on the north, through which the river flows. The houses rise in tiers one above another, and have generally flat roofs, without walls round them. The river is only about 10 yards wide and 1 deep, but very rapid and impetuous; and the ravine is crossed at the height of 20 feet above the water by a bridge of trees, which may be removed to secure the place against an attack from the north. Rowandiz has only from 1000 to 2000 houses, but each of them contains two or three families, and the population is very dense. The inhabitants belong chiefly to the tribe of Rewendis, and are under a chieftain, who maintains some degree of independence, aided by the mountain fastnesses and numerous castles in the neighbourhood.

ROWE, NICHOLAS, a poet and dramatist of some distinction, was descended from an ancient family in Devonshire, and was born at Little Barford in Bedfordshire about 1673. He acquired a strong taste for the classical authors under Dr Busby in Westminster school; but poetry was his early and darling study. His father, who was a lawyer, entered him a student in the Middle Temple, and he made remarkable advances in the study of the law; but the love of the belles lettres, and of poetry, interfered with his legal career. His first tragedy, the *Ambitious Stepmother*, meeting with considerable applause, he laid aside all thoughts of rising by the law, and afterwards composed several tragedies; but that which he valued himself most upon was his *Tamerlane*. The others were the *Fair Penitent*, almost wholly borrowed from the *Fatal Dowry* of Massinger, *Ulysses*, the *Royal Convert*, *Jane Shore*, and *Lady Jane Grey*. He also wrote a farce called the *Biter*, which Congreve in his correspondence says "was damned." He likewise wrote several poems upon different subjects, which have been published under the title of *Miscellaneous Works*, in one volume, as his dramatic works have been in two.

Meanwhile the love of poetry and books did not make

Rowley. him unfit for business; for nobody applied closer to it when occasion required. The Duke of Queensberry, when secretary of state, made him secretary for public affairs. But after the duke's death all avenues to his preferment were stopped: and during the remainder of Queen Anne's reign he passed his time with the Muses and his books. On the accession of George I., however, he was made poet-laureate on the 1st August 1715, and one of the land-surveyors of the customs in the port of London. The Prince of Wales conferred on him the clerkship of his council; and the Lord Chancellor Parker made him his secretary for the presentations. But he did not enjoy these promotions long. He died on the 6th of December 1718, in his forty-fifth year.

Rowe was twice married, had a son by his first wife, and a daughter by his second. He was a very handsome man; and his mind was as amiable as his person. He was buried in Westminster Abbey, opposite to Chaucer, where his widow erected an elegant monument to him, containing a bust by Rysbrack, and an epitaph by Pope.

Rowe is chiefly to be considered in the light of a tragic writer and a translator. In his attempt at comedy, he failed so ignominiously that his *Biter* is not inserted in his works; and his occasional poems and short compositions are rarely worthy either of praise or censure, for they seem to be the casual sports of a mind seeking rather to amuse its leisure than to exercise its powers. In the construction of his dramas there is not much art; and he is not a nice observer of the unities. "I know not," says Dr Johnson, "that there can be found in his plays any deep search into nature, any accurate discrimination of kindred qualities, or nice display of passion in its progress. All is general and undefined. Nor does he much interest or affect the auditor, except in *Jane Shore*, who is always seen and heard with pity. Alicia is a character of empty noise, with no resemblance to real sorrow or to natural madness. Whence then has Rowe acquired his reputation? From the reasonableness and propriety of some of his scenes, from the elegance of his diction, and from the suavity of his verse. He seldom moves either pity or terror, but he often elevates the sentiment; he seldom pierces the breast, but he always delights the ear, and often improves the understanding." Being a great admirer of Shakspeare, he gave the public an edition of his plays, to which he prefixed an account of his life. He even professed to have imitated the dramatist in his *Royal Convert*; and Pope ridiculed this profession in his *Martinus Scriblerus*, by stating that the resemblance was confined to one single line, "And so good morrow t'ye good Master Lieutenant." But the most considerable of Rowe's performances was an excellent translation of Lucan's *Pharsalia*, which he just lived to finish, but not to publish; it did not appear in print till 1728, ten years after his death.

ROWLEY, WILLIAM, an English dramatic writer of very considerable ability, and of whom hardly anything is known, seems to have flourished during the early part of the seventeenth century. He witnessed during his life three sovereigns on the throne, Elizabeth, James I., and Charles I. He was educated at Cambridge, for Wood has recorded of him that he was "the ornament for wit and ingenuity of Pembroke Hall in Cambridge;" and it is of him most probably Meres, in the second part of his *Wits Commonwealth*, 1598, speaks, when he says, "Maister Rowley, once a rare scholar of Pembroke Hall in Cambridge." He belonged to the royal company of players, and as an actor excelled most in comedy. He was on terms of close intimacy with all the reigning poets and wits of his time, and is known to have aided many of them in the composition of works for the stage, as well as having himself written a number of able comedies and tragedies, which were acted with "great applause" during his own time. In Charles Lamb's *Specimens of English Dramatic*

Poets, there are extracts given from the following works: *A Fair Quarrel*, by T. Middleton and W. Rowley; *All's Lost by Lust*, a tragedy, by W. Rowley; *A New Wonder*, *A Woman Never Vext*, a comedy, by W. Rowley; *The Witch of Edmonton*, a tragi-comedy, by Rowley, Decker, and Ford; *The Old Law*, a comedy, by Massinger, Middleton, and Rowley; *Fortune by Land and Sea*, by Heywood and Rowley. Speaking of *The Old Law*, Lamb remarks, "There is an exquisiteness of moral sensibility making one to gush out tears of delight, and a poetical strangeness in all the improbable circumstances of this wild play, which are unlike anything in the dramas which Massinger wrote alone. The pathos is of a subtler edge; Middleton and Rowley, who assisted in this play, had both of them finer geniuses than their associate." Several others of Rowley's plays will be found in Dodsley's *Collection*, and in Watt's *Bibliotheca Britannica*. Shakspeare is said to have assisted Rowley in the composition of his *Birth of Merlin*, 1662.

ROWNO, a town of European Russia, capital of a circle in the government of Wolhynia, on the Ūstja, 116 miles N.N.W. of Jitomir. It has four churches, a gymnasium, two benevolent institutions, and some manufactures. Pop. 4875.

ROXANA, the daughter of Oxyartes, a Bactrian prince, became the queen of Alexander the Great about 327 B.C. She had not long enjoyed her high dignity before misfortunes began to gather round her. Her husband died before her child was born. The fear lest her progeny should be deprived of its paternal rights changed her nature into that of a tigress. She could not rest until she had decoyed her rival Barsine to Babylon and murdered her. Even when her son had been acknowledged heir to his father's kingdom, there was no peace for her. In the struggles which ensued between the several potentates in the Alexandrian empire, she and her boy were tossed about from the custody of one to that of another. At length they became involved in the fortunes of the ambitious Olympias, and their fate was sealed. Cassander captured them in Pydna in 316 B.C. They were degraded from their royal dignity, and consigned to the citadel of Amphipolis. After languishing there for five years, they were secretly murdered by their keeper Glaucias in 311 B.C.

ROXBURGHSHIRE, one of the south-eastern counties of Scotland, is bounded on the E. and S. by Northumberland and Cumberland; on the S.W. by Dumfriesshire; on the W. by Selkirk and Mid-Lothian; and on the N. and N.E. by Berwickshire. It is strictly a border county, its southern limit occupying nearly the whole of the border line, except a limited space at the eastern and western extremities. Its outline is very unequal, but the principal mass may be regarded as forming an irregular rhomboid, throwing out a projecting angle to the N., where it touches on Mid-Lothian, and another to the S., composing the basin of the Liddle, where it declines towards the English border. Its greatest length, from the north-eastern to the south-western extremity, is 43 miles, and its greatest breadth about 30; its superficial extent, according to the latest authorities, being 696 square miles, or 446,440 acres.

The Teviot being the only considerable river wholly included within the limits of the county, its basin comprehends by far the largest portion of its area, and from this circumstance the entire district was formerly called Teviotdale. It includes also Liddesdale, an outlying fragment, as it were, of the county, and belonging to a river system extraneous to it, which finds its outlet in the Solway. The valley of the Tweed occupies the northern portion, running in a transverse direction, and uniting with that of the Teviot near Kelso. These great natural features, taken in connection with the mountain ranges, in which the rivers

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Roxburgh-shire. originate, and to which they owe their direction, will enable us to form a pretty accurate conception of the physical aspect of the district. On the S. and S.E. the county may be said to be set in a frame of mountains, forming a pretty continuous ridge, and throwing off lateral offshoots, which gradually decline in height till they sink into the low lands bordering on the rivers. On the N.E. side they expand into the somewhat extensive group of the Cheviots, and in the S.W. they form a strictly mountainous country, often rising to a considerable elevation, presenting elongated ridges and insulated hills, sometimes rugged and rocky, but more frequently with rounded outlines, and densely clothed with grass to the very summits. The whole of this district is pre-eminently of a pastoral character, and the dense, fine herbage which everywhere covers the surface rears vast numbers of the finest sheep the county produces. This part of the county is almost destitute of wood, a few patches of dark pines in the valleys alone diversifying the view, or, rarer still, a scattered group of aged birch trees, the relicts of primeval and natural woods, hanging on the slopes of the hills. Cultivation is scarcely practicable here, save on the low valleys by the side of the streams, where patches of corn and turnips are occasionally reared; and this state of things continues along the course of the Teviot nearly to the vicinity of Hawick, the country gradually becoming more level, and undergoing a great improvement in soil and climate, which admits of extended cultivation, and the rearing of almost any kind of crop cultivated in the country. Below this, further amelioration of climate, both in regard to temperature and dryness, is perceptible; woods not only skirt the banks of the river, but are scattered over the upland localities, and a wide district on either side presents all the features of a highly-cultivated and flourishing country. Frequent hills and abrupt eminences, arising from the obtrusion of igneous rocks, diversify the surface, which is everywhere varied, undulating, and beautiful. Still further down, the valley of the Teviot becomes more and more expansive, till it ultimately becomes blended with that of the Tweed, and both open up into a wide expanse of champaign country, which for richness of soil, extent of woodland, and general beauty of scenery, is well known to be surpassed by few places in the kingdom. The transverse valleys formed by the various affluents of the Teviot from the N. and S.E. also present features of great interest, and exhibit a peculiarity in their scenery owing to the nature of the geological formation through which they flow. That formation consists of the old red sandstone, and being for the most part of a soft and crumbling consistency, it has gradually given way to the action of the currents, and they have scooped out for themselves a deep channel in the rock. "They form deep and narrow defiles, often finely wooded, in which scaur, and wood, and water, and green mound-like banks, are blended into scenes of sequestered and varied beauty, such as the general aspect of the country scarcely promises. The high scaurs are generally in one place, confined to one of the banks, and the horizontal lines, in this nearly perpendicular wall, are sufficiently broken by the windings of the stream and overhanging wood, to prevent them becoming monotonous; while their deep tints present a mass of colour so agreeably contrasting with the fringing foliage as to add materially to the general effect. Though destitute, therefore, of the most characteristic features of rock scenery, properly so called, they are possessed of others which form a good substitute, and which cannot fail to recommend them to the eye of taste. The most interesting examples of this style of landscape are to be found in the lower course of the Jed; and though not on a large scale, they have long en-

joyed a well-merited reputation. Others of a similar kind occur on the Ale near Ancrum, on the Rule near Wells, on the Kale, and in the Dean above Denholm. As an instance of the same thing lying in the region of the conglomerate, may be mentioned the wooded dell at Hassen-dean Burn above Lurden. The precipitous banks in this spot are of a remarkably sombre hue; there are no lines of stratification, and the projections are blunt or rounded masses, with no appearance of the numerous small angles naturally formed by the breakage of stone having a minutely granular structure."¹

The Teviot, pre-eminently the county river, takes its rise at a place called Teviotstone, on the E. side of the mountain range which divides the county from Dumfriesshire. It pursues a very direct course in a N.E. direction, almost bisecting the county, and after a run of about 40 miles, in which it passes many a spot famous in border story, falls into the Tweed a little above Kelso. The general direction and undeviating nature of its course, at least in its upper half, is owing to the disposition of the Silurian strata through which it flows, the vertical masses of the rock being almost invariably arranged from N.E. to S.W., while their slaty structure and rather soft consistency give full effect to the abrading power of the current. This river was once famous as a trouting stream, and has been celebrated in poetry for the limpid clearness of its "silver tide;" but in both these respects there has of late years been a great change to the worse, partly from causes which are probably of very general operation in such cases, and partly from others of a more local nature. Owing to extensive drainage and other agricultural improvements, all superfluous rain-water falling on the fields is speedily conveyed to the river and its tributaries; sudden floods are the consequence; and as the water is rapidly carried off, the floods subside almost as rapidly as they rise. From the same causes, in seasons of drought the river is often reduced to a very low ebb. This tendency to extremes, and these sudden and violent changes, are unfavourable to the finny tribes, and seriously disturb both their breeding and feeding places. But a much greater evil arises from the great quantity of soap-suds and dye-stuffs discharged into the river from the manufactories of Hawick. These deleterious substances taint and discolour the water for many miles below that town, until they at length become diluted by the afflux of fresh streams, when their effects become less felt, or at least less apparent. Besides being directly injurious to the fish, these matters we know to be poisonous to the aquatic flies when in their larva state, on which they chiefly feed, and these are accordingly becoming much scarcer. No longer, then, can we exclaim with its native poet Leyden,—

"Untainted yet thy stream, fair Teviot, flows."

This contamination, which must have other injurious effects besides those alluded to, and which is becoming too common in other localities similarly situated, is the more to be deprecated, from the consideration that, by a little care and expense, it might be altogether avoided. The principal tributaries of the Teviot on the north-west side are the Borthwick and the Ale, both rising in Selkirkshire, the former flowing through a pastoral country similar to that surrounding the upper reaches of the Teviot, and joining the main stream nearly opposite Gondilands, a little above Hawick; the latter having its influx at Ancrum, among magnificent woods and romantic scenery, the last of which it principally contributes to create, by cutting deeply into the stratified rocks and producing lofty mural precipices of deep red sandstone. The affluent streams from the south are numerous, the principal being the Allan, the Slitrig,

¹ "Geology of Roxburghshire," by the Rev. James Duncan, in Jeffrey's *History of the county*, vol i., p. 130.

Roxburgh-
shire.

the Rule, the Jed, the Oxnam, and the Kale. They all originate in the high grounds that skirt the county towards the English border, flow nearly due north, and join the main stream at an angle more or less acute. The only exception to this is the Kale, which has a more western course, and it doubtless owes its deviation from the prevailing arrangement to the disturbing influence of the Cheviot porphyries, whose operation is still further shown in this quarter by an irregularity in the course of the Teviot itself. Each of these tributary streams presents peculiar features both in natural scenery and in other properties. Such of them as flow through the Silurian district are often very impetuous in their course when under flood, carrying along with them large boulders of greenstone, and overflowing the low-lying lands on their banks. Hawick has frequently suffered in this way from the inundations of the Slitrig. The Jed, one of the most considerable of these tributaries, from the length of its course, is likewise the most celebrated both for its scenery and historical associations. It rises near Needlaw, not far from the southern border, flows at first due north, then suddenly bends to the east, after which it resumes the normal direction, and continues by Old Jedburgh, Fernherst, and Jedburgh, to the Teviot. The peculiar and highly interesting physiognomy it gives to the landscape, arising from its action on the rocks which prevail throughout the greater part of its course, has been already alluded to. In the vicinity of the town to which the river gives its name the valley opens to some width, the banks are richly clothed both with natural wood and timber trees, and from the road, which follows more or less the windings of the stream, frequent views of the high and deeply-tinted scaurs are obtained, as well as occasional glimpses of the lofty tower and lengthened roof of the abbey; the whole presenting a scene of great interest and picturesque beauty. The other smaller rivers, such as the Gala, Leader, Eden, and Beaumont, belong only partially to the county; and though this is likewise the case with the Liddel and Tweed, these two rivers occupy a prominent place in the history of the district. The latter enters the county near the point where it is joined by the Etrick, and after a very winding course of about 30 miles in an eastern direction, leaves it at the influx of the Carham-burn. The Roxburghshire section of this noble river passes through scenes of rich and varied beauty, which have also been the theatre of events of the highest national interest and importance. The Liddel rises near the sources of the Jed, and follows an exactly opposite direction; and after receiving the waters of the Hermitage, proceeds southwards by Castleton and Mangeron, leaving the boundaries of the county at Liddelbank.

The lochs form so insignificant a feature in the physical aspect of the county that they scarcely seem to merit special notice in a cursory view of its hydrography. They are both few in number and of inconsiderable dimensions, and some of them are gradually diminishing, while others have entirely disappeared under the influence of drainage and agricultural improvements. We have not yet learned in this country to turn our permanent reservoirs of water to useful account in the production of human food, although they are susceptible of being rendered even more profitable in this respect than an equal extent of land. Yetholm or Primside Loch, which is the largest, is about a mile and a half in circumference; Hoselaw, in Linton parish, three-quarters of a mile. Several small sheets of water exist in Ashkirk parish, and a few others in Roberton. They occur amid very wild and sequestered scenes, are the favourite haunts of a considerable number of aquatic birds, and in

some of them the black-headed gull finds a suitable breeding-place.

Roxburgh-
shire.

The geology of the county is of considerable interest, owing to the variety of formations met with, consisting of the older rocks, and also for the organic remains which have lately been discovered. The Silurian rocks, which are so extensively developed in the southern division of Scotland, and which occupy almost the entire area of the adjoining counties of Selkirk and Peebles, also prevail in this county, extending over the whole western side, also on the south, and more or less on the south-east. The rock is very distinctly stratified, the strata standing on their edge, or nearly vertical, and the direction east and west, with slight deviations. It is of a fine texture, often running into clay-slate, of a bluish-grey colour, glimmering with minute scales of mica, and frequently traversed by veins of calcareous spar. This is succeeded to the eastward by an extensive deposit of the old red sandstone, forming an irregular quadrangular area towards the centre of the county, emitting two angular projections from its southern extremity, and interrupted in the middle of its north side by an intrusion of trap-rocks. It consists of three well-marked modifications: the conglomerate, which is the lowest of the series; the dark brownish-red somewhat earthy-looking mass, traversed by whitish or grey-coloured beds of marly matter, composing the scaurs formerly alluded to; and the compact red and white sandstones in the higher parts of the county used as building-stone. To the east of this there is a considerable portion of the county composed chiefly of dark greenstone; and around Kelso, and thence down the valley of the Tweed, the under-division of the coal formation prevails. This formation is also developed in Liddesdale.

According to Professor Nicol, the real axis of the old unfossiliferous greywacke ranges by Teviotdale, and corresponds to certain Silurian strata in Wales. It is certainly the fact that fossils are very rare in the Roxburghshire greywacke strata, but they have by no means been examined with sufficient care to justify us in asserting their non-existence. Until very lately the same thing was affirmed of the red sandstone, and it was accordingly difficult to determine its geological position; it has been described as the new red sandstone. Recently a new light has been thrown on the subject by the investigations of Mr Duncan of Denholm, who has discovered numerous fossils of the old red sandstone era, and has thus determined its real character. Fossil fishes, of the genus *Pterichthys* and *Holoptychius*, the scales of the latter occurring in some places in such quantities as actually to form beds, have been detected. Plants have been found in still greater number and variety, the fucoids being very plentiful in certain strata uncovered at Denholm Hill quarry, and in impressions remarkably distinct and characteristic. Vegetables of higher organization have likewise occurred,—what appears to be a species of fern (*Cyclopterus hibernicus*) and distinct petrifications of calamites. These were previously unknown in the upper beds of the old red, and their occurrence is therefore regarded as a matter of considerable geological interest.¹

The diversified nature of the county, and the beautiful and romantic scenery so frequently met with, is chiefly owing to the eruption of igneous rocks, frequently in the form of insulated hills. These consist for the most part of a dark augitic greenstone, somewhat resembling clinkstone in texture, and not unlike basalt in colour. Such are Penielheugh, Dunian, Ruberslaw, Minto Craigs, Southdean Hill, Windburgh, &c. The form, position, and colour

¹ For a detailed account of these fossils, see the work referred to in the previous note, and Hugh Miller's remarks on them in the *Testimony of the Rocks*, p. 452.

Roxburgh-shire. of the beautiful group of the Eildon Hills indicate at once a different composition and structure; they consist of fels-pathic porphyry, and form the nucleus of a circular area of that substance of no great dimensions. A similar formation is extensively developed in the Cheviot Hills, which, however, vary much in lithological structure, and in other respects, although all referable to the same class of rocks. The highest hills in the county—such as Chillhill, one of the Cheviots, Millenwood Fell, and Tudhope Hill—do not exceed 2000 feet: those in the interior are usually much lower,—Ruberslaw, 1174; Dunian, 1031; Eildons, 1634.

Even in the briefest outline of its geology it would be improper to omit mention of the remarkable greenstone dyke, from 12 to 20 or 30 feet in width, which runs across the county from east to west, nearly dividing it into two equal halves. It is a very remarkable geological phenomenon, from its great length as well as from its composition and other circumstances.

Both the greywacke and greenstone are occasionally employed as building-stones, for which neither of them is well adapted, especially the former, as, owing to its lines of cleavage, it is apt to open in rents after being placed in position, and admit moisture. Both these rocks make excellent road metal. The sandstones of the coal formation, and also the upper beds of the old red, afford admirable building materials, and are in general use throughout the county, although they have often to be conveyed for considerable distances.

One of the greatest inconveniences felt in the interior parts of the county is the distance from coal. It was formerly carted chiefly from Dumfriesshire and Northumberland; and the western parts of the county are still supplied in this way from the first-mentioned of these places. The greatest boon that was expected from the introduction of railway conveyance was the facilities it should afford for the transport of coal and lime. These advantages have been by no means hitherto realized to the extent anticipated, and good coal for domestic purposes is nearly as expensive as it was formerly. Limestone is plentiful in many places, but coal is often found too expensive for burning it. It used to be carted from various places near the English border, and still is to some extent; but the chief supplies both for agricultural and building purposes are now obtained from the Lothians by railway.

The climate cannot be said to present any very marked peculiarities. The mean annual temperature approximates to that of the kingdom at large, being, as determined by observations at Makerstoun on the Tweed, 46°.1. The mean annual quantity of rain, as registered at the same place, is found to be 24.18 inches. Were we in possession of a continuous series of hygrometrical observations, the results would no doubt present striking disparities in different places. The air is for a great part of the year extremely humid in the high grounds to the west, the evaporation from extensive grass lands, with a marshy bottom, being at all times considerable. In the low and arable portions of the county, on the contrary, the air is in general very dry, entire winters sometimes passing over with comparatively little rain. In former times corn crops in the uplands were frequently overtaken by the storms of winter before they could be housed; drainage, special manures, and, above all, the extensive use of lime, have produced a most beneficial change in this respect; and the crops come to maturity almost simultaneously in the upland districts and the haugh lands of the interior.

The agriculture of Roxburghshire has always borne a high character, and it may be safely affirmed that it has kept pace with the progress which every branch of husbandry has made of late years. Many of the better class of farmers are men of education and enlightened views, capable of appreciating modern improvements, and pos-

essed of sufficient capital to carry them into full operation. The greater part of the arable lands have been adequately drained; the old implements have been supplanted by others of the most improved construction; special manures are in extensive use; and every means employed to bring the land into the highest state of cultivation. In most of the exposed situations belts of plantation have been reared, and additional shelter thus obtained for both cattle and crops. Subsoil-ploughing is frequently resorted to, and the grubber seems to be often substituted for the plough, as an easier and more efficient method of preparing the land, especially for turnip crops. The area of cultivated land has been greatly extended in many quarters; and while certain species of crop, such as flax, which once occupied a corner on almost every farm, have disappeared, others have been introduced, and are not unlike to come into more general favour. This seems to be the case more especially with mangold-wurzel; for the notion, that it is unsuited to our soil and climate, may now be regarded as erroneous, for certain early varieties have been cultivated with great advantage.

It is now rather more than a century since the drill culture of turnips was introduced into this county from Norfolk, and this description of crop is now reared to a vast extent. Indeed, no county in Scotland has such a breadth of land under turnips in proportion to its cultivated area; and in the amount of its gross produce it is exceeded only by three other counties. Guano, bone-dust, and most of the modern manures, are in general use for this crop; and it must be admitted that although it is indispensable in the economy of the farm, according to the present system of management, it is reared at a great and early-increasing expense. In this district the crop has always been particularly subject to the finger-and-toe disease, and of late years it seems to be rather on the increase. Now that the cause of this disease is known, it is understood why lime has so far a remedial effect; it is far, however, from being a complete preventive, and it is to be hoped that some more effectual one will be discovered.

The number of occupiers of land, according to the agricultural statistics of 1856, is 992, whose rents are at and above L.10. The total acreage under tillage is 126,113½, which is considerably less than one-third of the entire area. The kinds of crops, and the proportional extent of their cultivation, as well as the kinds and amount of stock, are as follows, omitting fractions:—

	Aeres.		Aeres.
Wheat.....	10,148	Mangold.....	39
Barley.....	10,398	Carrots.....	11
Oats.....	28,190	Cabbage.....	7
Rye.....	113	Rape.....	148
Bere.....	16	Turnip seed.....	37
Beans.....	1,070	Other crops.....	20
Pease.....	565	Bare or summer fallow...	515
Vetches or tares.....	620	Grass and hay under ro-	
Turnips.....	24,016	tation.....	48,422
Potatoes.....	1,772		
Horses for agricultural purposes above three years			
old.....	3,661		
Do. Do. under three years	695		
All other horses.....	1,094		
Total horses.....	5,450		
Milk cows.....	4,401		
Other cattle.....	8,974		
Calves.....	3,721		
Total cattle.....	17,096		
Sheep of all ages for breeding.....	230,623		
Do. for feeding.....	40,117		
Lambs.....	177,955		
Total sheep.....	448,695		
Swine.....	3,917		
Total stock.....	475,158		

A considerable number of farms of mixed pasture land

Roxburgh- and tillage are of great extent, amounting in some instances shire. to 3000 acres; while farms of 1000 acres are not very rare. The average size of arable farms, however, may be stated at between 250 and 500 acres, and the rental varies of course with the qualities of the soil, distance from markets, and other circumstances. A great advance in rents has taken place of late years; few farms have been recently in the market which have not risen between 25 and 40 per cent. The Duke of Buccleuch's farms, which, from being usually given to tenants for political services, were very unequally rented and sometimes very low, have now been greatly raised; in some instances, it is believed, to double the original amount. Leases are generally of fifteen or nineteen years' duration; in regard to sheep farms, however, where expensive improvements yielding slow returns are less practicable, shorter periods are adopted: frequently it is nine years. The farm-steadings have been much improved of late, and some of those recently erected are not surpassed by any in the kingdom; the dwelling-houses are often handsome and commodious. These accommodations are of course provided by the landlord; but to this there is a partial exception in the case of the Buccleuch property, the management of which is in so many respects anomalous, the tenant being obliged to cart all the building materials, implying a considerable outlay in the present state of labour, and also to pay a percentage of L.3 on the money expended on the buildings. Rents are usually paid by a fixed sum, but in some instances grain rents are still partially in use.

The condition of farm-labourers is nearly on the same footing as in Berwickshire, to which article reference may accordingly be made for details. Hinds, however, are now better paid, receiving in all what is nearly equivalent to L.35 in money, with a free house and garden. The hind is under obligation to keep a bondager, or female worker for the farm, for whom he receives from the farmer 1s. a day for nine months, and 10d. a day for the three other months of the year; and both the hind and bondager receive a month's victuals during harvest. Wages for all kinds of servants and work-people have risen very high of late years. A man's wages for reaping is from 18s. a week to L.1; those of a female two or three shillings less. The smooth-edged hook, or sickle, is now very generally used, and it is thought that with this implement four good reapers will cut as much corn as six with the toothed hook; the latter, however, has the great advantage of arranging the corn more regularly in the sheaf. Scythes for cutting the grain crops are now pretty generally employed; and owing to the high price of manual labour, a strong desire is manifested to introduce reaping-machines. A few of these have been already in operation in the county; and that they are not more general is, we believe, owing chiefly to the fact that farmers are waiting in the expectation that the machine will soon undergo further improvements.

The towns are Kelso, Jedburgh, Hawick, and Melrose; and to the articles treating of these respectively reference must be made for an account of the different abbeys which give such an interest to most of them, of the ecclesiastical state, &c., and also of the manufactories which are concentrated in these places. Weekly markets are held in all the towns, as well as periodical fairs. That of Melrose has lately risen into great importance, and is now the principal market for lambs; Castleton in Liddesdale has also become important for its sheep markets; St Boswell's fair, which once possessed something of a national character, has now fallen off considerably; and from being a market for almost everything in ordinary use, is now chiefly confined to the sale of horses, cattle, sheep, and wool.

The county has now enjoyed for a considerable time the advantage of railway communication with the metropolis. The Hawick branch of the North British Railway enters

the county at Galashiels, and continues by Melrose, Newtown, Belses, and Hassendean, to the terminus at Wilton, which may now be said to form part of the town of Hawick. A branch leaves Newtown and joins the Berwick line at Kelso, thus opening up communication with the south; another branch connects the town of Jedburgh with this system. The want of a railway over the southern border, which might at once serve as a through line, and bring the coal and lime of England and Dumfriesshire into the interior of the county, has long been felt, and great exertions have recently been made to supply it. Two separate lines have been proposed for this purpose: one along the upper valley of the Teviot, by Langholm and Canonbie; the other running up the valley of the Slitrig, and continued by Riccarton, Newcastleton, and Longtown to the great southern line at Carlisle. After a struggle which has been scarcely equalled in the annals of railway partisanship, the last of these has been at length adopted; and the Border Union Railway has received the final sanction of the legislature while these pages are passing through the press.

The chief proprietors are the Dukes of Roxburgh and Buccleuch, Marquis of Lothian, Earl of Minto, Douglas of Cavers, Sir William Elliot, and various families of the name of Elliot, Ker, and Scott. Most of them have residences in the county. Of these, the most imposing is Fleurs, the residence of the Duke of Roxburgh, a palatial mansion standing on a beautiful terrace which overlooks the confluence of the Tweed and Teviot, and in the midst of a scene where most of the elements of a fine landscape are blended in rich profusion. Minto House is a very large modern mansion, without many architectural pretensions, surrounded with fine woods, and in the vicinity of the romantic Craigs, which are again crowned with their square tower, even more conspicuous than of old, adding an interesting feature to the landscape. The Lord Chancellor Campbell has built a considerable mansion at Hartrigg, which overlooks Jedburgh, and is the only residence of any note in that neighbourhood. But the whole valleys of the Tweed and Teviot are studded with handsome mansions; and the county can claim Abbotsford, although standing near its verge, which has long been an object of such general interest.

The county is divided into 34 parishes. The progress of the population will be seen from a comparison of the census returns at the four following decennial periods:—1821, 40,892; 1831, 43,663; 1841, 46,025; 1851, 51,642. There were in 1851 in all 67 places of worship, with 28,259 sittings, in the county. Of the former, 22 belonged to the Established Church, 14 to the Free Church, 15 to the United Presbyterians, 7 to the Independents, 3 each to the Episcopalians and Baptists, 2 to the Original Seceders, and 1 to the Roman Catholics. In the same year it contained 74 public and 32 private schools, attended by 7704 scholars. The valued rent in 1674 was L.314,663; and the annual value of real property, as assessed in 1843, L.264,321. The parliamentary constituency in 1854 was 1896, and there has been a decrease since.

There is scarcely any county in Scotland possessed of a more national interest than Roxburghshire. Lying on the verge of the two kingdoms, it has been the theatre of many a hard-fought field, and of many a scene of rapine and plunder during the endless wars that so long distracted the two kingdoms. The events that have transpired in it constitute a large share of border history, and that is so closely connected with the history of Scotland that we cannot here enter into any details. No part of the country presents so rich a field in the remains of feudal power and the means of national defence; even the seats of royalty are not wanting. It may be considered unrivalled in the relics of monastic magnificence, institutions which, however much we may despise them in the periods of their decay, were

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once the seats of learning, the fountains of knowledge, and the most powerful agents in the civilization of a barbarous people. The district teems with traditional stories and legends, many of which have been embodied in poetry, which has become a valuable part of our national literature. This county, therefore, has in former times always exercised great influence on the national character, whether considered in a political, religious, literary, or social point of view; and the number of celebrated men that have sprung from it in modern times, may be taken as a proof that it has not declined from its former character.

(J—S D—N.)

ROXBURY, a town of the United States of North America, Norfolk county, Massachusetts, forming a suburb of Boston, from which it is distant 3 miles to the S.W., and reached by four broad streets. The ground on which it stands is very varied in its nature, and some parts are so elevated as to command a fine view of the city. Most of the houses are well built, and surrounded by extensive gardens or shrubberies. Roxbury is the favourite residence of many Boston merchants. It has, however, branches of trade and manufactures proper to itself; the latter including steam and fire engines, iron castings, carpets, leather, &c. There are also here banks, insurance offices, and newspaper offices. The Forest Hill cemetery in this town is a large and well laid-out piece of ground. Roxbury was incorporated in 1630, the same year as Boston, but not chartered as a city till 1846. Pop. (1850) 18,273; (1853) about 22,000.

ROY, MAJOR-GENERAL WILLIAM, a famous geodesist, was employed in some of the great national trigonometrical measurements which were made during last century. In 1746 and 1747, while colonel of artillery, he surveyed and mapped out the whole mainland of Scotland. In 1784 he measured a base on Hounslow Heath, designed to be the germ of all subsequent scientific surveys of the United Kingdom. His aid was also employed in 1787 and 1788 in ascertaining, by observations from the above-mentioned base, the relative positions of the French and English royal observatories. He had completed this undertaking, and was just finishing an account of it for the *Philosophical Transactions* when he died in 1790. Besides several papers on his own operations in the *Philosophical Transactions*, General Roy is the author of a book entitled *The Military Antiquities of the Romans in North Britain, &c.*, London, 1793.

ROYAL (Fr. *royal*, Lat. *regalis*), belonging to a king. Thus we say royal family, royal assent, royal exchange, royal academy, &c.

Royal Family.—The first and most considerable branch of the king's royal family, regarded by the laws of England, is the queen.

1. The Queen of England is either queen-regent, queen-consort, or queen-dowager. The queen-regent, regnant, or sovereign, is she who holds the crown in her own right; as Queen Elizabeth, Queen Anne, and our present sovereign Queen Victoria. The queen consort is the wife of the reigning king; and she by virtue of her marriage is participant of divers prerogatives above other women. The husband of a queen regnant, as Prince George of Denmark was to Queen Anne, is her subject, and may be guilty of high treason against her; but in the instance of conjugal fidelity he is not subjected to the same penal restrictions. Hence, if a queen-consort is unfaithful to the royal bed, this may debase or bastardize the heirs to the crown; but no such danger can be consequent on the infidelity of the husband to a queen-regnant. A queen-dowager is the widow of the king, and as such enjoys most of the privileges belonging to her as queen-consort. But it is not high treason to conspire her death, or to violate her chastity; because the succession to the crown is not thereby endangered. Yet still, *pro dignitate regali*, no man can marry

a queen-dowager, without special license from the king, on pain of forfeiting his lands and goods.

2. The Prince of Wales, or heir-apparent to the crown, and also his royal consort, and the princess-royal or eldest daughter of the king, are likewise peculiarly regarded by the laws. For, by stat. 25 Edward III., to compass or conspire the death of the former, or to violate the chastity of either of the latter, is as much high treason as to conspire the death of the king or violate the chastity of the queen; and this upon the same reason as was before given, because the Prince of Wales is next in succession to the crown, and to violate his wife might taint the blood-royal with bastardy. And the eldest daughter of the king is also alone inheritable to the crown on failure of issue-male, and therefore more respected by the laws than any of her younger sisters; inasmuch that, upon this, united with other principles, whilst our military tenures were in force the king might levy an aid for marrying his eldest daughter, and her only. The heir-apparent to the crown is usually made Prince of Wales and Earl of Chester, by special creation and investiture; but, being the king's eldest son, he is by inheritance Duke of Cornwall without any new creation.

3. The rest of the royal family may be considered in two different lights, according to the different senses in which the term royal family is used. The larger sense includes all those who are by any possibility inheritable to the crown. Such, before the Revolution, were all the descendants of William the Conqueror, who had branched into an amazing extent by intermarriages with the ancient nobility. Since the Revolution and Act of Settlement it means the Protestant issue of the Princess Sophia, now comparatively few in number, but which in process of time may possibly be as largely diffused. The more confined sense includes only those who are in a certain degree of propinquity to the reigning prince, and to whom therefore the law pays an extraordinary regard and respect; but after that degree is past, they fall into the rank of ordinary subjects, and are seldom considered any further unless called to the succession upon failure of the nearer lines. For though collateral consanguinity is regarded indefinitely with respect to inheritance or succession, yet it is, and can only be, regarded within some certain limits in any other respect, by the natural constitution of things and the dictates of positive law.

By statute 12 Geo. III., c. 11, no descendant of the body of George II. other than the issue of princesses married into foreign families, is capable of contracting matrimony without the previous consent of the king signified under the great seal; and any marriage contracted without such a consent is void. It is provided, however, that such of the said descendants as are not above twenty-five, may, after a twelvemonth's notice given to the king's Privy Council, contract and solemnize marriage without the consent of the crown, unless both houses of Parliament shall, before the expiration of the said year, expressly declare their disapprobation of such intended marriage; and all persons solemnizing, assisting, or being present at any such prohibited marriage, shall incur the penalties of the statute of *præmunire*.

ROYAL OAK, a fair spreading tree at Boscobel, in the parish of Donnington in Staffordshire, the boughs of which were once covered with ivy, in the thick of which King Charles II. sat in the day-time with Colonel Careless, and in the night lodged in Boscobel House. They are mistaken who speak of it as an old hollow oak, it being then a gay flourishing tree, surrounded with many more. Its poor remains were fenced in with a handsome wall, with this inscription in gold letters: *Felicissimam arborem quam in asylum potentissimi regis Caroli II. Deus op. max. per quem reges regnant, hic crescere voluit.*

ROYER-COLLARD, PIERRE PAUL, a philosopher and statesman of France, who, by his noble character even

Royal Oak
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Royer-Collard.

more than by his writings, merited the esteem of his contemporaries, over whom he exercised a great influence, was born on the 22d of June 1763, at Somepuis, near Vitry-le-Français. Having received his elementary education at a school of which his maternal uncle was the superior, he, at the age of twenty, became a member of the bar in Paris. On the breaking out of the Revolution he embraced the reform doctrines, and attached himself, with all the ardour of his nature, to the principles of that strange time. On the taking of the Bastille he was chosen a member of the first organized municipality, and he remained secretary to that body to the 10th of August 1792. Royer-Collard, with the quick sagacity of his nature, saw that no bounds were to be set to the rage of the predominant revolutionists, and he resolved, while there was yet time, to retrace his steps. He accordingly separated himself for ever from the fierce and fiery revolutionists, and joined the moderate monarchical party. In 1797, perceiving the absolute impossibility of establishing in France a republican form of government, he put himself in communication with the members of the royalist committee established in Paris. When Napoleon was elevated to the empire, the royalist agents disappeared, and Royer-Collard, renouncing politics, devoted himself entirely to the study of literature and philosophy. He meditated deeply on Pascal, Corneille, Bossuet, and Racine; he read and re-read La Bruyère, and he studied Milton without ceasing. Thucydides was the book of his old age, and Plato the book of his entire life. The *philosophes* of the eighteenth century, with their eternal cry about Sensationalism, and its competency to explain all human knowledge, he profoundly disbelieved; but as yet he saw no genuine guidance from that dreary desolation in which these *savans* would have immersed him. There chanced to meet his eye one day, on a bookseller's stall, a volume which he felt a strong desire to read. He bought the book, and went straight home to peruse the *Inquiry into the Human Mind on the Principles of Common Sense* of Dr Thomas Reid. Charmed with the sagacity of the Scottish philosopher, he procured his *Intellectual Powers*; and these, as well as his *Active Powers*, afforded him the food he was in search of. From that day Reid became a household word among the philosophers of France, and before many years Jouffroy presented the *Œuvres de Reid* to the French public. Kant, Descartes, Plato, and Schelling, the other philosophers to whom modern French eclecticism owes its origin, had not been as yet expounded to the French students by M. Cousin. Royer-Collard embraced, accordingly, the spiritualism of Reid, and with no very profound philosophical reading commenced in 1810 to expound him. "That distinguished philosopher [Royer-Collard]," says Sir William Hamilton, "has, however, placed too great a reliance upon the accuracy of Reid." (Reid's *Works*, p. 262.) He had been appointed professor of history and of philosophy at the normal school; and in 1813 he delivered a remarkable discourse upon philosophical studies, which was destined to be his last. The events of 1814 came to carry off this earnest philosopher from his admiring pupils of the normal school. The following year he was chosen deputy of the Marne, was made a councillor of state, director of the library, and president of the commission of public instruction. In these various departments he reformed abuses, introduced important changes and ameliorations; and so popular had he become, that in 1827 no fewer than seven colleges chose him at once as their deputy. The same year he was admitted a member of the French Academy in the room of the great geometer Laplace. He led the discussion on the constitution in the Chamber of Peers in 1831; and after the triumph of the coalition in 1839 he finally retired from public life. Royer-Collard, after spending an honourable career both as a philosopher and as a statesman, died at Châteauevieux, near

Saint-Aignan, on the 2d September 1845, in his eighty-second year. His philosophical papers will be found published in his *Fragments*.

ROYLE, JOHN FORBES, a distinguished botanist, was born in the year 1799, and was educated for the medical profession at London under Dr Anthony Todd Thomson. Entering the service of the East India Company, he applied himself to the study of the botany of Hindustan. For this object the superintendentship of the botanic gardens at Saharunpore afforded him many facilities. The greatest diligence was employed in making a collection of plants. Their medicinal properties especially were investigated. Other natural products were likewise examined by his all-observant eye. The result of all these labours were published on his return to England in a work entitled *Illustrations of the Botany and other Branches of the Natural History of the Himalaya Mountains*. The rest of Dr Royle's life after his settlement in London was characterised by great and multifarious activity. He discharged till 1856 the professorship of materia medica in King's College. A *Manual of Materia Medica* and other separate works were published by him. Several papers from his pen were contributed to the *Penny Cyclopædia* and to Kitto's *Dictionary of the Bible*. Above all, it was his great aim to bring the natural history of Hindustan before the public. He published a work *On the Productive Resources of India* in 1840, and another *On the Fibrous Plants of India* in 1855. He read before the British Association papers *On the Cultivation of Cotton*, *On the Cultivation of Tea in the East Indies*, and on other kindred subjects. He also took an active part in arranging the Indian department in the Great Exhibition of 1851. Dr Royle, at the time of his death, on January 2, 1858, was a fellow of the Royal Linnæan and Geological societies.

ROYSTON, a market-town of England, on the borders of Cambridgeshire and Hertfordshire, in a bleak country, in the midst of downs, 13 miles S.S.W. of Cambridge. It has a fine modern market-house, a church that once belonged to a priory of St Augustine, places of worship for Independents and Unitarians, several schools of various kinds, and a mechanics' institute, provided with a library. Beneath the market-house was discovered in 1742 a curious old cavern, cut out in the chalk of the district, in the shape of a bell, and curiously carved. Malting, brewing, &c., form the occupations of the inhabitants; and there is some trade in corn. Pop. (1851) 2061.

ROYTON, a village of England, Lancashire, in a deep valley, 2 miles N. of Oldham. The streets are regular and the houses well built, so as to have given the place of late years much of the aspect of a town. It has a chapel belonging to the Established Church, places of worship for Independents, Methodists, and Quakers; as well as a national school. Cotton and flannel are made here; and the coal-pits and quarries in the vicinity employ many of the inhabitants. Pop. 6974.

RSHEV-WLADIMIROV, a town of European Russia, capital of a circle in the government of Twer, on the Volga, 74 miles W.S.W. of Twer. It is well built, and contains many churches, schools, and benevolent institutions. Gardening, ship-building, and harness-making are carried on here; and there is an active trade in the produce of the surrounding country. Pop. (1855) 16,139.

RUBBER, INDIA. See CAOUTCHOUC.

RUBENS, SIR PETER PAUL, the most distinguished painter of the Flemish school, was the fourth son and sixth child of John Rubens, a lawyer of some celebrity, and Maria Pypelinx, and was born at Siegen on the 29th of June 1577. As this was the festival of St Peter and St Paul, the parents agreed that their infant son should bear the name of those illustrious saints. The family re-settled at Cologne the next year after the birth of Peter Paul,

Rubens.

where they afterwards resided until the death of his father, which occurred on the 18th of March 1587. On the following year his mother, after an exile of twenty years from her hereditary abode, resolved to return to Antwerp, which had in 1585, after a twelvemonth's siege, surrendered to the dominion of Spain. The future painter, who was now ten years of age, probably left Cologne with some boyish regrets; for in speaking of it afterwards in a letter dated 15th July 1637, he says,—“I have a great affection for the city of Cologne, where I was brought up until I was ten years of age.” Rubens commenced his studies with ardour on reaching Antwerp, and seems to have prosecuted them with very marked success. His mother placed him with the Countess of Lalaing as page; but this was much too frivolous an occupation for Peter Paul, and, returning to his mother very shortly after, beseeched her to allow him to become a painter. As the boy had displayed great quickness in the acquisition of knowledge, and particularly in the department of languages, his mother and guardians had destined him to follow the profession of his father. He had certainly displayed quite an uncommon talent for drawing, however; and this peculiar gift, combined with his earnest solicitations, and also with the melancholy fact, that the family fortune had been very much reduced by the late wars, induced his mother, although it must have been somewhat galling to the maternal pride, to place young Rubens, then in his thirteenth year, with Tobias Verhæght, or more correctly Van Hæght, a skilful landscape-painter, where he might acquire the rudiments of his art. He remained but a short time with his first master, and subsequently joined the historical painter Adam Van Noort, or Oort, as notorious for his dissolute life as he was distinguished for his exquisite colouring. Rubens suffered his vulgar habits and churlish disposition for a considerable time; but human patience gave way at last, and he was compelled to leave him. He now, in his nineteenth year, had recourse to Otto Van Veen, usually known as Otto Venius, “the Flemish Raphael,” then court painter to the Infanta Isabella and her husband the Archduke Albert. Here Rubens, for the first time, found all that he most desired. His master was a man of gentle and polished manners, very willing, and thoroughly capable of giving instructions both in the scientific knowledge and in the minor details of the painter's art. The progress of Rubens during this period was quite unexampled; and in 1600, when he had hardly completed his twenty-third year, Venius advised him to proceed to Italy, and generously presented him to the Archduke Albert and the Infanta, who furnished him with letters of recommendation to smooth his way to that land of art. He had already executed (Descamps, *Les Vies des Peintres*, i., p. 323) several pictures of considerable value; among others, the “Adoration of the Three Kings,” a “Holy Trinity,” and a “Dead Christ.”

On the 9th of May 1600 Rubens set out for Italy, and made Venice his first halting-place. Here he studied and copied the works of Titian, Paul Veronese, and other eminent masters who were likely to assist him in the cultivation of his decided faculty for colour. While busily occupied with these engagements, he became known to Vincenzo II. de Gonzaga, Duke of Mantua, a distinguished patron of literature and the fine arts, who, upon his presenting his letters of recommendation from the archduke, appointed him gentleman of the chamber and court painter. This distinction was precisely what Rubens needed, for it afforded him leisure to study the immense collection of art treasures in Mantua, where the spirited and beautiful compositions of Giulio Romano, and the severe dignity of Andrea Mantegna, seem particularly to have delighted him. Returning from Rome, whither he had gone upon a short visit, he was employed by the Duke of Mantua in 1605 upon a political mission to Philip III. of Spain. It is

obvious that Rubens, besides possessing splendid talents as a painter, must have likewise displayed no ordinary degree of culture, combined with wonderful politeness of manners and refinement of address, ere he could have gained the entire confidence and good-will of the Duke Vincenzo. But Rubens was a man of genius, and, as Sir Dudley Carlton styled him in 1618, he was “the prince of painters and of gentlemen.” Very handsome and dignified in his person, with a fine complexion, glossy brown hair, eyes of “a golden embrownment,” that beamed with a softened fire, a captivating manner, and an agreeable voice; with a sound and clear intellect, with a splendid imagination that much study had enriched and controlled, with a fine turn for humour, and with the most complete self-command,—is it to be wondered at that he almost enchanted those with whom he came in contact? and is it strange that the Duke Vincenzo was among the number? Nor did his mission to Madrid belie the duke's sagacity. He was received with all the grace accorded to an ambassador, and with all the interest attendant on a splendid artist. He painted portraits of the king, many of the Spanish nobles, besides numerous historical pieces. His mission fulfilled, he returned again to Mantua, and persuaded the duke to allow him again to visit Rome. While in the Eternal City he copied the principal paintings of the great masters, and executed three pictures for his former patron the Archduke Albert, designed to adorn the church of Santa Croce della Gerusalemme. In the beginning of the year 1607 he left Rome, and proceeded first to Milan and afterwards to Genoa, where his fame having preceded him, he was received in the most princely manner by the nobles and first men of the city. The beauty of the place, the mildness of the climate, and the great courtesy of the inhabitants, induced him to prolong his stay. Here he painted two of his best works for the church of the Jesuits, besides making numerous drawings and plans of the pompous palaces and fantastic buildings of the city, a collection which he subsequently engraved at Antwerp, and published under the title of *Palazzi antichi di Genova, raccolti e designati da Pietro Paolo Rubens*, 1622, 2 vols. large folio, with 139 copperplates.

Rubens was interrupted in his interesting studies in the month of November 1608 by the alarming intelligence of his mother's serious illness. He hastened to Antwerp, but before he arrived she was dead. Overwhelmed with grief, he withdrew to the abbey of St Michael, and there he remained for four months in the deepest seclusion, pouring out his woes upon his canvas, with nothing to console him but his pencil and a few choice books. Strange that this man, who had just captivated courts by the splendour of his presence, and won their admiration by the dazzling qualities of his genius, should here, on the death of a woman of seventy, immerse himself within the walls of an abbey, and spend four weary months in quite unavailing tears. We must recollect that this aged person was his own mother, dearer to him than than all else the world knew, and that Rubens carried the qualities of genius in his heart as well as in his head. That genius is always saturated with the moral nature of a man is no less true than that the moral nature of Rubens was superlatively fine. After raising a tomb to the memory of his mother, he resolved to set out for Mantua; but the Archduke Albert would not hear of his leaving Flanders. He was sent for to attend upon the court at Brussels, received a pension, and was made court painter. He was accordingly persuaded to remain in his native land; and to avoid the distractions of a court in the prosecution of his high designs, he asked permission to choose Antwerp as his place of residence, a request that was readily granted him. He accordingly settled down in that ancient city; and on the 13th of October 1609 he was married, in the abbey church

Rubens.

Rubens. of St Michael, to Isabella Brant, daughter of a magistrate of Antwerp. By this wife Rubens had two children: Albert and Nicolas, to the former of whom the Archduke stood sponsor, and gave him his own name. As a still further promotion of his comfort and happiness, he, in 1610, built a princely house after the Italian style, from designs of his own, and adorned its walls with those priceless works of the great masters which he had collected in Italy. Rubens, who was exceedingly regular and temperate in his habits, had great powers of application. As he prosecuted his art he had always a person employed to read to him from some favourite classical author. The writers which delighted him most were Livy, Plutarch, Cicero, and Seneca. His excellent acquaintance with the Latin, besides other modern languages, must have been of singular advantage to him. All the towns of the Netherlands, all the cities of Italy, rivalled each other in their eagerness to possess pictures from the pencil of this rising Flemish master. Envy, that invariable shadow of greatness, projected its sombre outline occasionally over the figure of Rubens; but, turning on it with his gay humour and merry laugh, it swiftly slunk off to the halls of Orcus and old Night. It was about this time that, solicited by an English alchemist, named Brendel, for money to aid him in his pursuit of the philosopher's stone,—“You are come,” said Rubens, taking him into his study, “twenty years too late; for it was then with this palette and these brushes that I found the philosopher's stone.” It would have been well for Vandyck if he had listened to this advice, who allowed himself to be robbed of a great part of his fortune by these silly projects of the gold-seeker.

One of the first compositions of Rubens on his settling at Antwerp was an altar-piece for the private chapel of the archduke, representing “A Holy Family;” and art-critics are agreed that of all his pictures of this class, this “Holy Family” bears away the palm. It was so much admired that the members of the fraternity of St Ildefonso had an altar-piece painted by Rubens for the chapel of the order of St James on the Caudenberg, near Brussels, which was one of the most admirable paintings that ever came from his hands. As a fine specimen of the strongly-marked outlines, glowing colouring, and careful execution with which he handled portraits at this period, there is the celebrated picture in the Munich gallery representing himself and his wife. The free, brilliant, and fantastic style of his later years is hardly at all perceptible in this admirable picture. Such works as “The Descent from the Cross,” executed for the Antwerp Arquebussiers as an indemnification for a threatened lawsuit, raised the painter's reputation to the very highest pitch; and Marie de Medicis, the widowed queen of France, wishing to adorn the Luxemburg palace, chose Rubens, in preference to all other artists of his day, to perform this great undertaking. He executed twenty-one compositions for this Luxemburg gallery, besides a series of portraits in his own studio at Antwerp. In this great enterprise he received material aid from his pupils and assistants, many of whom subsequently rose to eminence in their profession. The most celebrated among his pupils were Vandyck, David Teniers, and Jacob Jordaens; and the most distinguished of his assistants, who usually painted backgrounds, animals, and other accessories, were Snyders, Wildens, and Van Uden. This work completed, probably with too great haste (for the taste of some of the representations is very questionable, and disagreeably Flemish), the queen and her court at Paris testified their high approbation. Rubens, having made the acquaintance of the Duke of Buckingham at Paris, that nobleman bought from him the whole of his collection of works of art for the sum of 100,000 florins, or L.10,000. On the 29th of September 1626 Rubens lost his wife; and to divert his mind from this heavy

domestic affliction he undertook a journey to Holland, and visited all the painters of note under the guidance of young Joachim Sandrart.

Rubens.

In 1627 Rubens laid aside his brush and palette for a time, and engaged in a delicate political mission to the court of Spain in behalf of his country. His stay at Madrid being somewhat protracted, he found leisure to execute several excellent pictures. It was on occasion of this visit to the Spanish capital that Rubens made the acquaintance of the youthful Velasquez, with whom he had previously corresponded. It was this “Spanish Vandyck” who escorted Rubens through the art treasures of the Escorial, and with whom, during his stay in Spain, the great Fleming spent many happy hours. Philip IV. of Spain made him secretary to the Privy Council, an office which in 1630 was granted in reversion to his son Albert by letters-patent, and he returned to Brussels with entire success. He had not long been in the Netherlands when occasion was found in 1629 for another diplomatic mission to the English court. Rubens set out as the herald of peace from the courts of Spain and Flanders, and on his arrival in London received a most gracious reception from Charles I. His splendid artistic genius, his cultivated intellect, his refined manners, all contributed to win the regard and admiration of the king. Meanwhile, he painted an allegory of the blessings of peace and war, a “St George and the Dragon,” and an “Assumption of the Virgin” which he presented to the king. He was likewise commissioned to paint the allegorical history of James I. for the banqueting-hall, Whitehall, an engagement which he executed on his return to Antwerp, completed them in 1634, and sent them to England in 1635. (Sainsbury's *Rubens*, p. 184.) He likewise received the honorary distinction of M.A. from the university of Cambridge in the month of September 1629. The tedious negotiations with Cottington being brought to a close, the ambassador prepared for taking leave. Before doing so, however, the king, to mark the distinguished opinion which he entertained of the great artist, had him knighted in Whitehall, presented him with the royal sword, and attaching the regal portrait to a rich gold chain, suspended it round the neck of Sir Peter Paul Rubens. Thus loaded with honours, the ambassador sailed away, and returning probably by way of Madrid (see Sainsbury's *Original Papers relating to Rubens*, London, 1859), where he had renewed favours heaped upon him, he presented himself to the Infanta Isabella at Brussels, who gave him a most gracious reception. On the 6th of December 1630, Rubens, then in his fifty-fourth year, married Helena Forman or Fourment, his niece, a girl of sixteen, and possessed, according to all accounts, of remarkable beauty. Her portrait, which served him frequently as a model, is found in many of his historical pieces. Returning to Antwerp in 1631, Rubens again resumed his favourite occupation with renewed vigour. He was made director of the School of Art there, and on his installation presented the academy with a beautiful picture of the “Virgin with the infant Jesus and Joseph.” The studio of Rubens now presented a most animated scene. The most considerable princes of Europe vied with each other in obtaining works from the hand of the great Fleming; and in order to gratify these crowned heads, he contented himself with merely superintending the execution of his pictures, and by putting the finishing touches to the whole. This circumstance must materially detract from the individuality of those paintings, however it may have astonished the recipients of them at the time. His artistic occupations were again interrupted in 1633 by another diplomatic embassy to Holland. The treaty of peace was suddenly cut short by the death of his patron, the Infanta Isabella, in 1633, who had survived her husband upwards of ten years. In 1635 the busy hand of the painter, that for long

Rubinsk
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Ruddiman.

years had seldom been stayed, was now destined to receive a severe check, reminding him in the most emphatic manner that he must take in his canvas and prepare for the coming storm. He was attacked by fits of the gout, which frequently assailing his hands, rendered him quite incapable of lifting his brush. He now confined himself to small landscapes, many of which he finished at his country residence at Stein, near Mechlin. He lingered on for the next five years, the fits of his disorder becoming more frequent and violent, till, in the beginning of 1640, he fell a victim to this torturing malady in the sixty-third year of his age. Thus was lost to the world, not at a very mature age, one of the very greatest men whom it had known. "Rubens," says Smith in his *Catalogue Raisonné of the Works of Eminent Painters*, "possessed a more universal genius, a more extensive knowledge of all the principles of the art, and a greater power in the practice of them, than any other painter who has hitherto existed." (For a critical estimate of the paintings of Rubens, the reader is referred to the articles ARTS, *Fine*; and PAINTING. See also *Original Papers relating to Rubens*, by Sainsbury, London 1859; Waagen's *Life of Rubens*, 1840; Michel, *Histoire de la Vie de P. P. Rubens*, 1854; Michiels, *Rubens et l'Ecole d'Anvers*, 1854.) (J. D—S.)

RUBINSK, or RYBINSK, a town of European Russia, capital of a circle of the same name, in the government and 52 miles W.N.W. of Jaroslav, at the confluence of the Rubinska with the Volga. It is one of the chief river-ports in the empire, and the great central point of the inland trade of Russia: the great canals which unite the waters of the Baltic, the White, and the Caspian seas join in its vicinity. It has two cathedrals, besides five other churches, several schools and benevolent institutions, a good stone quay, and seven bridges. There is a large market-place, where an annual market is held for a fortnight in June and July. There are linen factories, spinning-mills, tanneries, and other establishments. Grain is here the staple of commerce. Goods are transferred at Rubinsk from the larger to the smaller vessels that navigate the Volga, or *vice versa*. Pop. (1855) 8751.

RUBRIC (Lat. *ruber*, red), in the canon law, signifies a title or article in certain ancient law-books, and which was so called because written, as the rules and regulations in the ancient liturgies are, in red letters.

RUBY. See MINERALOGY.

RUDDER. See SHIP-BUILDING.

RUDDIMAN, THOMAS, one of the most eminent grammarians which Scotland has produced, was the son of a farmer, and was born in October 1674 at Raggel, in the parish of Boyndie and county of Banff. Ruddiman was instructed in the principles of Latin grammar at the parish school of Boyndie, where he made astonishing progress. The first book which charmed the opening mind of Ruddiman was Ovid's *Metamorphoses*; nor did he cease to relish the beauties of this author when his judgment was mature, for during the rest of his life Ovid was his favourite poet. At the age of sixteen he became anxious to pursue his studies at the university; but his father, thinking him too young, opposed his inclination. Hearing of the competition trial which was annually held at King's College, Aberdeen, for a certain number of bursaries on the foundation of that university, Ruddiman's ambition was kindled. Without the knowledge of his father, and with only a single guinea in his pocket, which his sister had privately given him, he set out for that place. On the road he was met by a company of gipsies, who robbed him of his coat, his shoes, his stockings, and his guinea. But this misfortune did not damp his enterprising spirit. He continued his journey to Aberdeen, presented himself before the professors as a candidate, and, though he had neither clothes to give him a decent appearance nor friends to recommend him, he gained

the first prize. After attending the university for four years, Ruddiman, he obtained the degree of Master of Arts, an honour of which he was always proud.

Ruddiman was soon after engaged as a tutor to the son of Mr Robert Young of Auldbar, the great-grandson of Sir Peter Young, who under the direction of Buchanan had been preceptor of James VI. His income here must have been very small, or his situation unpleasant, for within a year he accepted the office of schoolmaster in the parish of Laurencekirk. When Ruddiman had spent three years and a half in this employment, the celebrated Dr Pitcairne happening to pass through Laurencekirk, was detained in that village by a violent storm. Pitcairne wanting amusement, inquired at the hostess if she could procure any agreeable companion to bear him company at dinner. She replied that the schoolmaster, though young, was said to be learned, and, though modest, she was sure he could talk. Pitcairne was delighted with the conversation and learning of his new companion, invited him to Edinburgh, and promised him his patronage.

When Ruddiman arrived in Edinburgh he was appointed assistant-keeper of the Advocate's Library under Mr Spottiswoode, the principal librarian. His salary for executing this laborious office was L.8, 6s. 8d. He managed to eke out this small allowance by giving private lessons in Latin, and by preparing the *Introductio* of Sir Robert Sibbald, and Sir Robert Spottiswoode's *Præctiques*, for the press. In 1707 he commenced auctioneer, an employment not very suitable to the dignified character of a man of letters. But to this occupation he was probably impelled by necessity. Ruddiman had a family, and seems to have been a stranger to that foolish pride which has seduced some literary men into the opinion, that it is more honourable to starve than have recourse to an occupation which men of rank and opulence are accustomed to despise. The same year he published an edition of *Voluseni de Animi Tranquillitate Dialogus*, to which he prefixed the life of Volusenus. Volusenus or Wilson was a learned Scotchman, and had the honour to be patronized by Cardinal Wolsey. In 1709 he published *Johnstoni Cantici Solomonis Paraphrasis Poetica*, and *Johnstoni Cantica* with notes, which he dedicated in verse to his friend and patron Dr Pitcairne. The philological talents of Ruddiman were next directed to a more important object, in which they became more conspicuous and useful. Freebairne the bookseller proposed to publish a new edition of the Scottish translation of Virgil's *Æneid* by Gawin Douglas, Bishop of Dunkeld. Of the contributions which some eminent characters of the age presented, the most valuable were supplied by Ruddiman. He corrected the work and wrote the glossary; and there is strong reason to believe that he was the author of the forty-two general rules for assisting the reader to understand the language of Douglas. To those who wish to be acquainted with the ancient language of this island the glossary will be a treasure, as it forms a compendious dictionary of the Anglo-Saxon. The reputation of Ruddiman had now extended to a distance. He was invited by the magistrates of Dundee to be rector of the grammar-school of that town; but the faculty of advocates, anxious to retain him, augmented his salary to L.30, 6s. 8d. sterling, and he declined the offer. In 1711 he assisted Bishop Sage in publishing Drummond of Hawthornden's works, and performed the same favour to Dr Abercrombie, who was then preparing for the press his *Martial Achievements*. In 1713 he was deprived of his friend Dr Pitcairne. On this occasion he testified all the respect which friendship could inspire to the memory of his deceased patron and his surviving family. He composed Pitcairne's epitaph, and conducted the sale of his library, which was disposed of to Peter the Great of Russia.

In 1714 the *Rudiments of the Latin Tongue* were pub-

Ruddiman. lished. Eighteen or nineteen Latin grammars, composed by Scotchmen, had appeared before this period; yet such is the intrinsic value of this little treatise that it soon superseded all other books on the subject. It has also been translated into various other languages. He was next called upon to publish the works of Buchanan. The value of these he enhanced by an elaborate preface, his *Tabula Regum Scotiæ Chronologica*, and *Proprium Nominum Interpretatio*. Ruddiman also added a learned dissertation, entitled *De Metris Buchananæis Libellus*, and subjoined annotations, critical and political, on the history of Scotland. As he espoused the cause of Queen Mary, he raised against himself a host of enemies. He had now been so long accustomed to superintend the press that he was led to form the plan of erecting a printing-office himself. Accordingly, in the year 1715 he commenced printer, in partnership with his brother Walter, who had been regularly bred to the business; and some years afterwards he was appointed printer to the university, along with James Davidson, bookseller. The first literary society formed in Scotland was instituted in the year 1718. Ruddiman and the masters of the High School had the honour to be the founders of it. They were afterwards joined by Lord Kames.

In 1725 was published the first part of his *Grammaticæ Latine Institutiones*, which treated of etymology. The second part, which explained the nature and principles of syntax, appeared in 1731. Of this work he published an abridgment, to which he subjoined an extract on prosody.

Ruddiman next engaged in the management of a newspaper, an employment for which his genius and industry seemed to render him well qualified. But those who should expect either much information or amusement from this publication would perhaps be greatly disappointed. The newspaper which he conducted was the *Caledonian Mercury*, and was established in 1720 by William Rolland, a lawyer. This paper continued in the family of Ruddiman till the year 1772, when it was sold by the trustees of his grandchildren. After the death of Spottiswoode, Ruddiman was appointed keeper of the Advocate's Library, though without any increase of salary. On the 1st of October 1735 it appeared, from an exact statement of his affairs, that he was worth L.1882, 5s. 2d. sterling; and on the 20th of May the ensuing year his wealth had increased to L.1985, 6s. 3d. sterling. In 1710 he had valued his effects at L.24, 14s. 9d. sterling. In 1739 he published *Selectus Diplomatum et Numismatum Scotiæ Thesaurus*. This work was projected and begun by Anderson, and hence called Anderson's *Diplomata*, but was finished by Ruddiman. The preface, which is an excellent commentary on Anderson's performance, was written by Ruddiman, and displays a greater extent of knowledge than any of his other productions. He retired to the country during the summer of 1745; and whilst his fellow-citizens were spilling each other's blood, he was more happily engaged in writing *Critical Observations on Burmann's Commentaries on Lucan's Pharsalia*.

During the last seventeen years of his life Ruddiman was almost incessantly engaged in controversy. To this he was in some measure compelled by the violent attacks which some critics of the times had successively made upon his works. He died at Edinburgh on the 19th of January 1757, in the eighty-third year of his age, and was buried in the Greyfriars churchyard, without any monument to distinguish his grave. He was three times married, but left behind him only one daughter, Alison, who was married in 1747 to Mr James Stewart. He is supposed to have died worth L.3000 sterling.

He was of the middle size, of a thin and straight make, and had eyes remarkably piercing. Of his talents and learning his works afford the most satisfactory proofs. His memory was tenacious and exact; and he was so great a

master in the Latin language that he has been equalled by none since the days of Buchanan. Ruddiman has left a character unstained by vice, and distinguished by many virtues.

RUDING, ROGERS, a great authority on the national coinage, was born in Leicestershire in 1751, and was educated for the church at Merton College, Oxford. After settling down in 1793 as vicar of Maldon and Chessington in Surrey, he became engrossed with antiquarian researches. In the course of these studies his attention was particularly directed to the subject of the coinage. He saw its imperfections and its evils, and he resolved to try if he could bring about a remedy. His first attempt was a work published in 1798, and entitled *A Proposal for restoring the Ancient Constitution of the Mint so far as relates to the expense of Coinage; together with a Plan for the Improvement of Money, and for increasing the difficulty of Counterfeiting*. This was followed up by the commencement of a more thorough effort. All his antiquarian lore and power of investigation were employed to lay bare the abuse, from its origin to its latest development. In an accurate and minute survey, he showed how the imperfections of the coinage arose and were continued, how it became easy to counterfeit, how vain were the severest penalties enacted against forgery, and how that crime might be prevented by counteracting and weakening the temptation. The book was completed and published in 1817, in 4 volumes, 4to, under the name of *Annals of the Coinage of Britain and its Dependencies, from the earliest period of authentic history to the end of the fiftieth year of his present Majesty King George III.* A second edition was soon afterwards issued, comprising a continuation of the history down to the year 1818. Ruding, at his death in 1820, was a fellow of the Society of Antiquaries. He had also been a contributor on the subject of coins to the *Gentleman's Magazine*.

RUDOLSTADT, the capital of the principality of Schwartzburg-Rudolstadt, in a valley on the left bank of the Saale, 16 miles S. of Weimar. The castle of Heideksburg, where the prince resides, occupies the summit of a hill, about 200 feet above the river, and contains some good paintings and plaster casts. In the town are a theatre, a museum of natural history, and several benevolent and other establishments. Pop. 4000.

RUE, CHARLES DE LA, a French orator and poet, was born at Paris in the year 1643. He was educated at the college of the Jesuits, where he afterwards became professor of humanity and rhetoric. At an early age his talent for poetry disclosed itself. In 1667, when he was only twenty-four years old, he composed a Latin poem on the conquests of Louis XIV.; which was so much esteemed by Corneille that he translated it into French, presented it to the king, and at the same time passed so high encomiums on the superior merit of the original that the author was received into the favour of that monarch, and ever after treated by him with singular respect. De la Rue, anxious to preach the gospel to the Canadians, requested leave of absence from his superiors; but having destined him for the pulpit, they refused to comply with his request. Accordingly he commenced preacher, and became one of the most eminent orators of his age. In his discourses he would probably have been too lavish of his wit if he had not been cautioned against it by a judicious courtier. "Continue," said the courtier, "to preach as you do. We will hear you with pleasure as long as you reason with us; but avoid wit. We value the wit contained in two verses of a song more than all that is contained in most of the sermons in Lent." De la Rue died at Paris on the 27th of May 1725, at the advanced age of eighty-two. He was one of those who published editions of the classics for the use of the Dauphin. Virgil, which fell to his share, was published, with notes and a Life of the poet, in 1675, 4to, and is a valuable and useful edition.

Rueil
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Rufinus.

RUEIL, or **RUEL**, a town of France, in the department of Seine-et-Oise, on the Seine, at the foot of a vine-covered hill, called Mont Valerien, 4 miles N.E. of Versailles. It has a fine church, adorned with a portico and belfry, and containing the remains of Hortense, once queen of Holland, beside those of her mother, the Empress Josephine, whose favourite residence, Malmaison, stands near Rueil. Pop. 4581.

RUFFO, **FABRIZIO**, a famous soldier-cardinal, was born of a noble family at Naples in 1744, and was educated for the church. He gained a reputation at Rome as treasurer of the pontifical chamber, and as a cardinal. He was also well known in his native country as a courtier in 1798 when King Ferdinand I. fled to Sicily from before his republican subjects and the French. But his greatest fame was achieved in the following year, when he undertook to win back the kingdom of Naples to his sovereign. Landing at Bagnara, a fief of his family, he raised the royal standard. His hereditary influence in the district excited a favourable feeling towards him. The dignity he held in the church, and the large rewards he promised, completed the effect. As he advanced through Calabria, he received recruits from every village and town. "The army of the Holy Faith" (as he called it) swelled until it became resistless in its march. Some cities were driven to yield through very terror. Others were taken by storm and pitilessly given over to rapine and slaughter. His enterprise, thus victoriously commenced, was soon facilitated by several favourable circumstances. Bands of English, Turks, and Russians, continued to augment his troops. The republicans were kept engaged by other royalist leaders. The French forces also were called to the north of Italy by pressing emergencies. Accordingly, he was enabled to march to the very walls of Naples without opposition. Nor did his good fortune forsake him there. An insurrection in favour of him arose within the town; the republican party surrendered to him; and on the 30th of June 1799 King Ferdinand I. arrived in the bay on board of one of Nelson's ships. Cardinal Ruffo died at Naples in 1827.

RUFINUS, commonly called *Toranus*, was born about the middle of the fourth century, probably at Concordia, a town near the head of the Adriatic. At first he applied himself to the belles lettres, and particularly to the study of eloquence. To accomplish himself in this elegant art, he removed to Aquileia, a town at that time so celebrated that it was called a second Rome. Having made himself acquainted with the polite literature of the age, he withdrew into a monastery, where he devoted himself to the study of theology. Whilst thus occupied, Jerome happened to pass through Aquileia. Rufinus formed an intimate friendship with him; but, to his inexpressible grief, he was soon deprived of the company of his new friend, who continued his travels through France and Germany, and then set out for the East. Accordingly, he embarked for Egypt in the train of Melania, a devout Roman matron; and having visited the hermits who inhabit the deserts of that country, he repaired to Alexandria to hear the renowned Didymus. The sanctity of his manners soon obtained the confidence of Melania, which continued without interruption during their residence in the East, a period of nearly thirty years. The Arians, who swayed the ecclesiastical sceptre in the reign of Valens, persecuted Rufinus with great cruelty. They threw him into a dungeon, loaded him with fetters, and, after almost starving him to death, banished him to the deserts of Palestine. But from this exile he was relieved by the pecuniary aid of Melania, who employed her wealth in ransoming those confessors who had been condemned to prison or banishment. Jerome, supposing that Rufinus would immediately proceed to Jerusalem, wrote to one of his friends there congratulating him on the prospect of so illustrious a visitor. To Jerusalem he accord-

ingly proceeded, and having built a monastery on the Mount of Olives, he there assembled a great number of hermits, whom he animated to virtue by his exhortations. He converted many to the Christian faith, and persuaded more than four hundred hermits who had taken part in the schism of Antioch to return to the church. He also prevailed on many Macedonians and Arians to renounce their errors.

His attachment to the opinions of Origen set him at variance with Jerome, who, being of a temper peculiarly irritable, not only retracted all the praises which he had lavished upon him, but loaded him with severe reproaches. Their disputes, which were carried to a very indecent height, tended to injure Christianity in the eyes of the weak. Theophilus, their mutual friend, settled their differences; but the reconciliation was of short continuance. Rufinus having embarked for Italy along with Melania, and having published a translation of the principles of Origen at Rome, was summoned to appear before Pope Anastasius. He made a specious apology for not appearing, and sent a vindication of his work, in which he attempted to prove that certain errors of which Origen had been accused were perfectly consistent with the opinions of the orthodox. Jerome attacked Rufinus's translation. Rufinus composed an eloquent reply, in which he declared that he was only the translator of Origen, and did not consider himself bound to sanction all his errors. He subsequently retired to Aquileia; but in 408 A.D. he again returned to Pinetum in Italy. Most ecclesiastical historians say that Rufinus was excommunicated by Pope Anastasius; but for this no good evidence has been adduced. From Pinetum, being threatened by Alaric, he retired to Sicily, where he died in 410 A.D. Rufinus has left seven original compositions and ten translations from the Greek, while a number of his writings have been lost. (For further information respecting Rufinus, the reader may consult the elaborate work of Fontanini, Rome, 1742; and the more recent dissertation of Marzuttini, Patav. 1835.)

RUGBY, a market-town of England, in the county of Warwick, stands on a hill on the left bank of the Avon, 16 miles N.E. of Warwick and 83 N.W. of London. Part of the town is old, and part recently erected; the former somewhat irregular, and the latter consisting of straight streets lined with good brick houses. The parish church is an old building with a massive square tower. There was at one time a castle in the vicinity, but only a few traces of it are now to be seen. The chief importance of the place is derived from its being the seat of one of the great English public schools. This institution was founded in 1567 by Lawrence Sheriff, a London tradesman and native of Rugby. Its reputation as a place of education dates from the act of Parliament regulating it, passed in 1777, and was raised to a still higher degree under Dr Arnold, who, while head-master (1827-1842), effected great improvements in Rugby school, which were subsequently adopted in most of the other schools of England. The amount of the endowment is estimated at L.5000 a year, and the number of pupils averages 400. There are thirteen assistants under the head-master, and twenty-one exhibitions to the universities, each of L.60 for seven years. The buildings are of brick, in the Elizabethan style, and form a quadrangle 90 feet by 75. In the chapel are monuments to Dr Arnold and other celebrated masters of the school. The town contains, besides the parish church, two other Established churches; also places of worship belonging to Wesleyans, Baptists, and Roman Catholics; parish and infant schools, various benevolent institutions, &c. Many of the inhabitants are employed in an iron foundry, the only manufactory of any importance. The trade is considerable, and several fairs are held for corn and cattle. Rugby is the place of junction of several

Rugby.

Rugeley
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Ruhnken.

lines of railway, and thus occupies an important position in the system of internal communication of the country. The London and North-Western connects it on the one hand with the metropolis, and on the other with Liverpool, Manchester, and the north; while other lines diverge from this point in different directions. A county court is held in the town. Pop. 6317.

RUGELEY, or RUDGELEY, a market-town of England, in the county of Stafford, on the Trent, 7 miles N.W. of Lichfield and 123 N.W. of London. It is irregularly laid out; but the streets are clean, and the houses generally neat and well built. The parish church still retains a tower and chancel of considerable antiquity, but was almost entirely re-built in 1822. The chancel is now used as a school-room. The other churches in the town belong to Independents and Roman Catholics. For education there are here a grammar school, endowed, national, infant, and other schools. The manufactures comprise hardware, ropes, hats, agricultural implements, &c. Coal-pits are worked in the neighbourhood; and several fairs are held in the town. Pop. 3054.

RÜGEN, the largest island of Germany, lies in the Baltic and forms part of the Prussian monarchy, being included in the province of Pomerania. It is separated from the mainland by a narrow channel varying from half a mile to 2 miles in breadth, and has an area of 388 square miles. Its outline is very irregular; and as it is penetrated on all sides with arms of the sea, it has the appearance of several peninsulas joined together. Unlike the low coasts of the neighbouring mainland, those of this island are, except in the west, formed by steep chalk cliffs, and the whole bears a considerable resemblance to the Isle of Wight. The surface is varied with hill and dale, luxuriant woods and wild ravines, and the scenery is very beautiful and romantic. Many visitors resort hither in summer on account of the beauty of the island and its advantages for sea-bathing. The soil is fertile and well cultivated; cattle are reared in great numbers; and the fisheries are very productive. In the peninsula of Jasmund, on the eastern side of the island, stands a large beech forest called the Stubbenitz, which contains an oval lake, supposed to have been sacred in heathen times to Hertha, the goddess of the earth and patron deity of Rügen. There are also many sepulchral mounds of large size in the island. Rügen was originally independent of all the surrounding countries, under princes of its own; but in 1169 it was conquered by the Danish king Waldemar I., who made these princes his vassals, and on the extinction of their line gave Rügen as a fief to the dukes of Pomerania. By the peace of Westphalia it was ceded to Sweden, but in 1815 it was transferred to Prussia. Pop. (1852) 43,525.

RÜGENWALDE, a town of Prussia, province of Pomerania, in the circle and 20 miles N.N.E. of Cöslin, on the right bank of the Wepper, not far above its mouth. It is pretty well built, and has a castle, several churches, public offices, and courts of law. The principal manufactures are sail-cloth, damask, linen and woollen fabrics; bleaching and ship-building are also carried on. Rügenwalde is resorted to as a watering-place, and is noted for its smoked salmon and eels, in which a considerable trade is carried on. Pop. 5067.

RUHNKEN, DAVID, a classical critic of great eminence, was born at Stolpe, in Prussian Pomerania, in the year 1723. Of the early part of his studies little is known, but it appears that he was some time at Schlaff, from which he removed to Königsberg, where he met with the celebrated philosopher Kant. He afterwards repaired to Göttingen, to attend the lectures of Gesner, and to enlarge his knowledge of the Greek language. Some time after this period he formed an acquaintance with Ritter and Berger, whilst he resided at Wittenberg, where he continued about two

years. His earliest production was a disputation *De Galla Placidia Augusta* (1743), daughter of Theodosius, and the sister of Arcadius and Honorius. Under Berger he studied Roman antiquities and eloquence; under Ritter, jurisprudence and history. He relinquished the study of divinity, for which he was at first designed, and prevailed with his parents to allow him to transfer his residence to Leyden, where he arrived with recommendations to many of the learned. He pursued his studies with avidity and zeal, and accompanied Alberti in his visit to the Spa in the year 1750. Hemsterhuis wishing to attach him to Holland, urged him to persevere in the study of the law, as affording an additional chance of employment. This advice he thought proper to follow, and published a translation of some works of Theodorus, Stephanus, and other Greek civilians. In the year 1755 he went to Paris, where Capponier, who was at that time keeper of the king's library, received him kindly. He now formed an acquaintance with Dr Musgrave and Mr Tyrwhitt, who were there for the purpose of examining the manuscripts of Euripides. He had also formed the resolution of going to Spain; but Hemsterhuis recalled him, as he needed his assistance as lecturer in the Greek tongue. In 1755 Ruhnken took possession of his office, and read an excellent discourse *De Græcia Artium et Doctrinarum Inventrice*. He was likewise useful to Ernesti in his edition of Callimachus; and in 1761 he succeeded Oudendorp as professor of history and of eloquence, delivering an inaugural oration *De Doctore Umbratico*. About a year after this event Ruhnken was offered the chair of Gesner in the university of Göttingen. This offer he, however, declined; but, on his recommendation, the office was very worthily bestowed upon Heyne. In 1764 he married a beautiful Italian lady, who about six years afterwards lost both her speech and sight by a stroke of apoplexy. She had two daughters, one of whom was afterwards blind. The desire of Ruhnken to do Ernesti a favour made him turn his attention to the *Memorabilia* of Xenophon; and he was led to examine with particular attention the treatise of Longinus on the Sublime. Hemsterhuis died in 1767, and Ruhnken, then rector of the university, delivered a noble eulogium on his friend and patron. It was subsequently published under the title of *Elogium Tiberii Hemsterhusii*, 1768. In 1772 he prosecuted his new edition of Velleius Paterculus, and prepared a second edition of his *Epistola Critica*, and a collection of scholia on Plato. In the year 1768, he published a valuable tract *De Vita et Scriptis Longini*, in the form of an academical dissertation, to which he prefixed the name of one of his pupils. His Velleius Paterculus appeared in 1779, and in 1780 Homer's reputed hymn to Ceres. In 1786 he published the first part of Apuleius, which had been prepared by Oudendorp, and a new edition of his own *Timæus* in 1789; and at the same time he collected and published the works of Muretus, in 5 vols. 8vo. Both the body and mind of Ruhnken were much weakened by domestic affliction; but he was in some measure relieved by the satisfaction he felt at the dedication of Homer by Wolf, although he was not of that writer's opinion, that the works of Homer were written by different authors. He sunk into a kind of stupor on the 14th of May 1798, which in two days put a period to his existence.

His knowledge and learning were immense, and he was unquestionably one of the very greatest scholars of the eighteenth century. He was lively, cheerful, and gay, even to an extreme. Many posthumous honours were conferred upon him, and a pension settled on his unfortunate widow. When Wytttenbach took possession of Ruhnken's chair, he delivered a discourse on the early age of Ruhnken, which he proposed as an example to the Batavian youth who made the belles lettres their study; and he afterwards wrote a Life of his master, Leyden,

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1799. Ruhnken published an edition of his Discourses and Essays, in 2 vols., in 1797, which were subsequently edited by Bergmann in 1823. His *Epistolæ* to Valckenaer and others have been published at various periods.

RÜLSK, or RYLSK, a town of European Russia, in the government of Kursk, on the Sem, 65 miles W. of Kursk. It has five churches, several schools, a charitable institution, some manufactures, and a considerable trade in vegetables and fruit, which are raised in the vicinity. Pop. (1855) 7070.

RUM. See DISTILLATION.

RUM, an island of Scotland, one of the inner Hebrides, belonging to the county of Inverness, and lying to the S.W. of Mull; N. Lat. (of the western extremity) 57. 2., W. Long. 6. 25. Its form is somewhat irregular: greatest length, 8 miles; breadth, $7\frac{1}{2}$; circumference, about 20. The surface is more rugged and mountainous than that of any other of the Hebrides, there are hardly any valleys, and few patches of verdure among the hills. In the centre are a few fresh-water lakes, abounding in trout. A very small part of its surface is cultivated. Pop. (1851) 162.

RUMFORD, COUNT. See SIXTH DISSERTATION.

RUMILI, or RUMELIA, a name that has been applied at different periods, in a varying and sometimes vague manner, to various portions of the Turkish empire. The term, which signifies the land of the Romans, seems to have been originally applied by the Ottomans to the territories which they conquered from the Eastern Empire. For this reason, Asia Minor is generally known in the east under the name of Rum. But the term Rumili has always been used to designate some portion more or less extensive of European Turkey. In its widest application it denotes the whole country from the Danube and Save on the N., to the Ægean Sea and Greek frontiers on the S., and from the Black Sea on the E., to the Adriatic on the W., thus including the countries generally known as Bulgaria, Thrace, Macedonia, Thessaly, Albania, Bosnia, and Servia. It is, however, frequently used in a more limited sense, for the southern portion only of this vast region corresponding very nearly to the ancient Thrace, Macedonia, and Thessaly. But in neither of these senses is Rumili a political division, as the Turkish empire is now divided into eyalets totally irrespective of the ancient divisions of the country, or of those commonly used by European geographers. The present eyalet of Rumili is composed of the northern portion of Albania, and the western of Macedonia. It is bounded on the N. by Montenegro and the eyalet of Bosnia, E. by those of Uskiub and Saloniki, S. by that of Janina, and W. by the Adriatic. Its extent and limits, however, like those of all the Turkish divisions, are by no means fixed, but liable to frequent changes. The area of Rumili, along with the adjacent eyalet of Uskiub, is 18,883 square miles, and the population in 1844 was 2,700,000. It is subdivided into four livas, and the capital is Monastir. This is the Turkish eyalet of Rumili; but in speaking of the Ottoman empire, Europeans generally follow the larger and more historical divisions of the country; and of these Rumelia is one of the most important. It comprises, as has been already mentioned, the ancient countries of Thrace, Macedonia, and Thessaly. It is bounded on the N. by Bulgaria, from which it is separated by the Balkan Mountains; on the E. by the Black Sea; S. by the Sea of Marmora, the Ægean, and Greece; and W. by Albania. It is traversed by several offshoots of the Balkan range, between which there are valleys and plains of much beauty and fertility. The principal rivers are the Maritza, ancient *Hebrus*; the Struma, ancient *Strymon*; the Wardar, ancient *Axius*; and the Vistritza, ancient *Haliacmon*, all flowing into the Ægean, the former two from the Balkan range, and the latter from that of Pindus, which separates Rumelia from Albania. The climate is mild and healthy; and the prin-

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cipal products are wine, oil, tobacco, and cotton. There are many sheep raised here, which have excellent wool. The cotton is generally woven, and dyed of a red colour. This region forms the Turkish eyalets of Edirné, or Adrianople and Saloniki, with parts of Rumili and Janina.

RUNCIMAN, ALEXANDER, a Scottish painter, was the son of an architect, and was born in Edinburgh in 1736. The enthusiasm of his artistic genius was very great. While a mere child, he went into the fields to sketch rocks and trees. At the age of fourteen he sat down to devote himself entirely to study under John Norry, an artist of local celebrity. In his nineteenth year, he appeared before the world as a landscape-painter by profession. Nor after the public had persisted during five years in neglecting his pieces did his self-confidence fail him. It then appeared to him that his proper province was in the higher field of historical painting. A trial of six years only tended to confirm this notion. Nothing was wanting to perfect him in high art, he thought, but a residence in Italy. He therefore spent five years in Rome, and came back in 1771 with a spasmodic style, and with a courage equal to the loftiest subjects. The remaining part of Runciman's career was as energetic as the former. Appointed professor in the trustees' academy immediately after his return, he applied himself to the task with a superabundant display of zeal. His attention was also constantly engrossed with the most ambitious designs. Among other efforts, he undertook to embellish the hall of his patron, Sir James Clerk of Pennycuick, with twelve paintings from Ossian. With visions before him of making a miniature Sistine chapel, and of rivalling Michael Angelo, he set himself to work. His application grew so intense and so constant that his health was irretrievably injured. Accordingly, after the completion of the hall he became gradually weak, and on the 21st of October 1785 dropped down dead at the door of his lodgings. (Cunningham's *Lives of British Painters*, &c.)

RUNCORN, a market-town of England, Cheshire, on the left bank of the Mersey, near its confluence with the Weaver, 17 miles N.N.E. of Chester, and 182 N.W. of London. It is an ancient town; but until the formation of the Duke of Bridgewater's canal, which terminates here, it was of very little importance. The public buildings include the new town-hall, a handsome edifice, containing also a news-room; the jail; the parish church, also of modern date; and Trinity church, a red sandstone building, with a square tower. There are also places of worship for Independents, Baptists, Methodists, and Roman Catholics; and several schools of various kinds. The manufactures of the place are pretty numerous, including iron, ropes, sails, soap, &c.; and there are also ship-building yards, slate and stone quarries, and establishments for distilling turpentine. The trade of the place, too, is great and rapidly increasing; the town is a free port, and contains a custom-house, and ample accommodation for goods in warehouses and yards. The principal exports are stone and salt. Runcorn is much resorted to in summer for the sake of sea-bathing. Markets are held weekly, and fairs twice a year. Pop. (1851) 8049.

RUNES. See ALPHABET.

RUNGPOOR, a district of British India, in the presidency of Bengal, lying between N. Lat. 25.16. and 26 21., E. Long. 88. 26. and 89. 50.; bounded on the N. by Cooch Behar, E. by the districts of Goalpara and Mymensing, S. by that of Bograh, and W. by that of Dinajepore: length, from S.E. to N.W., 106 miles; breadth, 60; area, 4030 square miles. The most part of the surface is low, sloping gradually from N.W. to S.E. to the bank of the Brahmapootra, which flows along the eastern frontier of the district. Many other rivers and watercourses of smaller size intersect the country; and in the rainy season a great part of it is laid under water. There are no considerable

Runjeet
Singh
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Rupert.

lakes; but many small sheets of stagnant water called *jhils*. The climate differs in some respects from that of those parts of India which lie farther S. and W. The hot winds of spring are unknown in many parts of the district, and of short duration in the rest; the earlier part of the summer is tempered by cool breezes from the E., and it is not till June that extreme heat begins to set in. In the winter hoar-frosts occur at some places. The soil produces rice, wheat, barley, pulse, &c., as well as indigo and tobacco. Cotton has not been successfully raised here. The principal branch of industry is the preparation of indigo, for which there are 50 large factories, conducted upon European methods, besides about 350 of inferior size. The commerce is not very active. Indigo is the chief article of export; besides this, silk, tobacco, sugar, carpets, &c., are exported; and the imports include cotton, woollen, and silk fabrics, salt, metals, &c. The country which now forms the district of Rungpoor seems to have belonged originally to the ancient Hindu states of Camroop, which at the close of the fifteenth century was conquered by the kingdom of Bengal, and this in its turn fell under the sway of the emperors of Delhi. It came into the possession of Great Britain in 1765, by a grant from the Emperor Shah Alum. The capital is an insignificant town of the same name, consisting of a large mosque surrounded by a crowd of wretched huts. Pop. of the district, 2,559,000.

RUNJEET SINGH, the founder of the Sikh empire, was the son of Maha Singh, the chief of a Sikh tribe, and was born about 1780. The early part of his career was not propitious. His father died when he was only in his twelfth year. His worthless mother, bent upon retaining the government of the clan in her own hands, tried to make him an imbecile. Accordingly the means of education were denied him, and every indulgence that could enervate and debase his mind was forced upon his acceptance. But the boy grew up possessed of very dangerous accomplishments. No sooner had he reached his seventeenth year, than he removed his mother by assassination, and took the power into his own hands. He then commenced a long-continued and successful system of aggression. Every influence—war, stratagem, negotiation, and deceit—was brought into play. The countenance of the English East India Company was gained. No means were spared to inveigle or force the other Sikh chiefs into a confession of his supremacy. His power was especially directed against the inert Affghans. Adopting European arms and discipline, he invaded them with an irresistible host. The province of Cashmere was taken in 1819. Other conquests followed; and at length, in 1826, he reduced the province of Peshawur. Runjeet Singh having thus founded an empire, died in 1839. His political Life has been written by H. T. Pringle.

RUPEE, a silver coin current in many parts of Asia, and of values ranging from one shilling and sixpence to nearly two shillings.

RÜPERT, PRINCE ROBERT, of Bavaria, was born in 1619. His father, Frederic V., elector palatine, had rendered himself an exile by an unsuccessful attempt to seize upon the crown of Bohemia, which entailed upon his son the reverses of his own evil fortune. His mother was Elizabeth, eldest daughter of James I. of England, and by his connection with the British throne the youth resolved to win his way to fame, and perhaps to fortune. Of a restless, active disposition, that had little known the restraints of any regular system of educational discipline, he already had his eye fixed upon the civil wars that were then desolating England, and with a thirst for the fortunes of the soldier, he sought and obtained the command of a regiment of cavalry from his uncle Charles I. of England. He took Hereford, Lichfield, and Cirencester, and shared in the battles of Worcester, Edgehill, and Chalgrove Field. In

these engagements he had given proof of much rash courage and of daring impetuosity, but he was found to be destitute of the prudence of the soldier, and was entirely wanting in military sagacity. The king, pleased probably with his rashness, which he trusted to time to bring into subjection to his will, created him a Knight of the Garter and made him Duke of Cumberland. He took Bristol, scattered the parliamentary forces at Newark; but at Long Marston Moor, Oliver Cromwell and his Ironsides compelled him ignominiously to flee. Prince Rupert did not lose confidence by this defeat, nor did the king's reliance on him diminish. He was made general of all the king's troops: he took Leicester: he swept down upon the Ironsides at Naseby; but his rashness, as usual, proved his ruin. He hastened to Bristol to prepare that city to resist an attack, but betrayed such an entire want of strategical skill, and gave such proofs of pusillanimity, that not only was the place taken by the triumphant enemy, but Charles I., having lost all patience with his favourite, stripped him of his command and deprived him of his countenance. But Prince Rupert being a needy man, of great versatility and very adventurous, resolved to try his fortune upon the sea, seeing she had deserted him by land. He accordingly obtained command of the fleet in 1648, but had Blake out upon him before many months, who pursued him to Kinsale, to Lisbon, to Carthage, until, Rupert having sunk and captured some English merchantmen at Malaga, the little admiral burnt and destroyed almost his whole fleet, and compelled him to take refuge with two or three ships in the West Indies, where he for some time supported himself by piracy. Returning across the Atlantic, he took refuge in a French port, sold his ships to the French government, and went for a time at large throughout France. On the restoration of Charles II. he again sought the English court, and having now blustered out his youthful impetuosity, he was again appointed to a command under the Duke of York. In 1673 he was entrusted with the command of the fleet, but found it so ill equipped and so weakly manned that he chose to return home rather than face the enemy in such a condition. Prince Rupert had now completed the active part of his life. As governor of Windsor, he occupied his leisure, according to the fashion of the times, with painting and engraving, with mechanical and chemical experiments. He attained to some distinction in the engraver's art, and is generally supposed to have been the inventor of mezzotinto. This is, however, a mistake, as the invention belongs to a German named Siegen, who, having fallen upon the art in the year 1642, showed it to Prince Rupert, whom he met at Brussels in 1655 or 1656. (Laborde's *Histoire de la Gravure en Manière Noire*.) He died at Spring Gardens on the 29th of November 1682, and was interred with great magnificence in Henry VII.'s chapel, Westminster.

Prince Rupert is believed to be the inventor of pinchbeck or prince's metal, and of those curious glass bubbles known as "Rupert's drops" (see ANNEALING), which, as Lord Macaulay remarks, "have long amused children and puzzled philosophers."

RUPPIN, New, a town of Prussia, in the province of Brandenburg, on the W. shore of a lake of the same name, 37 miles N.W. of Berlin. It is surrounded by walls, and well built, with regular streets and several public squares; and it contains a column with a statue of Frederick the Great. The principal establishments in the town are a church, school, lunatic asylum, and two hospitals. Linen and cotton cloth are the most important articles manufactured. The trade is considerable, and is facilitated by a canal, which forms part of the line of communication between the Elbe and the Oder. Ruppín was for some time the residence of Frederick the Great, when crown prince. Pop. 9780.

Ruppín.

Rush.

RUSH, BENJAMIN, a celebrated American physician, born on the 5th January 1745, near Bristol in Pennsylvania, was descended from a family who were originally Quakers, and who had accompanied Penn in 1683 to his infant colony. He lost his father at an early age, and having been first placed by his mother at a school kept by the Rev. S. Finley, he proceeded to finish his classical education at the college of Princeton, and there took the degree of Bachelor of Arts before he was sixteen. He then determined to make the profession of physic the pursuit of his life, and went to study it, first under the care of Dr Redman of Philadelphia, and then at Edinburgh, where he was created a doctor of physic in 1768. At the time of his return from Europe, a new school of medicine was about to be founded in Philadelphia, and he became professor of chemistry immediately upon his arrival. In 1776 Dr Rush began to take an active part, with the rest of his countrymen, in the political struggle of the day, and he was chosen a member of Congress for the state of Pennsylvania; in 1777 he was appointed surgeon-general to the army, and not long afterwards became physician-general. He also contributed his best efforts to the improvement of the internal government of the state which he represented. But he soon withdrew his attention from political affairs, in order to devote it exclusively to medical and literary subjects; and he continued to be actively engaged in the practice of physic for the remainder of his life. In 1776 he married Miss Julia Stockton of New Jersey. He had by her thirteen children, nine of whom survived him in respectability and prosperity. In 1791, when the two medical colleges of Philadelphia were incorporated into a single university, he was appointed professor of the institutes of medicine, and of clinical practice. In 1793 he greatly distinguished himself by the new and apparently successful modes of practice that he introduced in the epidemic yellow fever, which was then causing great mortality throughout the United States, and which, shortly before his death, he was induced to believe not contagious, but derived from some general causes independently of the previous existence of the disease. He died on the 13th of April 1813, after an illness of five days, of a typhus fever, with some pulmonary symptoms. He had for a considerable part of his life been threatened with consumption, but had combated its attacks with unusual success. The number of his writings is considerable in proportion to their bulk; the times and the state of society in which he lived being such as to produce rather hasty and spirited than highly-finished compositions.

His inaugural dissertation was entitled *De Concoctione ciborum in ventriculo*, and contained an explanation of the opinions relating to digestion, which he had learned from Dr Cullen, Edinburgh, 1768; *Account of the Effects of the Stramonium*, *American Phil. Trans.* i. 1770; *On the Utility of Wort in ill-conditioned Ulcers*, *Med. Obs. Inq.* iv. 1770, addressed to Dr Huck; *Inquiry into the Natural History of Medicine amongst the Indians of North America*, an anniversary oration delivered in 1774; *Remarks on Bilious Fevers*, addressed to Dr Huck, *Med. Obs. Inq.* v.; *Account of the Influence of the Revolution on the Human Body, with Observations on the Diseases of Military Hospitals; Inquiry into the Cause of the Increase of Bilious and Intermitting Fevers in Pennsylvania*, *American Trans.* ii.; *Observations on Tetanus; Inquiry into the Influence of Physical Causes upon the Moral Faculty; Remarks on the Effects of Ardent Spirits upon the Body and Mind; Inquiry into the Causes and Cure of Pulmonary Consumption*, in his *Medical Inquiries and Observations*, i., Phil. 1788. His grand object in the cure of consumption is to recommend exercise, and everything which will enable the patient to take exercise; anticipating a practice which has become somewhat fashionable in England of late years, from its frequent success as a temporary palliative. The subject is continued in the second volume of the *Inquiries*, published in 1793; and bleeding is very strongly recommended in the earlier and only curable stages. Consumption, he observes, is common in America, though serofula scarcely ever occurs; and it has sometimes been known to be clearly communicated by infection to the Negroes belonging to a family, who had, of course, no consanguinity that could account

for a similarity of constitution. Five volumes, in the whole of this collection, appeared from 1788 to 1798; a second edition was published in 1804, in four volumes 8vo; a third in 1805, revised and enlarged, with a continuation of the *Histories of the Yellow Fever* from 1793 to 1809; *A Defence of Blood-letting as a Remedy for Certain Diseases; A View of the State of Medicine in Philadelphia; An Inquiry into the Sources of the Usual Forms of Summer and Autumnal Diseases in the United States*; and the recantation of his opinion of the contagious nature of the yellow fever, already mentioned; *Information to Europeans disposed to Emigrate to the United States, in a Letter to a Friend; Observations on the Population of Pennsylvania; Observations on Tobacco; A new Mode of Inoculating Small-Pox, a Lecture*, reprinted, Phil. 1792, 8vo; *Essay on the Study of the Latin and Greek Languages, American Museum*; condemning it as a waste of time, oppressive to the poor dunces who are tortured into their parts of speech, to the great scandal of a humane and republican country, and subversive of a proper respect for the rights of boys, and, consequently, for the rights of man. *Essays, Literary, Moral, and Philosophical*, 1798, 8vo; containing a republication of the last article, together with the author's eulogiums on Dr Cullen and on Professor Rittenhouse, delivered in 1790 and 1796, and with some other miscellaneous papers of less moment, 1806; *Lectures on the Cause of Animal Life*, 1791; *Account of the Sugar-Maple Tree*, *American Trans.* iii. 1791; *Observations on the Black Colour of the Negro*, *American Trans.* iv., 1792, attributing the blackness to leprosy; *History of the Yellow Fever*, 1794. This celebrated work has been translated into French and Spanish. At the time of its publication an almost superstitious dread was entertained by medical men of the use of the lancet in idiopathic fever; and few books have ever had so powerful and extensive an effect in altering the general treatment of a disease as this history had produced in every part of the world. Probably, indeed, it may have carried a number of the younger and bolder practitioners into an opposite extreme; but, with respect to the author's claims to merit on the occasion, it must be allowed that the innovation showed an uncommon combination of courage with talent and good sense; and the accurate description of the disease that he has given us fully establishes his claim to the character of an accurate nosologist. *On the Symptoms and Cure of Dropsy, and especially of Water in the Head*, 1793; *An Account of the Influenza of Philadelphia* in 1789, 1790, 1791; *Observations on the State of the Body and Mind in Old Age*, 1794; *Observations on the Nature and Cure of Gout and Hydrophobia*, 1797; *Inquiry into the Cause and Cure of the Cholera Infantum*, 1797; *Observations on Cynanche Trachealis*, 1797; *Introductory Lectures*, 1801, Ed. ii. 1811; with ten new introductory lectures, and two lectures on the *Pleasures of the Senses and of the Mind*. In 1809 he published the works of Sydenham and of Cleghorn, with Notes, and in 1810 those of Pringle and Hilary. *On Diseases of the Mind*, 8vo, 1812—an elaborate work which had long been impatiently expected; *A Letter on Hydrophobia*, 1813, addressed to Dr Hosack, and containing additional reasons for believing the seat of the disease to be chiefly in the blood-vessels; an opinion which in all probability has at least tended to shorten the sufferings of several individuals on whom the experiment of profuse depletion has been tried. Dr Rush's numerous publications obtained him many marks of respect from his contemporaries, and procured him admission, as an honorary member, into the most distinguished literary and philosophical societies of Europe. His name was familiar to the medical world as the Sydenham of America. His accurate observations and correct discrimination of epidemic diseases well entitled him to this distinction; while in the original energy of his reasoning, he far excelled his prototype. His literary and professional character, indeed, appears to have been greatly influenced by the moral and political sentiments which were prevalent in his day. A love of innovation led him to that proud defiance of established authority which is just as likely to be pernicious as to be salutary. The study of the learned languages he depreciated, in one of his early essays, as unfit for a republican education; and this was the first step to the true Jacobin doctrine, that it was unrepugnant and aristocratical to have received any education whatever. In physic, his rejection of the prejudices of antiquity was somewhat more consistent with moderation, and the reform that he attempted was occasionally more successful than his literary speculations; nor can it be denied that there are a multitude of original suggestions in his works which may very probably be found capable of affording valuable hints to the lovers of medical experiments.

(Hosack and Francis in the *American Med. Philos. Register*; Chalmers's *Biographical Dict.*, xxv., London, 1816, 8vo.) (T.Y.)

RUSH, a seaport and market town of Ireland, on a headland stretching into the Irish Sea, in the county and 14 miles N.E. of Dublin. The chief buildings are the Ro-

Rush.

Rushworth. man Catholic chapel, and a martello tower which defends the harbour. Kenure Park, a fine mansion near the town, was once the seat of the Duke of Ormond. Rush harbour has recently been improved, and is capable of receiving vessels of 50 tons burden. Some trade and fishery is carried on here. Pop. 1496.

RUSHWORTH, JOHN, the compiler of some very useful historical collections, was born in Northumberland about the year 1607, being descended of honourable ancestors. After attending the university of Oxford for some time, he removed to Lincoln's Inn; but the study of the law not suiting his genius, he soon deserted it, in order to seek a situation where he might more easily gratify his love for political information. He frequently attended the meetings of Parliament, and wrote down the speeches both of the king and members. During the space of eleven years from 1630 to 1640, when no Parliament was held, he was an attentive observer of the great transactions of state in the Star Chamber, the court of honour, and exchequer chamber, when all the judges of England assembled there on cases of great emergency. Nor did he neglect to observe with a watchful eye those events which happened at a distance from the capital. He visited the camp at Berwick, and was present at the battle of Newburn, at the treaty of Ripon, and at the great council of York. In 1640 he was appointed assistant to Henry Elsyng, clerk to the House of Commons, and thus had the best opportunities of being acquainted with their debates and proceedings. The Commons considered him as a person worthy of confidence; and, in particular, they trusted him with carrying their messages to the king whilst he remained at York. When the Parliament created Sir Thomas Fairfax their general, Rushworth was appointed his secretary, and discharged the office much to the advantage of his master. When Fairfax resigned his commission, his secretary returned to Lincoln's Inn, and was soon afterwards (in 1651-52) chosen one of the committee that was appointed to deliberate concerning the propriety and means of altering or new-modelling the common law. He was elected one of the representatives for Berwick-upon-Tweed to the Parliament which Richard Cromwell assembled in 1658, and was re-elected by the same town to the Parliament which restored Charles II. to the crown. After the Restoration, he delivered to the king several books of the Privy Council, which he had preserved in his own possession during the commotions which then agitated the country. Sir Orlando Bridgeman, keeper of the great seal, chose him his secretary in the year 1677, an office which he enjoyed as long as Sir Orlando kept the seals. In 1678 he was a third time chosen member for Berwick, and a fourth time in the ensuing Parliament in 1679. He was also a member of the Parliament which was convened at Oxford. The different offices he had held afforded him favourable opportunities of acquiring a fortune, or at least an independence; yet, whether from negligence or prodigality, he was never possessed of wealth. Having run himself into debt, he was arrested and committed to the King's Bench prison, Southwark, where he lingered for the last six years of his life in the most deplorable condition. His memory and judgment were much impaired, partly by age and partly by the too frequent use of spiritous liquors. He died on the 12th of May 1690.

His *Historical Collections of Private Passages in State, Weighty Matters in Law, and remarkable Proceedings in Parliament*, were published in folio at different times. The first part, comprehending the years between 1618 and 1629, appeared in 1659. The copy had been entrusted by Oliver Cromwell to Whitelock, with instructions to peruse and examine it. Upon perusing it, he thought it necessary to make some alterations and additions. The second part was published in 1680; the third in 1692;

the fourth and last, which comes down to the year 1648, was published in 1701; and altogether they made seven volumes. These underwent a second edition in 1721; and the trial of the Earl of Strafford was added, which made the eighth. This work has been much applauded by those who condemn the conduct of Charles I., and accused of partiality by those who favour the cause of that unhappy monarch. Rushworth's principles indeed led him to show the king and his adherents in an unfavourable light, and to vindicate the proceedings of Parliament; yet it cannot justly be affirmed that he has misrepresented or falsified any of the speeches or facts which he has admitted into his collection.

RUSSELL, WILLIAM, *Lord*, a distinguished English patriot, was descended from a family which had held land in Dorsetshire from a very early period, was the third son of William, Earl of Bedford, and was born on the 29th of September 1639. He entered Cambridge about 1654, afterwards resided with his elder brother at Augsburg, and spent the winter of 1658 at Paris. On his return to England, he was chosen member of Parliament for Tavistock. The court, which was at that time the abode of gaiety and licentiousness, seems at first to have attracted his attention, and, according to Bishop Burnet, "drew him into some irregularities." An earnest and truthful nature like Russell's soon shook itself rid of the entanglements of court life; and in 1669 he married Rachel Wriothesly, second daughter of the Earl of Southampton, and widow of Lord Vaughan. To the influence of this most excellent woman, who seems to have been endowed with all the charms which captivate and all the virtues which elevate man's nature, we must attribute not a few of the noble qualities which adorn the memory of her husband. Had the government of the country been conducted with security and honour, Lord William Russell would have continued to enjoy the happiness of private life in the company of this admirable woman; but, roused by the hypocrisy and scandalized by the open and shameless venality of Charles II. and his brother the Duke of York to restore the Roman Catholic religion, no Englishman who had any regard for the independence, the freedom, and the religion of his country, could any longer keep aloof. He accordingly, with no very remarkable talents, ranged himself at once on the side of the Protestants, and became the declared opponent of the king. "I never knew," says Burnet, "any man have so entire credit with the nation as he had;" and again, the bishop continues, "his understanding was not defective; but his virtues were so eminent that they would have more than balanced real defects, if any had been found in the other." Lord Russell joined Lord Cavendish, Sir W. Coventry, Colonel Birch, Mr Powle, and Mr Littleton, in their endeavours to thwart the scandalous proceedings of the king, and advancing as they did, and as they required to do, at first with moderation, gained so great an influence in the country, that the king found it necessary to prorogue the Parliament. This step broke off the alliance with France. Fresh intrigues, however, were speedily renewed; and against these Lord Russell resolutely opposed himself. Barillon was busy with his French gold. Russell, as well as Sidney, are accused of having received bribes to serve French interests. Lord John Russell, who has written the Life of his noble ancestor, does not hesitate to impeach the honesty of Barillon, rather than have men suppose that such a charge is true. And no one can have observed Lord William Russell's strong sense of justice, his scrupulous integrity, his zeal and energy in every noble and generous undertaking, who would for a moment listen to such a charge. His character is wholly at variance with such an act. However, the testimony of Barillon will be differently estimated by different men; and the reader may consult on the matter the views taken by Macaulay (*History of England*, vol. i.), and Hallam (*Constitutional History*, vol. ii.)

Russell.

In no long time the principal Whigs were accused of having conspired to take the king's life as he returned from the Newmarket races. This is known as the "Rye-house Plot," from the name of a farm near Newmarket, where the conspirators agreed to meet. The king having, it is said, returned earlier from Newmarket than was anticipated, the court ascribed to this lucky accident the shielding of his majesty's life. Russell, Essex, Sidney, and a number of others, were at once committed to the Tower. Russell was, on the 13th of July 1683, brought before the Old Bailey on a charge of high treason. He was indicted "for conspiring the death of the king, and consulting and agreeing to stir up insurrection, and to that end to seize the guards for the preservation of the king's person." The evidence against him was contradictory; no one charge in his indictment was proved; yet the sheriffs, who were the tools of the court, secured his conviction. He was accordingly found guilty, and was sentenced to death. During his imprisonment he manifested great calmness and pious resignation. Lady Russell, who had greatly assisted him during his trial, was now near, like an angel of comfort, administering to his wants with the most singular tenderness and resolution. Bishop Burnet and Dean Tillotson attended him; and the former has left a written account of his last days. He was beheaded in Lincoln's Inn Fields on the 21st of July 1683.

Charles James Fox, in alluding to the death of Lord William Russell (*History of James II.*), says, "It is impossible not to assent to the opinion of those who have ever stigmatized the condemnation and execution of Russell as a most flagrant violation of law and justice." The act for annulling Russell's attainder, passed in the first year of William and Mary, says, he "was by undue and illegal return of jurors, for want of freehold, and by partial and unjust constructions of law, wrongfully convicted, attainted, and executed for high treason." (See the *Life of William, Lord Russell*, by Lord John Russell, London, 1819.)

RUSSELL, *William*, a popular historian, the eldest son of Alexander Russell and Christian Ballantine, was born in the year 1741 at Windydoors, a farm-house in the parish of Stowe and county of Selkirk. At an early age he was sent to school in the neighbouring village of Inverleithen, where he acquired an elementary knowledge of the Greek and Latin languages; and private study afterwards enabled him to supply many of the deficiencies of his early education. In 1756 he was removed to Edinburgh, in order to be instructed in writing and arithmetic; and after having attended to these branches for about ten months, he was bound an apprentice to the bookselling and printing business for the term of five years. While engaged in this occupation he discovered the utmost ardour in literary pursuits; nor was his situation unfavourable to the acquisition of useful and elegant knowledge. After the completion of his apprenticeship he published a select collection of modern poems, which was favourably received.

About the year 1763 he made an unsuccessful attempt to adapt Crebillon's *Rhadamisthe et Zénobie* to the English stage. In 1764 he retired to the country, and spent the succeeding autumn with Lord Elbank. He had relinquished his original employment, and he now prosecuted with zeal his historical and literary studies.

Having resided with his father till the month of May 1767, he proceeded to London in quest of honour and emolument. But his high hopes were speedily blasted. After having in vain waited for advancement, he engaged himself as a corrector of the press in the great office of William Strahan, afterwards printer to his majesty. In the year 1769 he quitted the employment of Strahan, and was engaged as overseer of the printing-office of Brown and

Russell.

Adlard. During the same year he published an *Ode to Fortitude*. His *Sentimental Tales* appeared in 1770; and from this time he contributed to the periodical publications many essays in prose as well as verse. In 1772 he published a collection of *Fables, Moral and Sentimental*; and *An Essay on the Character, Manners, and Genius of Women, from the French of M. Thomas*. In 1774 he produced an octavo volume under the title of *Julia, a Poetical Romance*. Of this work, which is founded on the *Nouvelle Heloise* of Rousseau, neither the plan nor the execution can be commended. Russell is the author of the verses on the death of Hume and on the death of Dr Armstrong, subscribed "W. R.," and dated from Gray's Inn, Sept. 10, 1779, which are commonly printed with the poems of that classical writer. His *History of America*, published in numbers, was completed in the course of the same year. This work was received with some degree of favour; but the splendid merit of Dr Robertson's *History* precluded all competition. During the same year (1779) he likewise published, in octavo, the first two volumes of *The History of Modern Europe, with an Account of the Decline and Fall of the Roman Empire, and a View of the Progress of Society from the Fifth to the Eighteenth Century, in a Series of Letters from a Nobleman to his Son*. Their reception was so favourable as to exceed his most sanguine expectations. In the year 1783 he published *The Tragic Muse*, a poem addressed to Mrs Siddons. The three volumes which completed the *History of Modern Europe* made their appearance in 1784. His narrative is always free from languor, and his reflections are conveyed in a lively and elegant style. It is, however, to be regretted that he should have adopted the commercial expedient of exhibiting his work as a series of letters from a nobleman to his son: every reader is sufficiently aware that Dr Russell did not belong to the order of nobility; and the frequent recurrence of "my dear Philip" is too apt to remind one of Lord Chesterfield. This work has very often been reprinted, and has still some degree of popularity. Russell closes his *History* with the peace of Paris in 1763. A continuation, extending to two volumes, was added by the late Dr Coote; and another writer has continued the narrative still farther down.

In the year 1787 he married Isabella Scott, a lady of Eskdale, to whom he had long been attached, and in whom he found a pleasant and intelligent companion. He now entered upon the occupation of a comfortable farm at Knottyholm, in the parish of Canonby and county of Dumfries, where he spent the remainder of his days.

He had now acquired the reputation of a very popular historian; and in 1792 the university of St Andrews conferred upon him the degree of LL.D. During the following year he published at London, in two volumes octavo, *The History of Ancient Europe, with a View of the Revolutions in Asia and Africa, in a Series of Letters to a Young Nobleman*. This production partakes of the peculiar merits of his modern history; but as the author did not live to complete his design, it never attained to the same popularity. Of these two volumes, the greater proportion relates to the history of Greece. Dr Coote was afterwards induced to supply what he had left deficient.

Dr Russell did not long survive the publication of his last work. A stroke of palsy suddenly terminated his life, on the 25th of December 1793, after he had completed the fifty-second year of his age.

He had engaged in various projects which he did not live to execute. Among these was his *History of England from the Beginning of the Reign of George III. to the Conclusion of the American War*, a work on which he was engaged at the close of his life.

RUSSIA.

History. THE history of Russia commences shortly after the middle of the ninth century, when a Scandinavian race, known as the Varages or Varangians, established their dominion over several of the less warlike Slavonic and Finnish tribes who inhabited the eastern shores of the Baltic. These seem to have made some progress in the arts of peace, and even at this early period to have carried on a considerable commerce. Harassed by more warlike neighbours, they had called in the assistance of the Varangians; but these unscrupulous allies no sooner rid them of their enemies than they established themselves in their country. Ruric, the leader of the Varangians, built a town near the Volkhof, where Old Ladoga now stands, and made it the seat of his government. This is said to have been about A.D. 862. His two brothers Sinaf and Truvor, who had accompanied him, established themselves,—the former at Bielo Ozero, and the latter at Isborsk, near Pleskof. The rightful owners of the soil, however, were not inclined peacefully to submit to this species of usurpation, and accordingly they took up arms under the leadership of Vadim, a chief who had greatly distinguished himself for his military talents. A fierce engagement took place, in which the Varangians were victorious, Vadim and several of the other chiefs having lost their lives. This success emboldened Ruric to extend his territories, and to change the seat of his government from Ladoga to Novgorod, the capital of the Slavi, which was even then a large and opulent city. His brothers Sinaf and Truvor died soon after, and Ruric became sole monarch of the conquered territory, over which he reigned without further molestation for fifteen years. At his death his son Igor was only four years of age, and the government devolved upon his kinsman Oleg. The new ruler did not long remain idle, and one of his first expeditions was against Kief, where two Varangian chiefs, Oskhold and Dir, seem to have established their dominion over the Slavi of that part. To effect his purpose, Oleg had recourse to strategem; and, taking with him Igor, he descended the Dnieper with a few boats, in which he had concealed a number of armed men. On approaching Kief, he sent a message to the two chiefs, stating that some Varangian merchants, on their way to Greece by order of the Prince of Novgorod, desired to see them as friends and kinsmen. Oskhold and Dir accepted the invitation, and, suspecting no harm, went unarmed and unattended. They no sooner reached the place of meeting than they were surrounded by armed men, and Oleg taking Igor in his arms, cried, "You are neither princes nor of the race of princes; but I am a prince, and this is the son of Ruric." No sooner were these words uttered than the soldiers fell upon the two chiefs and slew them. The inhabitants of Kief, thrown into consternation by this bold and treacherous act, made no resistance, but opened the gates of their city to the invader. But his ambitious designs did not end here. He now meditated an attack upon Constantinople, and for that purpose he removed the seat of his government to Kief. At length he embarked on the Dnieper with 80,000 warriors, on board of no fewer than 2000 vessels. After encountering numerous obstacles, and having several times to disembark and carry their vessels for some distance overland, the Russians at length reached the Black Sea, and, coasting along its shores, they soon arrived at the Strait of Constantinople. To prevent their approach to the city, the inhabitants had thrown a chain across the harbour; but the invaders, not deterred by this, are said to have drawn their vessels ashore, and fitting them upon wheels, by means of sails, converted them into carriages,

and thus arrived under the walls of the city. The weak Leo, who was then upon the throne, did not offer any resistance, but was content to purchase an ignominious peace, and Oleg returned to Kief laden with wealth. Soon after this Oleg sent deputies to Constantinople with articles of a treaty to be signed by the Greek emperor. From this treaty we learn many important particulars respecting the internal policy of the Russians at the beginning of the tenth century. It shows that they laid great stress upon oaths; that murder was punished by death, and not by fine; that a thief taken in the fact might be killed by the proprietor with impunity, or, if bound and brought before the judge, he was obliged to restore the stolen goods, together with three times their value; that wives had a part of the estates of their husbands; that punishment did not extend to the entire confiscation of goods, and hence the widow and orphan did not suffer for a crime of which they were innocent; that citizens might dispose of their effects in favour of friends, without fear of the sovereign seizing on their heritage. Oleg died in 913, after having conducted the government for thirty-three years, leaving Igor in full possession of the throne, who, up to this time, does not seem to have had any share in the administration. On the accession of the new sovereign, several of the nations that had been subjugated by Oleg attempted to regain their independence. The Drevlians were the first to revolt; but they were soon quelled, and punished by the imposition of an increased tribute. The Uglitches, who dwelt on the southern side of the Dnieper, contended longer for their liberty, and one of their principal towns withstood a siege for three years; but at length they too were subdued and made tributary. Igor had next to contend with a more formidable enemy in the Petchenegans, a nation hitherto unknown, who, quitting their settlements on the Oural and Volga, established themselves on the Don and the Dnieper. Igor finding himself unable to cope with his new enemies, concluded a treaty of alliance with them. About five years afterwards disputes seem to have arisen between them, and both parties had recourse to arms. It appears that the Russians were finally victorious, and the Petchenegans were for some time disabled from giving farther molestation.

We next hear of Igor in 941 setting out on an expedition against the Greeks with, if we may credit the Russian accounts, 10,000 barks, each carrying forty men. The government of the empire, however, was now in different hands from those that had held it during the former invasion. The Greeks were commanded by two able generals, Theophanes and Phocas, the former of whom was over the fleet, the latter over the army. Theophanes attacked them in their ships, and throwing among them the terrible Greek fire, with the effects of which they were totally unacquainted, caused such consternation that many cast themselves into the sea to avoid the flames. Their vessels were dispersed, shattered, or burned, and great numbers of their crews perished. Those that reached the land were immediately attacked by Phocas, so that Igor carried back with him scarcely one-third of his immense army. Though discouraged by this ill success, it did not deter him from making a second attempt, and accordingly, three years afterwards, he set out with a new army, which included many of the Petchenegans whom he had taken into pay. Before he had advanced beyond the Taurican Chersonesus, however, he was met by deputies from the emperor, offering to pay to him the same tribute that his predecessor had received; and Igor, doubtful of the issue of a contest, complied with this offer, and retired with his army. Igor was

History.

Accession of Igor, 913.

His expedition against the Greeks.

Ruric, A.D. 862.

Regency of Oleg.

History. now far advanced in years, but the insatiable rapacity of his officers impelled him to turn his army against the Drevlians, for the purpose of obtaining from them an increase of their yearly tribute. In this he was at first successful, and was returning home loaded with booty; but, not yet satisfied, he sent home the greater part of his troops with the spoil, and with the remainder marched again into the enemy's country. The Drevlians, now driven to desperation, fell upon him and his followers near the town of Iskorosch, and massacred the whole of them.

Regency of Olga.

Igor's son, Sviatoslaf, was very young at the death of his father, and the regency devolved upon Olga the queen-mother. Her first act was to revenge the murder of her husband. The Drevlians were anxious to renew friendship with the Russians, and their chief made offer of his hand to Olga. Pretending to listen to their overtures, the queen received the messengers kindly, but immediately caused them to be put to death. In the meantime, she requested a larger deputation to be sent to her, consisting of the chief men of the state; and these, on their arrival, she treated in the same inhuman manner, taking care, in each case, that no tidings should reach the Drevlians. She then set out, as if on a friendly visit, to conclude the new alliance, and having invited to a great entertainment some hundreds of the principal inhabitants, she caused them all to be assassinated. Not yet satisfied, she now laid waste the country with fire and sword. The town near which Igor had lost his life long withstood her utmost efforts, the inhabitants dreading the horrible fate that awaited them. At length she had recourse to stratagem, and promised them mercy on condition of receiving all the pigeons in the town. To the tails of these she attached lighted matches, and then set them all at liberty. They of course made for their usual haunts, and the houses being all of wood, the town was speedily in a blaze. The wretched inhabitants, endeavouring to escape the flames, were immediately butchered by the Russians.

Her conversion.

The only other remarkable event during Olga's regency was her conversion to Christianity. Though Christianity seems to have been introduced into Russia before this time, and full liberty allowed to its professors in their worship, yet it had hitherto made little progress. The people were still pagans, practising the most absurd and cruel superstitions. Olga, however, resolved to embrace the Greek religion, and for that purpose undertook a journey to Constantinople about A.D. 955. Constantine Porphyrogeneta, who was then upon the throne, received the royal convert with the greatest respect,—himself conducting her to the baptismal font, where, in the character of sponsor, he gave her the name of Helen. Her example, however, had little effect upon the Russians, and even her son disregarded all her solicitations to become a Christian. She died about the year 969. It is not known at what time Sviatoslaf obtained the reins of government, but it is generally supposed to have been about the time of his mother's departure for Constantinople. His first care was to improve the character and discipline of his army, and to this he devoted himself with the greatest zeal, living in the camp, and sharing in the duties and dangers of the meanest of his followers. His food was of the simplest and coarsest description; and he had no tent, but, wrapt in a bear's skin, usually slept on the bare ground. Nor was he less distinguished for his contempt of danger than for his disregard of the luxuries and conveniences of life. His soldiers emulated his example, and were proud to follow a leader who shared in all their toils and hardships. His army thus became formidable, not so much from its numbers as from the courage and discipline of the soldiers; and having little baggage, they could rapidly move from place to place. His first great expedition was against the Kozares, a people that had come from the shores of the Caspian and the sides of the Cau-

History. casus, and had established themselves along the eastern side of the Black Sea. He totally vanquished them, and took their capital by storm. He is even said to have annihilated the nation, at least we find no mention of it after that time. The Greek emperor Nicephorus Phocas, harassed by the Hungarians, assisted by his treacherous allies the Bulgarians, applied for assistance to Sviatoslaf, who hastened southward with a large army. He quickly made himself master of all the Bulgarian towns along the Danube, and was so elated with his success, that he resolved to remove the seat of his government from Kief to Pereiaslavatz, now Yamboly, on the banks of that river. He was, however, obliged to defer his intentions and hasten home, having received intelligence that the Petchenegans, taking advantage of his absence, were ravaging his territory, and had laid siege to his capital. Before his arrival, however, the Petchenegans had, by an artifice of the Russian general, been induced to raise the siege. After reducing them to subjection, Sviatoslaf resumed his design of establishing himself on the Danube. By this time the Bulgarians had recovered most of their towns, and were prepared to resist his encroachments. At length he succeeded in establishing himself in Bulgaria, but by this time the Emperor Nicephorus had been assassinated, and his murderer, John Zimisce, had ascended the throne. The new emperor saw clearly that the Russians would be a more dangerous neighbour than the Bulgarians, and sent ambassadors to the Russian monarch, desiring him to evacuate Bulgaria, in terms of his treaty. This Sviatoslaf refused to do, and prepared to maintain his ground by force. He raised his army by the addition of Bulgarians, Petchenegans, and Hungarians, to the number of 300,000 men. He first made an incursion into Thrace, burning and ravaging in all directions, and laid siege to Adrianople, but was defeated by stratagem by the commandant of that town. This was succeeded by a series of other losses, and his army was further weakened by desertions among the allied troops, until a great part of them were shut up in the city of Pereiaslavatz. The city was taken by assault, but 8000 of the Russians threw themselves into the citadel, which was considered impregnable. The enemy, however, succeeded in setting it on fire; many threw themselves from the summit of the rock, others perished in the flames, and the rest were taken captive. Sviatoslaf, who had not been shut up in Pereiaslavatz, now took refuge in Durostole, the strongest of the few towns that now remained to him on the Danube. It was immediately besieged by the enemy; and the Russians, reduced to extremity, made a sally from the town. A desperate battle ensued, in which the Russians were defeated; and Sviatoslaf made for Russia with the shattered remains of his army. Contrary to the advice of his most experienced officers, he attempted the navigation of the Dnieper, and was intercepted near the cataracts of that river by his old enemies the Petchenegans. After remaining on the defensive all winter, exposed to famine and disease, he attempted to force his way through the enemy, but was defeated, and himself slain. He was succeeded by his three sons—Yaropolk in Kiev, Vladimir in Novgorod, and Oleg in the country of the Drevlians. A war soon took place between Yaropolk and Oleg, in which the latter was defeated and slain; and Vladimir, dreading a similar fate, abandoned his dominions, which were quietly seized on by the Kievian prince. He did not, however, long enjoy his success; for Vladimir, who had taken refuge among the Varangians, returned with succours which enabled him not only to secure his possessions, but to make war on the Kievian territory. Yaropolk's chief adviser, Blude, was in the interest of his brother, and led him on to his ruin. He was thus prevailed upon to leave his capital, which immediately opened its gates to the enemy; and was afterwards induced to throw himself on

History.

Yaropolk, Vladimir and Oleg.

History.
Vladimir.

History.

the mercy of his brother, by whom he was ordered to be put to death. The commencement of Vladimir's reign was but a continuation of those atrocities by which he had obtained the throne. The traitor Blude was one of the first to suffer. For three days he was treated with the highest distinction, at the end of which time the king said :—" I have now fulfilled my promise ; as executor of justice, I condemn you to death ;" and caused him to be immediately executed. He displayed like perfidiousness towards the Varangians, who had assisted in placing him upon the throne. They were beginning to feel the effects of his ingratitude, and so they asked permission to go and seek their fortune in Greece. He granted their request, but also privately advised the emperor of their approach ; so that they were arrested and secured. He engaged in numerous wars with the neighbouring states,—the Poles, Bulgarians, Petchenegans, and others ; and being generally successful, he added very considerably to his territory. He was very devout in his religious duties, and usually sacrificed a number of his prisoners at the shrine of his gods. On one occasion, to show his devotion, he resolved to sacrifice one of his own subjects, and his choice fell upon a young Varangian, whose father had adopted the Christian faith. The unhappy father refused the victim, and the people, enraged at what they considered an insult to their gods, assaulted the house, and slew both father and son, folded in mutual embrace. Yet this furious pagan and bloody warrior became afterwards equally zealous in the cause of Christianity. The fame of Vladimir's military exploits had rendered him so formidable to the neighbouring nations that each courted his alliance, and strove to unite him by the ties of the same religion with themselves. Determined to act with judgment, Vladimir despatched deputies to inspect the religious tenets and ceremonies of the several nations, and to report. The accounts of the imposing splendour of the Greek worship, and the gorgeous decorations of the priests and churches, attracted his attention, and he resolved to join that church. Being too proud to seek from the Greek emperor a priest to instruct him in the Christian religion and administer baptism, he resolved to obtain one by arms. Assembling his army, he marched to Taurida, and laid siege to Theodosia. After a lengthened siege, he obtained possession of the town, and soon after of the whole of the Crimea. He might now have obtained baptism, but he was also desirous of an alliance with the Greek monarch, and therefore demanded in marriage Anna, sister of Basilus and Constantine, who were then upon the throne. After some deliberation, his request was complied with, on condition that he and his people should become Christians. These conditions being accepted, the Russian monarch was baptized, and took the name of Basilus, receiving the Grecian princess, and carrying with him several popes and archimandrites, together with sacred vessels and church books, images of saints, and consecrated relics. The change effected in his conduct by his conversion to the Christian faith was, if we may credit the Russian accounts, most marked. Formerly* delighting in human blood, he could now scarcely be prevailed upon to sanction the death of the greatest criminal ; instead of destroying cities and laying waste territories, he now built churches and endowed seminaries of education ; and though he is said to have had six wives and 800 concubines, he now became faithful to the imperial princess. He destroyed the idols that he had formerly worshipped, and used every exertion to persuade his subjects to adopt the Christian reli-

Embraces
Christi-
anity.

gion. His last days were embittered by domestic vexations. His wife and one of his favourite sons died long before him ; while another of his sons, Yaroslaf, on whom he had bestowed the government of Novgorod, refused to acknowledge him as his liege lord, and applied to the Varangians for assistance against his father. The aged Vladimir, compelled to march against a rebellious son, died of grief upon the road, after a long and glorious reign of thirty-five years. The improvements introduced by this prince were great and permanent. With the Christian religion he imported from Greece the arts which then flourished in that empire ; and almost entirely new-modelled the language of his country, by engrafting on it the more refined dialect of the Greeks and adopting in a great measure the letters of their alphabet. He extended the boundaries of Russia westward along the shores of the Baltic into Lithuania and Poland ; southward along the shores of the Euxine, so as to include the Crimea and great part of the Bulgarian territories ; and eastward to the Oka, the Don, and the Volga.

Vladimir had before his death divided his territories among his twelve sons, reserving to himself and his immediate heir the principality of Kief. This was the occasion of almost perpetual warfare among the brothers. Sviatopolk, who had obtained possession of Kief after the death of his father, attempted by stratagem and force to possess himself of some of the neighbouring principalities. Yaroslaf, Prince of Novgorod, took up arms to stop his encroachments, and forced him to flee for refuge and succour to his father-in-law, Boleslaus of Poland. The latter accompanied him back to Russia with an army, and forced Yaroslaf to retreat with precipitation. Sviatopolk now plotted the destruction of his allies, and a massacre ensued in which many of the Poles lost their lives ; whereat Boleslaus was so enraged that he plundered Kief and several other towns, and then left his perfidious son-in-law to shift for himself. He next applied for assistance to the Petchenegans, and with an army of these auxiliaries offered battle to Yaroslaf. The contest was long and bloody, but at length terminated in favour of Yaroslaf. Sviatopolk died soon afterwards. By this victory Yaroslaf became possessed of the greater part of his father's dominions. He advanced the Christian religion by causing the Bible to be translated into the Russian language, and circulated. He also established a metropolitan at Kiev, and devoted himself generally to the advancement of his people. He drew up a code of laws for Novgorod, which is still known as the municipal law of Novgorod. He is supposed to have died about 1054, after a reign of thirty-five years. Like his father, he divided his territories among his sons, but exhorted them on his deathbed to live in peace and harmony among themselves. From his death to the beginning of the thirteenth century, the history of Russia comprises little else than a continued series of intestine commotions and petty wars with the neighbouring states. The same system of dismemberment was continued by the succeeding princes, and was attended with the same result. There were during this period not fewer than seventeen independent principalities, though these were at length reduced to seven, viz., those of Kief, Novgorod, Smolensk, Vladimir, Tver, Halitch, and Moskva or Moscow. Of these, Kief and Novgorod long continued to be the most powerful, though they could not always maintain their superiority over the others ; and towards the latter end of the period which we have mentioned, the district of Vladimir erected itself into a grand principality, and became at least as powerful as Kief and Novgorod.¹

His suc-
cessors.

¹ In the supremacy of these three great principalities we may trace the division of European Russia into Great, Little, and White Russia, a distinction which long maintained its ground, and in later times gave to the sovereign of this empire the title of monarch or emperor of all the Russias. Great Russia comprehended the principality of Novgorod, and extended northward to the White Sea, eastward to the River Dvina and the entrance of the Petchora into the Ural Mountains, whilst to the south it bordered on the district of Vladimir as far as the Volga and the mouth of the Medveditza, and to the west on Lithuania and Prussia, including the tributary

History.
Tartar
eruptions.

Such a state of anarchy and confusion held out a strong temptation to powerful states in the vicinity. In the neighbourhood of the Sea of Aral, not far from the confines of Vladimir and Kief, the wandering hordes of Mongols, or Mongol Tartars, took up their residence, about the year 1223, under the conduct of Tusch, son of the famous Tschinghis Khan, chief of the Mogul empire. From the Aral, Tusch conducted his horde along the shores of the Caspian Sea, and gradually approached the Dnieper. In his course he attacked and overcame the Tscherkasses, or Circassians, who on his approach had joined with the Polovtzes to resist the terrible enemy. The defeated Polovtzes gave notice to their neighbours the Russians of the approaching storm, and the two united their armies to oppose the common enemy. A furious engagement took place near the small river Kalka, which flows into the Sea of Azoff, and ended in the complete overthrow of the Russians and their allies.

About thirteen years after this defeat another horde of Tartars, headed by Baaty Khan, the grandson of Tschinghis Khan, penetrated into Russia, after having attacked and defeated their neighbours the Bulgarians. The invaders soon spread far and wide the terror of their name. Wherever they came, the whole face of nature was laid waste; towns and villages were destroyed by fire; all the men capable of bearing arms were put to the sword, and the children, women, and old men, carried into captivity.

They advanced unimpeded to the capital of Vladimir, which, left to its fate by the Grand Prince Yury, who, with unpardonable negligence, was celebrating a marriage feast when he ought to have been employed in collecting the means of defence against the enemy. The city, which contained the princess and two of her sons, was left to the protection of a chieftain totally unqualified for its defence, and fell an easy prey into the hands of the Tartars; who, like wild beasts, glutted their appetite for blood amongst the wretched inhabitants. The grand princess, and other ladies of distinction, had taken refuge in the choir of a church; but it was set on fire by the barbarians, and they perished in the flames. Yury, incensed almost to desperation, assembled all his forces, and marched against the enemy. Though his army was greatly inferior in number, he attacked them with the most determined valour; but victory was with the Tartars, and the body of Yury was found amongst the slain. This appears to have been the only vigorous stand made by the Russian princes. The Tartars pushed forward with rapidity, and successively overpowered the principalities of Novgorod and Kief.

They had now established themselves in the Russian territories, and their khan or chief, though he did not himself assume the nominal sovereignty, reigned as paramount lord, and placed on the throne any of the native princes whom he found most obsequious to his will, or who had ingratiated themselves by the magnificence of their presents. Till the middle of the fourteenth century the miseries of a foreign yoke were aggravated by all the calamities of intestine discord and war; whilst the knights of Livonia on one side, and the Poles on the other, lost no opportunity of attacking Russia, took several of its towns, and even some considerable countries.

Dimitri
Ivanovitch,
an. 1362.

About the year 1362 Dimitri Ivanovitch received the sovereignty from the Tartar chief, and established the seat

of his government at Moscow. This prince possessed considerable ambition, and contrived to inspire the other Russian princes with so much respect for his person and government that they consented to hold their principalities as fiefs under him. This excited the jealousy of Mammai, the Tartar khan, who determined to take measures for maintaining his superiority. He began by demanding an increase of tribute; but when Dimitri demurred to this, the khan not only insisted on his demand, but required the grand prince to appear before him in person. This requisition Dimitri thought proper to refuse, and prepared to support his refusal by force of arms. A combination of favourable circumstances operated strongly in favour of Dimitri. The terror with which the Russians had at first viewed the Tartars had now in a great measure subsided; while the haughty bearing of the latter, with their barbarism and paganism, served to keep alive the hatred with which they had ever been viewed. The clergy, too, did all in their power to foster the spirit of revolt, and promised crowns of glory to all who should fall in battle. Thus the grand duke soon found himself at the head of an army of 200,000 men, with which he marched towards the Don, on the southern bank of which the Tartars were encamped in numbers greatly exceeding his own forces. This, however, did not deter him from crossing the river, and the fight commenced with the greatest fury on both sides. The issue was long doubtful; but victory at length declared for the Russians. The Tartars appear to have been so much humbled by this defeat that for a time they left the Russians to enjoy in peace their recovered liberty. This forbearance, however, was not of long duration. Before the death of Dimitri, returning with increased numbers, they laid siege to Moscow, which, after an obstinate defence, was at length induced to surrender, and Russia once more submitted to her old masters.

Dimitri died in the year 1389, and was succeeded by his son Vasilii Dimitrievitch. In the reign of this prince a new incursion of the Tartars took place, under the great Timur or Tamerlane, who, having subdued all the neighbouring Tartar hordes, extended his conquests to the Russian territories, took Moscow by assault, and carried off immense plunder.

The grand principality of Vladimir, or, as it may now be called, of Moscow, had at the end of the fourteenth century attained its greatest height, whilst that of Kief had proportionally declined. This latter principality was, at the time of which we are now writing, under the dominion of the Poles, having been seized on in 1320 by Gedemin, Duke of Lithuania.

The later part of the fifteenth century forms a splendid epoch in the history of Russia. At this time,—viz., from 1462 to 1505,—reigned Ivan Vasilivitch, or, as he is commonly called, John Basilovitch. This able prince, by his invincible spirit and refined policy, became both the conqueror and deliverer of his country, and laid the first foundation of its future grandeur. Observing with indignation the narrow limits of his power at his accession to the throne, he began immediately to resolve within himself upon the means of enlarging his dominions. He demanded and obtained in marriage Maria, sister of Michael, Duke of Tver, whom he soon afterwards deposed, on pretence of revenging the injuries done to his father, and added this duchy to his own territories of Moscow. Maria, by whom he had a son, who died before him, did not live long; and upon her death he

History.

tribes on the Baltic, as far as Memel. Its capital was Novgorod. Little Russia extended on the north along the River Ager to White Russia, on the east above the Donetz and the Oka to the Polovtzes and the Petchenegans, whilst to the south it stretched as far as the Tauric Chersonesus or the Crinæa, and to the west along the banks of the River Goryn. This was the principality of Kief, and in that city was the seat of government. The principality of Vladimir received the name of White Russia. It extended northward along the Volga to the southern boundary of Great Russia; to the east it bordered on the possessions of the Ugres and the territory of the Mordvines, stretching down the Volga to the mouth of the Oka; and to the south it extended along the Oka to the principality of Riazan and the Bulgarian territory. The metropolis of this division was at first Shuja, and afterwards in succession Rostof, Susdal, and Vladimir, till at length the seat of government was transferred to Moscow.

History. married Sophia, daughter of Thomas Palæologus, who had been driven from Constantinople, and forced to seek shelter at Rome, where the Pope portioned this princess, in hopes of thus procuring great advantage to the Catholic religion; but his expectations were frustrated, Sophia being obliged to conform to the Greek Church after her arrival in Russia.

This princess, shocked at the servile manner in which her husband was treated by the proud Tartars, stirred him up to resistance. He gradually increased his forces, and at length openly disclaimed all subjection to the Tartars, attacked their territories, and made himself master of Kazan. Here he was solemnly crowned, about the year 1470, with a diadem which is said to be the same that is still used in the coronation of the Russian sovereigns. He afterwards carried his arms against the neighbouring states. Asiatic Bulgaria and great part of Lapland soon submitted to him; and the great Novgorod, a city then so famous that the Russians were accustomed to intimate their idea of its importance by the proverbial expression, "Who can resist God and the great Novgorod?" was reduced by his generals after a seven years' siege, and yielded immense treasure. After he quitted the city, which had been awed by his presence, the discontents, excited at his violent measures, broke out into acts of mutiny, upon which he, in 1485, carried off fifty of the principal families, and distributed them through several of the Russian towns. He afterwards removed some thousands of the most considerable inhabitants, and substituted for them more loyal subjects from other places. By these proceedings the flourishing commerce of this city received a considerable shock, and it suffered still more by the imprisonment of all the German merchants, and the confiscation of their effects, with the abolition of the old municipal franchises. Indeed from this period Novgorod never recovered its former splendour.

After his reduction of this city, Ivan invaded the territories of Livonia and Esthonia, in consequence, as we are told, of an affront offered to him by the inhabitants of Revel. Here, however, he met with a stout resistance, and does not seem to have made much progress. Towards the conclusion of his reign the Kazanian Tartars, who, though humbled, had continued to inhabit that district, made a hard struggle to shake off the Russian yoke that had been imposed on them; but Ivan had established his authority too firmly for them to accomplish their purpose during his life. He died in 1505, and was succeeded by his son Vasilii Ivanovitch, commonly called Basilus III.

About fourteen years after the death of Ivan, the Tartars of Kazan rebelled against the Russian yoke, and united themselves with their brethren of the Crimea. With their assistance, they assembled a mighty force, entered the Russian dominions, and carried their arms even to the gates of Moscow. The grand prince Vasilii finding himself at that time unable to resist the barbarians, purchased an exemption from general pillage by great presents and a promise of renewed allegiance. The Tartars retired, but carried off immense booty, and nearly 300,000 prisoners, the greater part of whom they sent to Theodosia in the Crimea, and sold to the Turks. Vasilii, however, was soon enabled to make head against the Tartars, and to recover possession of the city Kazan, and of Pscove, a city which had been built by the Princess Olga, and was the great rival of Novgorod in wealth and commercial importance. Under this prince all the principalities of Russia were once more united, and they have remained ever since under the dominion of one sovereign. He died in 1533, having reigned 28 years.

Ivan IV.

It was under the son and successor of Vasilii, Ivan IV., or, as he is styled by the Russian historians, Ivan Vasilievitch II., that Russia completely emancipated herself from her subjection to the Tartars, and acquired a vast accession of territory, which extended her empire into the N.E. of Asia, and rendered her for the first time superior in ex-

tent to any state that had appeared since the Roman empire. He was only three years old when his father died; and during his minority the state became a prey to anarchy and confusion. But when he attained his seventeenth year he was able to assume the reins of government; and he displayed so much prudence and manly fortitude as soon raised him very high in the estimation of his subjects. His first aim was to still the contending factions which surrounded him; and he then resolved to attempt liberating his country from the dominion of the Tartars. In 1551 he marched an army in the depth of winter into the district of Kazan, and laid siege to the capital, which he made himself master of in 1552, by the new, and, to the Tartars, unheard-of method of springing a mine below the walls. By this important conquest the dominion of the Tartars, who had oppressed the Russians for more than three centuries, was completely and permanently overthrown. About two years later Ivan extended his conquests eastward to the shores of the Caspian, and took possession of the territory that lay on the right bank of the Volga, round the city of Astracan, and which was also inhabited by the Tartar hordes. In 1570 the inhabitants of Novgorod being suspected of forming a plot for delivering that city and the surrounding territory into the hands of the King of Poland, felt still more severely the effects of his vengeance. All who had been in any degree implicated in the conspiracy, to the number of 25,000, suffered by the hands of the executioner. The city of Pscove was threatened with a similar proscription; but Ivan, on their voluntary submission, contented himself with the execution of a few monks, and the confiscation of the property of the most opulent inhabitants.

In 1547 Ivan sent a splendid embassy to the Emperor Charles V., requesting a number of German artists, mechanics, and literary men to be sent into Russia. Several hundred volunteers were thus collected; but they were intercepted in their journey through Livonia, and obliged to return home, though some of them escaped and succeeded in reaching Moscow. Ivan endeavoured to revenge himself on the Livonians by invading their country, which was strenuously defended by the Teutonic Knights; and these champions, finding at last that they were unable to maintain their ground, put the territory under the protection of Poland. The Swedes also received a share of the Livonian territories; and this circumstance gave rise to a war between them and the Russians. Ivan invaded Finland; but that country was bravely defended by William of Furstenberg, grand-master of the Livonian Knights, with the assistance of the troops of Gustavus Vasa; and it does not appear that Ivan gained much in this expedition, though we are told that the Livonian grand-master ended his life in a Russian prison. In 1553 some Englishmen, who were at that time on a voyage of discovery, landed on the shores of the White Sea, where soon after was built the port of Arkhangel. They were hospitably received by the natives; and intimation of the circumstance being conveyed to Ivan, he sent for the strangers, and was so much pleased with their abilities and deportment that he resolved to give every encouragement to the English commerce. It was in consequence of this accidental communication between the Russians and the English that England first engaged in a trade to Russia, and promoted this new commerce by the establishment of a company of Russian merchants in London.

About twenty years after Astracan had been annexed to the Russian empire, a new acquisition of territory accrued to it from the conquests of a private adventurer, in the unknown regions of Siberia. A merchant named Stroganof, who was proprietor of some salt-works on the confines of Siberia, perceiving among the persons who came to him on affairs of trade men who belonged to no nation with which he was acquainted, he questioned them concerning the

History.

the Russian empire.

History.

place whence they came, and once sent a few of his people with them back to their country. These brought with them, at their return, a great quantity of valuable furs, and thus opened to their master a new road to wealth. The attention of the government was thus directed to this country, but the conquest of it was reserved for an adventurer or robber named Timoseyef Yermak. This Yermak, at the head of a gang of Don Kozzacks of not fewer than 6000 men, in fleeing from a band of Russian troops, came accidentally to the dwelling of Stroganof, where, hearing much about Siberia, they resolved to seek there at once their safety and their fortune. After numerous struggles and conflicts with the natives, which greatly reduced their numbers, they at length conquered the capital, and shortly after the whole country. Yermak now presented the fruit of his toilsome and perilous victories to his czar, and thereby obtained a pardon of his former depredations. The less and the greater Kabardey were also added to Russia in the reign of Ivan. This czar, however, not only enlarged the circumference of his empire, but he also attempted to reform his people, to render them more polished, more skilful, and more industrious; but this he found to be a most arduous enterprise. The insuperable impediments which threw themselves in the way of the execution of this grand work were the principal incitements to those frequent acts of cruelty and despotism which have covered his memory with so deep a stain.

His victories over the Tartars.

Destruction of Moscow by the Tartars.

Towards the close of Ivan's reign a prodigious army of Tartars entered Russia, with a design to subdue the whole country. But Zerebrinoff, the czar's general, having attacked them in a defile, put them to flight with considerable slaughter. They then retired towards the mouth of the Volga, where they expected a considerable re-inforcement; but being closely pursued by the Russians and the Tartars in alliance with them, they were again defeated, and forced to fly towards Azof, where their army was almost annihilated. In 1571, instigated by the Poles, the Crim Tartars again invaded the country with an army of 70,000 men, which totally defeated the Russians in a battle fought within 18 miles of the city of Moscow. The czar retired with his most valuable effects to a well-fortified cloister; upon which the Tartars entered the city, plundered it, and set fire to several churches. A violent storm which happened at the same time soon spread the flames all over the city, which was entirely reduced to ashes in six hours. The fire likewise communicated itself to a powder magazine, by which upwards of fifty rods of the city wall, with all the buildings near it, were destroyed; and, according to the historians, upwards of 120,000 citizens were burned or buried in the ruins. The castle, however, which was strongly fortified, could not be taken; and the Tartars, hearing that a formidable army was coming against them under the command of Magnus, Duke of Holstein, whom Ivan had made king of Livonia, thought proper to retire. The Livonians, the Poles, and the Swedes, having united in a league against the Russians, gained great advantages over them; and in 1579 Stephen Batory, who was then raised to the throne of Poland, levied an army expressly with a design of invading Russia, and of regaining all that Poland had formerly claimed, which, indeed, was little less than the whole empire. Ivan found his undisciplined multitudes unable to cope with the regular forces of his enemies; and it is possible that the number of enemies which now attacked Russia might have overcome the empire entirely, had not the allies grown jealous of each other. The consequence of this was, that in 1582 a peace was concluded; shortly after which the czar, having been worsted in an engagement with the Tartars, died in the year 1584. His eldest son Feodor (or, as he is commonly called, Theodore) Ivanovitch was by no means fitted for the government of an empire so extensive, and a people

An. 1584.
Reign of
Feodor

Ivanovitch.

so rude and turbulent; and to obviate the effects of this incapacity, Ivan had appointed three of his principal nobles as administrators of the empire, whilst to a fourth he committed the charge of his younger son Dmitri or Demetrius. This expedient, however, failed of success, partly from the mutual jealousy of the administrators, and partly from the envy which their exaltation had excited in the other nobles. The weak Feodor had married a sister of Boris Gudonof, a man of great ambition, immense riches, and tolerable abilities. He had long directed his wishes towards the imperial dignity, and began to prepare the way for its attainment by removing Dmitri. This young prince suddenly disappeared; and there is every reason to believe that he was assassinated by the order of Boris. Feodor did not long survive his brother, but died in 1593, not without suspicion of having been poisoned by his brother-in-law.

With Feodor ended the family of Ruric, a dynasty which had enjoyed the supreme power in Russia for more than 700 years. On the death of Feodor, as there was no hereditary successor to the vacant throne, the nobles assembled to elect a new czar; and Boris having, through the interest of the patriarch, procured a majority in his favour, was declared sovereign. Notwithstanding the means that he had used to obtain imperial power, Boris seems to have employed it in advancing the interest of the nation, and in improving the circumstances of his people. He was extremely active in his endeavours to extend the commerce and improve the arts and manufactures of the Russian empire; and for this purpose he invited many foreigners into his dominions. Soon after the commencement of his reign the city of Moscow was desolated by one of the most dreadful famines recorded in history. Parents are said to have eaten their children, and children their parents; and we are told by one writer of the time that he saw a woman bite several pieces out of her child's arm as she was carrying it along. This dreadful calamity lasted three years, notwithstanding all the exertions of Boris to mitigate its severity. During these distresses the power of Boris was threatened by an adventurer who pretended to be the young prince Dmitri, whom he had caused to be assassinated. This adventurer was a monk named Otrepief. He retired from Russia into Poland, where he had the dexterity to ingratiate himself with some of the principal nobles, and at length even the King of Poland was brought over to his party. The Kozzacks of the Don also, who were oppressed by Boris, eagerly embraced the opportunity of declaring in his favour; and although Boris did all in his power to destroy the illusion, by prohibiting all intercourse between his subjects and the Poles, the cause of the pretender rapidly gained ground in Russia. He soon made his appearance on the frontiers with a regiment of Polish troops and a body of Kozzacks, and signally defeated an army sent by Boris to oppose him. He greatly strengthened his cause by treating his prisoners with the utmost humanity, and strictly enjoining his troops not to molest the inhabitants in passing through the country. This gentle behaviour, when contrasted with the horrible excesses committed by the soldiers of Boris, gained Dmitri more adherents than even the persuasion that he was the lawful sovereign of the country. At length, Boris, unable to resist the torrent of public opinion in favour of his rival, is said to have taken poison, and thus hastened that fate which he foresaw awaited him if he should fall into the hands of his enemies.

The death of Boris took place in the year 1605; and though the principal nobility at Moscow placed his son Feodor on the throne, the party of Dmitri was now so strong that Feodor was dethroned and sent to prison with his mother and sister, within six weeks after his accession. The successful monk now made his entry into Moscow with the utmost magnificence. One of his first acts was

History.

Accession
of Boris,
and termination
of the dynasty
of Ruric

History.

to remove the son of Boris, whom he caused to be strangled, together with one of his sisters. Though possessed of considerable abilities, he was deficient in prudence; and the partiality that he showed towards the Poles, and the contempt with which he treated the Russian nobility, so exasperated the Russians that discontents and insurrections arose in every quarter of the empire. The people were still further incensed by the clergy, who declaimed against Dmitri as a heretic, and by Schuiskoy, a nobleman who had been condemned to death by the czar, but had afterwards been pardoned. This nobleman put himself at the head of the enraged mob, and led them to attack the palace. They entered it by assault, put to the sword all the Poles whom they found within its walls, and afterwards extended their massacre to such as were discovered in other parts of the city. Dmitri himself, in attempting to escape, was overtaken by his pursuers and thrust through with a spear; and his dead body, being brought back into the city, lay for three days before the palace, exposed to every outrage that malice could invent or rage inflict.

Schuiskoy was now raised to the vacant throne, but his reign was short and uninteresting; and indeed, from this time till the accession of the House of Romanof in 1613, the affairs of Russia have little to gratify our curiosity. The Russians, dissatisfied with the reigning prince, treated with several of the neighbouring potentates for the disposal of the imperial crown. They offered it to Vladislaf or Uladislaf, son of Sigismund, King of Poland, on condition that he should adopt the Greek persuasion; but as he rejected this preliminary, they turned their eyes first on a son of Charles IX. of Sweden, and then on a young native Russian, Mikhail Feodorovitch, of the House of Romanof, a family which was distantly related to their ancient czars, and of which the head was then metropolitan of Rostof, and as such held in great estimation. The influence of the clergy, who exerted themselves for Mikhail, both by personal intrigues and by the dissemination of pretended revelations from heaven, silenced the supporters of the other claimants; and, after a long series of confusion and disaster, there ascended the Russian throne a family whose descendants have raised the empire to a state of grandeur and importance unequalled in any former period.

State of the empire at the beginning of the 17th century.

At this period the government of Russia may be considered as a pure aristocracy, since the supreme power rested in the hands of the nobles and the superior clergy. In particular, the boyars, or chief officers of the army, who were also the privy counsellors of the prince, possessed a very considerable share of authority. The election of the late princes Boris, Dmitri, and Schuiskoy had been conducted principally by them, in concert with the inhabitants of Moscow, where was then held the seat of government. The common people, especially those of the inferior towns, though nominally free, had no share in the government or in the election of the chief ruler. The boors, or those peasants who dwelt on the noblemen's estates, were almost completely slaves, and transferable with the land on which they dwelt. An attempt to annul this barbarous vassalage had been made both by Boris and by Schuiskoy, but from the opposition of the nobles it was abandoned.

The laws then in force consisted partly of the municipal laws drawn up for the state of Novgorod by Yaroslaf, and partly of an amended code, called *Sudebnik*, promulgated by Ivan Vasiliivitch II. By this *Sudebnik* the administration of the laws was made uniform throughout the empire, and particular magistrates were appointed in the several towns and districts, all subject to the czar as their chief. The *Sudebnik* consisted of ninety-seven articles, all containing civil laws; as the penal statutes are only briefly mentioned in some articles, so as to appear either connected with the civil, or as serving to illustrate them. The criminal laws were contained in a separate code, called

Gubnaia Gramota, which is now lost, but is referred to in the civil code. In neither of these codes is there any mention of ecclesiastical affairs; but these were regulated by a set of canons drawn up in 1542, under the inspection of Ivan Vasiliivitch, in a grand council held at Moscow. In the civil statutes of the *Sudebnik* theft was punished in the first instance by restitution; or, if the thief were unable to restore the property stolen, he became the slave of the injured party till by his labour he had made sufficient compensation. Of murder nothing is said, except where the person slain was a lord or master, when the murderer was to be punished with death. There is no mention of torture, except in cases of theft. Notwithstanding that attempts had been made by Ivan I., Ivan Vasiliivitch II., and Boris, to cultivate their manners and to improve the state of their arts and manufactures, the Russians were still deplorably behind the rest of Europe in civilization.

At the accession of Mikhail, who was crowned in June 1613, the Swedes and Poles were in possession of several parts of the empire; and to dislodge these intruders was the first object of the new czar. He began by negotiating a treaty of peace with Sweden, agreeing to give up Ingria and Karelia, and to evacuate Esthonia and Livonia. A numerous body of Poles next entered Russia, to support the claims of their king's son Vladislaf. Mikhail, however, instead of opposing them in the open field, entrapped them by ambuscades, or allured them into districts already desolated, where they suffered so much from cold and hunger that in 1619 they agreed to a cessation of hostilities for fourteen years and a half, on condition that the Russians should cede to Poland the government of Smolensk.

Mikhail now applied himself to arranging the internal economy of his empire, and formed treaties of alliance with the principal commercial states of Europe. He also commenced those improvements of the laws which were more fully executed by his son and successor; but the tide of party ran so high that he could effect only a very imperfect reformation. He died in 1645, and was succeeded by his son Alexei, who being then only fifteen years of age, a nobleman named Morosof was appointed his governor and regent of the empire. This man possessed all the ambition of Boris, without his prudence and address; and in attempting to raise himself and his adherents to the highest posts in the state, he incurred the hatred of all ranks of the people. Though, by properly organizing the army, he provided for the defence of the empire against external enemies, he shamefully neglected internal policy, and connived at the most flagrant enormities in the administration of justice. The populace at length rebelled against these abuses, and were only pacified by the execution of one of the most nefarious of the judges, Morosof's life being spared at the earnest entreaty of the czar.

Similar disturbances had broken out at Novgorod and Pscov; but they were happily terminated, chiefly through the exertions of the metropolitan Nikon, a man who, though of low birth, by his reputation for extraordinary piety and holiness, had raised himself to the patriarchal dignity, and was high in favour with Alexei. The pacific conduct of the neighbouring states did not long continue, though, indeed, we may attribute the renewal of hostilities to the ambition of the czar.

The war with Poland was occasioned by Alexei's sup-
porting the Kozzacks, a military horde, who, after the sub-
jugation of the Tartars, had put themselves under the
guardianship of Poland. As the Polish clergy, however,
attempted to impose on them the Catholic faith, they threw
off their allegiance, and claimed the patronage of Russia.
Alexei gladly received them as his subjects, hoping by their
assistance to recover the territories which had been ceded
to Poland by his father. The Russians, assisted by the
Kozzacks, were so successful in this contest that the King of

History.

An. 1613.
Accession
of Mikhail.

An. 1645.
Accession
of Alexei
Makhailo-
vitch.

War with
Sweden and
Poland.

History. Sweden became jealous of Alexei's good fortune, and determined to take a very active part in the war, especially as the Lithuanians, who were extremely averse to the Russian dominion, had sought his protection. The war with Sweden commenced in 1656, and lasted for two years, without any important advantage being gained by either party. A truce was concluded in 1658 for three years, and at the termination of this period a solid peace was established. In the meantime, the war with Poland continued, but was at length terminated by an armistice, which was prolonged from time to time during the remainder of Alexei's life.

The authority which Alexei had obtained over the Don Kozzacks excited the jealousy of the Sublime Porte, and after a successful attempt on the frontiers of Poland, a Turkish army entered the Ukraine. Alexei endeavoured to form a confederacy against the infidels among the Christian potentates of Europe; but the age of crusading chivalry was over, and the czar was obliged to make head against the Turks with no assistance but that of the King of Poland. The Turkish arms were for some years victorious, especially on the side of Poland; but at length a check was given to their successes by the Polish general Sobieski, who afterwards ascended the throne of that kingdom. Hostilities between the Turks and Russians were not, however, terminated during the reign of Alexei, and the czar left to his successor the prosecution of the war.

The reign of Alexei is most remarkable for the improvements introduced by him into the Russian laws. Before his time the *Emmanoy Ukases*, or personal orders of the sovereign, were almost the only laws of the country. These edicts were as various as the opinions, prejudices, and passions of men; and before the days of Alexei they produced endless contentions. To remedy this evil, he made a selection, from all the edicts of his predecessors, of such as had been current for a hundred years, presuming that these either were founded in natural justice, or during so long a currency had formed the minds of the people to consider them as just. This digest, which he declared to be the common law of Russia, and which is prefaced by a sort of institute, is known by the title of the *Ulosheniè* or "Selection." It was long the standard law-book, all edicts prior thereto being declared to be obsolete.

An. 1676. Alexei died in 1676, leaving three sons and six daughters. **Reign of Feodor.** Two of the sons, Feodor and Ivan, were by a first marriage; the third, Peter, by a second. The two former, particularly Ivan, were of a delicate constitution, and some attempts were made by the relations of Peter to set them aside. These attempts, however, proved unsuccessful; and Feodor became the successor of Alexei.

The reign of this prince was short, and distinguished rather for the happiness which the nation then experienced than for the importance of the transactions which took place. One important service he rendered to his country places his energy and talent in a very favourable light, and that was his causing the destruction of the family registers of the nobility, and thus removing an endless source of contention in the kingdom. The Russian noble placed the highest value upon his ancestry; and to such an extent was this carried that no one would take an office under one with a shorter or less distinguished pedigree than himself. All these registers Feodor ordered to be brought to Moscow, under the pretence of adjusting certain errors that had crept into them, and then caused them to be burned. He continued the war with the Turks for four years after his father's death, and at length brought it to an honourable conclusion by a truce for twenty years, the Turks acknowledging the Russian right of sovereignty over the Kozzacks. Feodor died in 1682, having nominated his half-brother Peter his successor.

The succession of Peter, though appointed by their fa-

History. vourite czar Feodor, was by no means pleasing to the majority of the Russian nobles, and it was particularly opposed by Galitzin, the prime minister of the late czar. This able man had espoused the interest of Sophia, the sister of Feodor and Ivan, a young woman of eminent abilities and the most insinuating address. Sophia, upon pretence of asserting the claims of her brother Ivan, who, though of a feeble body and weak intellect, was considered as the lawful heir of the crown, had really formed a design of securing the succession to herself; and with that view, had not only insinuated herself into the confidence and good graces of Galitzin, but had brought over to her interests the Strelitzes, who were the body-guard of the czars, and at this time were about fourteen thousand in number. These licentious soldiers assembled for the purpose, as was pretended, of placing on the throne Prince Ivan, whom they proclaimed czar by acclamation. During three days they roved about the city of Moscow, committing the greatest excesses, and putting to death several of the chief officers of state who were suspected of being hostile to the designs of Sophia. Their employer did not, however, entirely gain her point; for as the new czar entertained a sincere affection for his half-brother Peter, he insisted that this prince should share with him the imperial dignity. This was at length agreed to; and on the 6th of May 1682, Ivan and Peter were solemnly crowned joint emperors of all the Russias, while the Princess Sophia was nominated their copartner in the government.

From the imbecility of Ivan and the youth of Peter, who was now only ten years of age, the whole power of the government rested with Sophia and her minister Galitzin, although till the year 1687 the names of Ivan and Peter only were annexed to the imperial decrees. Scarcely had Sophia established her authority when she was threatened with deposition, from an alarming insurrection of the Strelitzes. This was excited by their commander Prince Kovanskoi, who had demanded of Sophia that she should marry one of her sisters to his son, but had met with a mortifying refusal. In consequence of this insurrection, which threw the whole city of Moscow into terror and consternation, Sophia and the two young czars took refuge in a monastery about twelve leagues from the capital; and before the Strelitzes could follow them thither, a considerable body of soldiers, principally foreigners, was assembled in their defence. Kovanskoi was taken prisoner, and instantly beheaded; and though his followers at first threatened dreadful vengeance on his executioners, they soon found themselves obliged to submit. From every regiment was selected the tenth man, who was to suffer as an atonement for the rest; but this cruel punishment was remitted, and only the most guilty among the ringleaders suffered death.

The quelling of these disturbances gave leisure to the friends of Peter to pursue the plans which they had formed for subverting the authority of Sophia; and about this time a favourable opportunity offered, in consequence of a rupture with Turkey. The Porte was now engaged in a war with Poland and the German empire, and both these latter powers had solicited the assistance of Russia against the common enemy. Sophia and her party were averse to the alliance; but as there were in the council many secret friends of Peter, these had sufficient influence to persuade the majority that a Turkish war would be of advantage to the state. They even prevailed on Galitzin to put himself at the head of the army, and thus removed their principal opponent. It is difficult to conceive how a man, so able in the cabinet as Galitzin, could have suffered his vanity so far to get the better of his good sense, as to accept a military command, for which he certainly had no talents. Assembling an army of nearly three hundred thousand men, he marched towards the confines of Turkey, and there consumed two campaigns in marches and countermarches, and

History. An. 1682. Intrigues of the Princess Sophia.

Joint reign of Ivan and Peter I.

An. 1687. The party of Peter gains ground.

History. lost nearly forty thousand men, partly in unsuccessful skirmishes with the enemy, but chiefly from disease.

While Galitzin was thus trifling away his time in the south, Peter, who already began to give proofs of those great talents which afterwards enabled him to act so conspicuous a part in the theatre of the north, was strengthening his party among the Russian nobles. His ordinary residence was at a village not far from Moscow, and here he had assembled round him a considerable number of young men of rank and influence, whom he called his play-mates. Among these were two foreigners, Lefort a Genevese, and Gordon a Scotchman, who afterwards signalized themselves in his service. These young men had formed a sort of military company, of which Lefort was captain; and the young czar, beginning with the situation of drummer, gradually rose through every subordinate office. Under this appearance of a military game, Peter was secretly establishing himself in the affections of his young companions, and effectually lulled the suspicions of Sophia, till it was too late for her to oppose his machinations.

An. 1689. Peter obtains the undivided sovereignty.

About the middle of the year 1689, Peter, who had now attained his seventeenth year, determined to make an effort to deprive Sophia of all share in the government, and to secure to himself the undivided sovereignty. On occasion of a solemn religious meeting that was held, Sophia had claimed the principal place, as regent of the empire; but this claim was strenuously opposed by Peter, who, rather than fill a subordinate situation, quitted the place of assembly, and, with his friends and adherents, withdrew to the monastery of the Holy Trinity, which had formerly sheltered him and his copartners from the fury of the Strelitzes. This was the signal for an open rupture. Sophia, finding that she could not openly oppose the party of the czar, attempted to procure his assassination; but as her design was discovered, she thought proper to solicit an accommodation. This was agreed to, on condition that she should give up all claim to the regency, and retire to a nunnery. The commander of the Strelitzes, her agent in the assassination of Peter, was beheaded, and the minister Galitzin sent into banishment to Archangel.

He establishes a military and naval force.

Peter now saw himself in undisputed possession of the imperial throne; for though Ivan was still nominally czar, he had voluntarily resigned all share in the administration of affairs, and retired to a life of obscurity. The first object to which the czar directed his attention was the establishment of a regular and well-disciplined military force. He had learned by experience how little dependence was to be placed on the Strelitzes; and these regiments he determined to disband. He commissioned Lefort and Gordon to levy new regiments, which, in their whole constitution, dress, and military exercises, should be formed on the model of other European troops. He next resolved to carry into execution the design which had been formed by his father, of constructing a navy. For this purpose he first took a journey to Archangel, where he employed himself in examining the operations of the shipwrights, and occasionally taking a part in their labours; but as he learned that the art of ship-building was practised in greater perfection in Holland, and some other maritime countries of Europe, he sent thither several young Russians to be initiated into the best methods of constructing ships of war.

His successes against the Turks.

The war with Turkey still languished, but Peter was resolved to prosecute it with vigour, hoping to get possession of the town of Azof, and thus open a passage to the Black Sea. He placed Gordon, Lefort, and two of his nobles, at the head of the forces destined for this expedition, and himself attended the army as a private volunteer. The success of the first campaign was but trifling; and Peter learned that his deficiency of artillery and his want of transports prevented him from making an effectual attack on Azof. These difficulties, however, were soon surmounted. He

procured a supply of artillery and engineers from the emperor and the Dutch, and found means to provide a number of transports. With these auxiliaries he opened the second campaign, defeated the Turks on the Sea of Azof, and made himself master of the town. Peter was so elated with these successes, that on his return from the seat of war he marched his troops into Moscow in a triumphal procession, in which Lefort as admiral of the transports, and Schein as commander of the land forces, bore the most conspicuous parts, while Peter himself was lost without distinction in the crowd of subaltern officers.

He now resolved to form a fleet in the Black Sea; but as his own revenues were insufficient for this purpose, he issued a ukase, commanding the patriarch and other dignified clergy, the nobility, and the merchants, to contribute a part of their income towards fitting out a certain number of ships. This proclamation was extremely unpopular, and, together with the numerous innovations which Peter was every day introducing, especially his sending the young nobles to visit foreign countries, and his own avowed intention of making the tour of Europe, contributed to raise against him a formidable party. The vigilance and prudence of the czar, however, extricated him from the dangers with which he was threatened, and enabled him to carry into execution his proposed journey.

In returning to his own dominions, Peter passed through An. 1700. Rawa, where Augustus king of Poland then was. The czar Peter had determined, in conjunction with Augustus and the king of Denmark, to take advantage of the youth and inexperience of Charles XII. who had just succeeded to the Swedish throne; and in this interview with Augustus, he made the final arrangements for the part which each was to take in the war. Augustus was to receive Livonia as his part of the spoil, while Frederick king of Denmark had his eye on Holstein, and Peter had formed designs on Ingria, formerly a province of the Russian empire.

In the middle of the year 1700, Charles had left his capital to oppose these united enemies. He soon compelled the king of Denmark to give up his designs on Holstein, and sign a treaty of peace; and being thus at liberty to turn his arms against the other members of the confederacy, he resolved first to lead his army against the king of Poland; but on his way he received intelligence that the czar had laid siege to Narva with an army which some authorities calculate at a hundred thousand men. On this he immediately embarked at Carlscrona, though it was then the depth of winter, and the Baltic was scarcely navigable; and soon landed at Pernaw in Livonia with part of his forces, having ordered the rest to Revel. His army did not exceed twenty thousand men, but it was composed of the best soldiers in Europe, while that of the Russians was little better than an undisciplined multitude. Every possible obstruction, however, had been thrown in the way of the Swedes. Thirty thousand Russians were posted in a defile on the road, and this corps was sustained by another body of twenty thousand drawn up some leagues nearer Narva. Peter himself had set out to hasten the march of a reinforcement of forty thousand men, with whom he intended to attack the Swedes in flank and rear; but the celerity and valour of Charles baffled every attempt to oppose him. He set out with four thousand foot and an equal number of cavalry, leaving the rest of the army to follow at their leisure. With this small body he attacked and defeated the Russian armies successively, and pushed his way to Peter's camp, for the attack of which he gave immediate orders. This camp was fortified by lines of circumvallation and contravallation, by redoubts, and by a line of a hundred and fifty brass cannons placed in front; and it was defended by an army of eighty thousand men; yet so violent was the attack of the Swedes, that in three hours the intrenchments were carried, and Charles, with

History.

An. 1700. Peter engaged in a war with Charles XII. of Sweden.

Defeated the Swedes.

History.

only four thousand men, that composed the wing which he commanded, pursued the flying enemy, amounting to fifty thousand, to the river Narva. Here the bridge broke down with the weight of the fugitives, and the river was filled with their bodies. Great numbers returned in despair to their camp, where they defended themselves for a short time, but were at last obliged to surrender. In this battle, thirty thousand were killed in the intrenchments and the pursuit, or drowned in the river; twenty thousand surrendered at discretion, and were dismissed unarmed, while the rest were totally dispersed. A hundred and fifty pieces of cannon, twenty-eight mortars, a hundred and fifty-one pairs of colours, twenty standards, and all the Russian baggage, fell into the hands of the Swedes; and the Duke de Croy, the Prince of Georgia, and seven other generals, were made prisoners. Charles behaved with the greatest generosity to the conquered. Being informed that the tradesmen of Narva had refused credit to the officers whom he detained prisoners, he sent a thousand ducats to the Duke de Croy, and to every other officer a proportional sum.

Peter was advancing with forty thousand men to surround the Swedes, when he received intelligence of the dreadful defeat at Narva. He was greatly chagrined; but comforting himself with the hopes that the Swedes would in time teach the Russians to beat them, he returned to his own dominions, where he applied himself with the utmost diligence to the raising of another army. He evacuated all the provinces which he had invaded, and for a time abandoned all his great projects, thus leaving Charles at liberty to prosecute the war against Poland.

As Augustus had expected an attack, he endeavoured to draw the czar into a close alliance with him. The two monarchs had an interview at Birzen, where it was agreed that Augustus should lend the czar fifty thousand German soldiers, to be paid by Russia; that the czar should send an equal number of his troops to be trained up to the art of war in Poland; and that he should pay the king three millions of rix-dollars in the space of two years. Of this treaty Charles had notice, and, by means of his minister Count Piper, entirely frustrated the scheme.

Renewed exertions of Peter.

After the battle of Narva, Charles became confident and negligent, while the activity of Peter increased with his losses. He supplied his want of artillery by melting down the bells of the churches, and constructed numerous small vessels on the lake of Ladoga to oppose the entrance of the Swedes into his dominions. He took every advantage of Charles's negligence, and engaged in frequent skirmishes, in which, though often beaten, he was sometimes victorious. He contrived to make himself master of the river Neva, and captured Nyenschantz, a fortress at the mouth of that river. Here he laid the foundation of that city which he had long projected, and which was to become the metropolis of his empire. At length, in 1704, he became master of Ingria, and appointed his favourite Prince Menzikoff to be viceroy of that province, with strict orders to make the building of the new city his principal business. Here edifices were already rising in every quarter, and navigation and commerce were increasing in vigour and extent.

Defeat of the Swedes.

In the mean time Augustus king of Poland, though treating with Charles for the surrender of his dominions, was obliged to keep up the appearance of war, which he had neither ability nor inclination to conduct. He had been lately joined by Prince Menzikoff with 30,000 Russians; and this obliged him, contrary to his inclination, to hazard an engagement with Meyersfeldt, who commanded 10,000 men, one half of whom were Swedes. As at this time no disparity of numbers whatever was reckoned an equivalent to the valour of the Swedes, Meyersfeldt did not decline the combat, though the army of the enemy was four times as numerous as his own. Menzikoff, with his own countrymen,

defeated the enemy's first line, and was on the point of defeating the second, when Stanislas, with the Poles and Lithuanians, gave way. Meyersfeldt then perceived that the battle was lost; but he fought desperately, that he might avoid the disgrace of a defeat. At last, however, he was oppressed by numbers, and forced to surrender; suffering the Swedes for the first time to be conquered by their enemies. The whole army were taken prisoners excepting Major-general Krassau, who having repeatedly rallied a body of horse formed into a brigade, at last broke through the enemy, and escaped to Posnania. Augustus had scarcely sung *Te Deum* for this victory, when his plenipotentiary returned from Saxony with the articles of the treaty, by which he was to renounce all claim to the crown of Poland in favour of his rival Stanislas. The king hesitated and scrupled, but at last signed them; after which he set out for Saxony, glad at any expense to be freed from such an enemy as the king of Sweden, and from such allies as the Russians.

The czar Peter was no sooner informed of this extraordinary treaty, than he learned also the cruel fate of his plenipotentiary Patkul, a Livonian emigrant, whom Charles claiming as a subject, seized and executed. Peter immediately sent letters to every court in Christendom, complaining of this breach of the law of nations. He entreated the emperor, the queen of Britain, and the states-general, to revenge this insult on humanity. He stigmatized the compliance of Augustus with the opprobrious name of pusillanimity; and exhorted them not to guarantee a treaty so unjust, but to despise the menaces of the Swedish bully. So well, however, was the prowess of the king of Sweden known, that none of the allies thought proper to irritate him, by refusing to guarantee any treaty which he thought proper to accept. At first, Peter thought of revenging Patkul's death by massacring the Swedish prisoners at Moscow; but from this he was deterred, by remembering that Charles had many more Russian prisoners than he himself had of Swedes. In the year 1707, however, he entered Poland at the head of sixty thousand men, and, assembling a diet, solemnly deposed Stanislas, with the same ceremonies which had been used with regard to Augustus. The appearance of a Swedish army under King Stanislas and General Lewenhaupt put a stop to this invasion, and the czar retired into Lithuania, giving out as the cause of his retreat, that the country could not supply him with the provisions and forage necessary for so great an army.

During these transactions Charles had taken up his residence in Saxony, where he gave laws to the court of Vienna, and in a manner intimidated all Europe. At last, satiated with the glory of having dethroned one king, set up another, and struck all Europe with terror and admiration, he began to evacuate Saxony in pursuit of his great plan, the dethroning the czar Peter, and conquering the vast empire of Russia. While the army was on full march in the neighbourhood of Dresden, he took the extraordinary resolution of visiting King Augustus with no more than five attendants. Although he had no reason to imagine that Augustus either did or could entertain any friendship for him, he was not uneasy at the consequences of thus putting himself entirely in his power. He reached the palace door of Augustus before it was known that he was in the city; and he entered the elector's chamber in his boots before the latter had time to recover from his surprise. He breakfasted with him in a friendly manner, and then expressed a desire of viewing the fortifications. While he was walking round them, a Livonian, who had formerly been condemned in Sweden, and served in the troops of Saxony, thought he could never have a more favourable opportunity of obtaining pardon. He therefore begged of King Augustus to intercede for him, being fully assured that his majesty could not refuse so small a favour to a prince in whose power he then was. Augustus accordingly made the request, but Charles refused

History.

Peter determines to continue the war.

Charles visits Augustus.

History. it in such a manner that he did not think proper to ask it a second time. Having passed some hours in this extraordinary visit, he returned to his army, after having embraced and taken leave of the king he had dethroned.

He marches against the Russians. The armies of Sweden, in Saxony, Poland, and Finland, now exceeded seventy thousand men; while the available force of Russia amounted to about a hundred thousand. Peter, who had his army dispersed in small parties, instantly assembled it on receiving notice of the king of Sweden's march, was making all possible preparations for a vigorous resistance, and was on the point of attacking Stanislas, when the approach of Charles struck his whole army with terror. In the month of January 1708, Charles passed the Niemen, and entered the south gate of Grodno just as Peter was quitting the place by the north gate. Charles at this time had advanced some distance before the army, at the head of six hundred horse.

The Russians again defeated. The czar having received intelligence of his situation, sent back a detachment of two thousand men to attack him; but these were entirely defeated, and thus Charles became possessed of the whole province of Lithuania. The king pursued his flying enemies in the midst of ice and snow, over mountains, rivers, and morasses, and through obstacles which appeared to be insurmountable. These difficulties, however, he had foreseen, and had prepared to meet them. As he knew that the country could not furnish provisions sufficient for the subsistence of his army, he had provided a large quantity of biscuit, and on this his troops chiefly subsisted, till they came to the banks of the Beresina, in view of Borisow. Here the czar was posted, and Charles intended to give him battle, after which he could the more easily penetrate into Russia. Peter, however, did not think proper to come to an action, but retreated towards the Dnieper, whither he was pursued by Charles, as soon as he had refreshed his army. The Russians had destroyed the roads and desolated the country, yet the Swedish army advanced with great celerity, and in their march defeated twenty thousand Russians, though intrenched to the very teeth. This victory, from the circumstances in which it was gained, was one of the most glorious that ever Charles had achieved. The memory of it was preserved by a medal struck in Sweden with this inscription; *Sylvæ, paludes, aggeres, hostes, victi.*

Peter attempts to make peace, but is unsuccessful. When the Russians had repassed the Dnieper, the czar, finding himself pursued by an enemy with whom he could not cope, resolved to make proposals for an accommodation. Charles made only this arrogant reply, "I will treat with the czar at Moscow;" a taunt which was received by Peter with the coolness of a hero. "My brother Charles," said he, "affects to play the Alexander, but he shall not find in me a Darius." He still, however, continued his retreat, and Charles pursued so closely that daily skirmishes took place between his advanced guard and the rear of the Russians. In these actions the Swedes had generally the advantage, though their petty victories cost them dear, by contributing to weaken their force in a country where it could not be recruited. The two armies came so close to each other at Smolensk, that an engagement took place between a body of Russians composed of ten thousand cavalry and six thousand Kalmuks, and the Swedish vanguard, composed of only six regiments, but commanded by the king in person. Here the Russians were again defeated; but Charles, having been separated from the main body of his detachment, was exposed to great danger. With one regiment only he fought with such fury as to drive the enemy before him, when they thought themselves sure of making him prisoner.

An. 1708. Charles advances towards Moscow. By the 3d of October 1708, Charles had approached within a hundred leagues of Moscow; but Peter had rendered the roads completely impassable, and had destroyed the villages on every side, so as to cut off every possibility of

subsistence to the enemy, while the season was far advanced, and the severity of winter was approaching. In these circumstances, the king, at length sensible that he had committed a perilous mistake, endeavoured to retrieve it by a step which proved yet more calamitous. He resolved, before attacking the Russian capital, to achieve the conquest of the Ukraine, where Mazeppa, a Polish gentleman, was general and chief of the Kozaks. Mazeppa having been affronted by the czar, readily entered into a treaty with Charles, whom he promised to assist with thirty thousand men, great quantities of provisions and ammunition, and with all his treasures, which were falsely stated to be immense. The Swedish army advanced towards the river Disna, where they had to encounter the greatest difficulties; a forest above forty leagues in extent, filled with rocks, mountains, and morasses. To complete their misfortunes, they were led thirty leagues out of the right way; all the artillery was sunk in bogs and marshes; the provision of the soldiers, which consisted of biscuit, was exhausted; and the whole army were spent and emaciated when they arrived at the Disna. Here they expected to have met Mazeppa with his reinforcement; but instead of that, they perceived the opposite banks of the river covered with a hostile army, and the passage itself rendered almost impracticable. Charles, however, was still undaunted; he let his soldiers by ropes down the steep banks; they crossed the river either by swimming, or on rafts hastily put together, drove the Russians from their post, and continued their march. Mazeppa soon after appeared, having with him about six thousand men, the broken remains of the army he had promised. The Russians had got intelligence of his designs, defeated and dispersed his adherents, laid his town in ashes, and taken all the stores collected for the Swedish army. However, he still hoped to be useful by his intelligence in an unknown country; and the Kozaks, out of revenge, crowded daily to the camp with provisions.

History. Greater misfortunes still awaited the Swedes. When Charles entered the Ukraine, he had sent orders to General Lewenhaupt to meet him with fifteen thousand men, six thousand of whom were Swedes, and a large convoy of provisions. Against this detachment Peter now bent his whole force, and marched against him with an army of sixty-five thousand men. Lewenhaupt had received intelligence that the Russian army consisted of only twenty-four thousand, a force to which he thought six thousand Swedes superior, and therefore disdained to intrench himself. A furious contest ensued, in which the Russians were defeated with the loss of fifteen thousand men. Now, however, affairs began to take another turn. The Swedes, elated with victory, prosecuted their march into the interior; but, from the ignorance or treachery of their guides, they were led into a marshy country, where the roads were made impassable by felled trees and deep ditches. Here they were attacked by the czar with his whole army. Lewenhaupt had sent a detachment to dispute the passage of a body of Russians over a morass; but finding his detachment likely to be overpowered, he marched to support them with all his infantry. Another desperate battle ensued. The Russians were once more thrown into disorder, and were just on the point of being totally defeated, when Peter gave orders to the Kozaks and Kalinkks to fire upon all that fled; "Even kill me," said he, "if I should be so cowardly as to turn my back." The battle was now renewed with great vigour; but notwithstanding the czar's positive orders, and his own example, the day would have been lost, had not General Bauer arrived with a strong reinforcement of fresh Russian troops. The engagement was once more renewed, and continued without intermission till night. The Swedes then took possession of an advantageous post, but were next morning attacked by the

History. Russians. Lewenhaupt had formed a sort of rampart with his waggons, but was obliged to set fire to them to prevent their falling into the hands of the Russians, while he retreated under cover of the smoke. The czar's troops, however, arrived in time to save five hundred of these waggons, filled with provisions destined for the distressed Swedes. A strong detachment was sent to pursue Lewenhaupt; but so terrible did he now appear, that the Russian general offered him an honourable capitulation. This was rejected with disdain, and a fresh engagement took place in which the Swedes, now reduced to four thousand, again defeated their enemies, and killed five thousand on the spot. After this Lewenhaupt was allowed to pursue his retreat without molestation, though deprived of all his cannon and provisions. Prince Menzikoff was indeed detached with a body of forces to harass him on his march; but the Swedes were now so formidable, even in their extremity, that Menzikoff dared not to attack them, so that Lewenhaupt with his four thousand men arrived safe in the camp of Charles, after having destroyed nearly thirty thousand of the Russians.

This may be said to have been the last successful effort of Swedish valour against the troops of Peter. The difficulties which Charles's army had now to undergo exceeded what human nature could support; yet still they hoped by constancy and courage to subdue them. In the severest winter known for a long time, even in Russia, they made long marches, clothed like savages in the skins of wild beasts. All the draught-horses perished; thousands of soldiers dropt down dead through cold and hunger; and by the month of February 1709 the whole army was reduced to eighteen thousand. Amidst numberless difficulties these penetrated to Pultava, a town on the eastern frontier of the Ukraine, where the czar had laid up magazines, of which Charles resolved to obtain possession. Mazeppa advised the king to invest the place, in consequence of his having correspondence with some of the inhabitants, by whose means he hoped it would be surrendered. He was, however, deceived. The besieged made an obstinate defence; the Swedes were repulsed in every assault, and eight thousand of them were defeated, and almost entirely cut off, in an engagement with a party of Russians. To complete his misfortunes, Charles received a shot in his heel from a carabine, which shattered the bone. For six hours afterwards, he continued calmly on horseback, giving orders, till he fainted with the loss of blood; after which he was carried into his tent.

Battle of
Pultava.

For some days the czar, with an army of seventy thousand men, had lain at a small distance, harassing the Swedish camp, and cutting off the convoys of provision; but now intelligence was received that he was advancing as if with a design of attacking the lines. In this situation, Charles, wounded, distressed, and almost surrounded by enemies, is said to have, for the first time, assembled a grand council of war, the result of which was, that it was determined to march out and attack the Russians. Voltaire, however, asserts that the king did not relax one iota of his wonted obstinacy and arbitrary temper; but that, on the 7th of July, he sent for General Renschild, and told him, without any emotion, to prepare for attacking the enemy next morning.

The 8th of July 1709 is remarkable for the battle which decided the fate of Sweden. Charles, having left eight thousand men in the camp to defend the works and repel the sallies of the besieged, began by break of day to march against his enemies with the rest of the army, consisting of twenty-six thousand men, of whom eighteen thousand were Kozaks. The Russians were drawn up in two lines behind their intrenchments, the horse in front, and the foot in the rear, with chasms to suffer the horse to fall back in case of necessity. General Slippenbach was despatched to attack the cavalry, which he did with such impetuosity that they were broken in an instant. They, however, rallied behind the infantry, and returned to the charge with so much vigour,

that the Swedes were disordered in their turn, and Slippenbach was made prisoner. Charles was now carried in his litter to the scene of confusion. His troops, re-animated by the presence of their leader, returned to the charge, and the battle became doubtful, when a blunder of General Creuk, who had been despatched by Charles to take the enemy in flank, and a successful manœuvre of Prince Menzikoff, decided the fortune of the day in favour of the Russians. Creuk's detachment was defeated, and Menzikoff, who had been sent by Peter with a strong body to post himself between the Swedes and Pultava, so as to cut off the communication of the enemy with their camp, and fall upon their rear, executed his orders with so much success as to intercept a corps de reserve of three thousand men. Charles had ranged his remaining troops in two lines, with the infantry in the centre, and the horse on the two wings. They had already twice rallied, and were now again attacked on all sides with the utmost fury. Charles in his litter, with a drawn sword in one hand, and a pistol in the other, seemed to be everywhere present; but new misfortunes awaited him. A cannon-ball killed both horses in the litter; and scarcely were these replaced by a fresh pair, when a second ball struck the litter in pieces, and overturned the king. The Swedish soldiers, believing him killed, fell back in consternation. The first line was completely broken, and the second fled. Charles, though disabled, did every thing in his power to restore order; but the Russians, emboldened by success, pressed so hard on the flying foe, that it was impossible to rally them. Renschild and several other general officers were taken prisoners, and Charles himself would have shared the same fate, had not Count Poniatowski, father of the future favourite of Catherine II., with five hundred horse, surrounded the royal person, and with desperate fury cut his way through ten regiments of the Russians. With this small guard the king arrived on the banks of the Dnieper, and was followed by Lewenhaupt with four thousand foot and all the remaining cavalry. The Russians took possession of the Swedish camp, where they found a prodigious sum in specie; while Prince Menzikoff pursued the flying Swedes, and, as they were in want of boats to cross the Dnieper, obliged them to surrender at discretion. Charles escaped with the utmost difficulty, but at length reached Otchakof, on the frontiers of Turkey.

By this decisive victory, Peter remained in quiet possession of his new acquisitions on the Baltic, and was enabled to carry on, without molestation, the improvements which he had projected at the mouth of the Neva. His haughty rival, so long and so justly dreaded, was now completely humbled, and his ally the king of Poland was again established on his throne. During the eight years that had elapsed from the battle of Narva to that of Pultava, the Russian troops had acquired the discipline and steadiness of veterans, and had at length learned to beat their former conquerors. If Peter had decreed triumphal processions for his trifling successes at Azof, it is not surprising that he should commemorate by similar pageants a victory so glorious and so important as that of Pultava. He made his triumphal entry into Moscow for the third time, and the public rejoicings on this occasion far exceeded all that had before been witnessed in the Russian empire.

The vanquished Charles had, in the mean time, found a valuable friend in the monarch in whose territories he had taken refuge. Achmet II. who then filled the Ottoman throne, had beheld with admiration the warlike achievements of the Swedish hero; and, alarmed at the late successes of his rival, determined to afford Charles the most effectual aid. In 1711, the Turkish emperor assembled an immense army, and was preparing to invade the Russian territories, when the czar, having intimation of his design, and expecting powerful support from Cantemir, hospodar of Moldavia, a vassal of the Porte, resolved to anticipate the

History.

Dangerous
situation of
Peter at
the Pruth.

History. Turks, and to make an inroad into Moldavia. Forgetting his usual prudence and circumspection, Peter crossed the Dnieper, and advanced by rapid marches as far as Yassy or Jassy, the capital of that province, which is situated on the river Pruth; but his temerity had nearly cost him his liberty, if not his life. From this dangerous situation he was extricated by the tact of his consort the Czarina Catherine, who by a liberal bribe succeeded in gaining over the grand vizier to her interests, and thus brought about the treaty of the Pruth.

An. 1721. By this treaty, in which the interests of Charles had been almost abandoned, Peter saw himself delivered from a dangerous enemy, and returned to his capital to prosecute those plans for the internal improvement of his empire which justly entitled him to the appellation of Great. Before we enumerate these improvements, however, we must bring the Swedish war to a conclusion. The death of Charles, in 1718, had left the Swedish government deplorably weakened, by the continual drains of men and money occasioned by his mad enterprises, and little able to carry on a war with a monarch so powerful as Peter. At length, therefore, in 1721, this ruinous contest, which had continued ever since the commencement of the century, was brought to a conclusion by the treaty of Nystadt, by which the Swedes were obliged to cede to Russia, Livonia, Esthonia, Ingria, a part of Karelia, the territory of Vyborg, the isle of Oesel, and all the other islands in the Baltic, from Courland to Vyborg; for which concessions they received back Finland, that had been conquered by Peter, together with two millions of dollars, and the liberty of exporting duty free, from Riga, Revel, and Arensburg, corn to the annual amount of fifty thousand roubles. In consequence of this great accession to the Russian empire, Peter received from his senate the title of Emperor and Autocrat of all the Russias, and the ancient title of czar fell into disuse.

Peter's national improvements. The improvements introduced by Peter into the internal policy of the empire must be acknowledged to have been numerous and important. He organized anew the legislative assembly of the state; he greatly ameliorated the administration of justice; he new-modelled the national army; he entirely created the Russian navy; he rendered the ecclesiastical government milder and less intolerant; he zealously patronized the arts and sciences; he erected an observatory at St Petersburg, and by publicly proclaiming the approach of an eclipse, and the precise time at which it was to take place, taught his subjects no longer to consider such a phenomenon as an omen of disaster, or an awful menace of divine judgment. He enlarged the commerce of his empire, and gave every encouragement to trade and manufactures. He formed canals, repaired the roads, instituted regular posts, and laid down regulations for a uniformity of weights and measures. Lastly, he in some measure civilized his subjects, though it is evident that he could not civilize himself.

Character of Peter. Various have been the estimates formed of the character of Peter by those who have detailed the events of his reign. It is certain that to him the Russian empire is greatly indebted for the position which she now occupies among the nations of Europe. As a monarch, therefore, he is entitled to our admiration; but as a private individual we must consider him as an object of detestation and abhorrence. His tyranny and his cruelty admit of no excuse; and if we were to suppose, that in sacrificing the heir of his crown he emulated the patriotism of the elder Brutus, we must remember that the same hand which signed the death-warrant of his son, could with pleasure execute the sentence of the law, or rather of his own caprice, and, in the moments of dissipation and revelry, could make the axe of justice an instrument of diabolical vengeance or of cool brutality.

Peter was succeeded by his consort Catherine, in whose favour he had, some years before his death, altered the or-

der of succession. As the character of this princess, and the transactions of her short reign, have been already detailed under her life, we shall here only notice in the most cursory manner the events that took place. From the commencement of her reign, Catherine conducted herself with the greatest benignity and gentleness, and thus secured the love and veneration of her subjects, which she had acquired during the life of the emperor. She reduced the annual capitation tax; ordered the numerous gibbets which Peter had erected in various parts of the country to be cut down; and caused the bodies of those who had fallen victims to his tyranny to be decently interred. She recalled the greater part of those whom Peter had exiled to Siberia; paid the troops their arrears; and restored to the Kozaks those privileges and immunities of which they had been deprived during the late reign, while she continued in office most of the servants of Peter, both civil and military. In her reign the boundaries of the empire were extended by the submission of a Georgian prince, and the voluntary homage of the Kubinskian Tartars. She died on the 17th of May 1727, having reigned about two years. She had settled the crown on Peter the son of the Czarovitch Alexei, who succeeded by the title of Peter II.

Peter was only twelve years of age when he ascended the imperial throne, and his reign was short and uninteresting. He was guided chiefly by Prince Menzikoff, whose daughter Catherine had decreed him to marry. This ambitious man, who, from the mean condition of a pye-boy, had risen to the first offices of the state, and had, during the late reign, principally conducted the administration of the government, was now, however, drawing towards the end of his career. The number of his enemies had greatly increased, and their attempts to work his downfall at last succeeded. A young nobleman of the family of the Dolgoruki, who was one of Peter's chief companions, was excited by his relations, and the other enemies of Menzikoff, to instil into the mind of the young prince feelings hostile to that minister. In this commission he succeeded so well, that Menzikoff and his whole family, not excepting the young empress, were banished to Siberia, and the Dolgorukis took into their hands the management of affairs. These artful counsellors, instead of cultivating the naturally good abilities of Peter, encouraged him to waste his time and exhaust his strength in hunting and other athletic exercises, for which his tender years were by no means calculated. It is supposed that the debility consequent on such fatigue increased the natural danger of the small-pox, with which he was attacked in January 1730, and from which he never recovered.

An. 1730. Notwithstanding the absolute power with which Peter I. and the Empress Catherine had settled by will the title Anne to the throne, the Russian senate and nobility, upon the death of Peter II. ventured to set aside the order of succession which those sovereigns had established. The male issue of Peter was now extinct; and the Duke of Holstein, son to Peter's eldest daughter, was by the destination of the late empress entitled to the crown; but the Russians, for political reasons, filled the throne with Anne duchess of Courland, second daughter to Ivan, the eldest brother of Peter, though her eldest sister, the Duchess of Mecklenburg, was still alive. Anne's reign was extremely prosperous; and though she accepted the crown under limitations which some thought derogatory to her dignity, yet she broke them all, asserted the prerogative of her ancestors, and punished the aspiring Dolgoruki family, who had imposed those restrictions, with a view, as it is said, that they themselves might govern. She raised her favourite Biren to the duchy of Courland; and was obliged to give way to many severe executions on his account. Few transactions of any importance took place during the reign of Anne. She followed the example of her great predecessor Peter, by interposing in the affairs of Poland, where she

History.
An. 1725.
Reign of
Catherine I.

An. 1727.
Reign of
Peter II.

An. 1730.
Anne
Courland
succeeds to
the imperial
throne.

History. had sufficient interest to establish on the throne Augustus III. She entered into a treaty with the shah of Persia, by which she agreed to give up all title to the territories that had been seized by Peter I. on the shores of the Caspian, in consideration of certain privileges to be granted to the Russian merchants.

In 1735, a rupture took place between Russia and Turkey, occasioned partly by the mutual jealousies that had subsisted between these powers ever since the treaty on the Pruth, and partly by the depredations of the Tartars of the Crimea, then under the dominion of the Porte. A Russian army entered the Crimea, ravaged part of the country, and killed a considerable number of Tartars; but having ventured too far, without a sufficient supply of provisions, it was obliged to retreat, after sustaining a loss of nearly ten thousand men. This ill success did not discourage the court of St Petersburg; and in the following year another armament was sent into the Ukraine, under the command of Marshal Munnich, while another army under Lascy proceeded against Azof. Both these generals met with considerable success; the Tartars were defeated, and the fort of Azof once more submitted to the Russian arms. A third campaign took place in 1737, and the Russians were now assisted by a body of Austrian troops. Munnich laid siege to Otchakof, which soon surrendered, while Lascy desolated the Crimea.

No material advantages were, however, gained upon either side; and disputes arose between the Austrian and Russian generals. At length, in 1739, Marshal Munnich, having crossed the Bog at the head of a considerable army, defeated the Turks in a pitched battle near Stavutshan; made himself master of Yassy, the capital of Moldavia; and before the end of the campaign reduced the whole of that province under his subjection. These successes of the Russian arms induced the Porte to propose terms of accommodation; and in the end of 1739 a treaty was concluded, by which Russia again gave up Azof and Moldavia, and, to compensate the loss of above a hundred thousand men, and vast sums of money, gained nothing but permission to build a fortress on the Don.

An. 1740. Accession and imprisonment of Ivan VI. Upon the death of Anne, which took place in 1740, Ivan, the son of her niece the Princess of Mecklenburg, was, by her will, entitled to the succession; but as he was no more than two years old, Biren was appointed to be administrator of the empire during his minority. This nomination was disagreeable to the emperor's father and mother, and unpopular among the Russians. Count Munnich was employed by the princess to arrest Biren, who was tried and condemned to die, but was sent into exile to Siberia.

The administration of the Princess Anne of Mecklenburg and her husband was upon many accounts disagreeable, not only to the Russians, but to other powers of Europe; and the Princess Elizabeth, daughter of Peter the Great by Catherine, formed such a party, that in one night's time she was proclaimed empress of the Russias, and the Princess of Mecklenburg, her husband, and son, were made prisoners. The fate of this unhappy family was peculiarly severe. All but Ivan were sent into banishment, to an island at the mouth of the Dvina, in the White Sea, where the Princess Anne died in childhood in the year 1747. Ivan's father survived till 1775, and at last ended his miserable career in prison. The young emperor Ivan was for some time shut up in a monastery at Oranienburg, when, on attempting to escape, he was removed to the castle of Schlussemburg, where he was cruelly put to death.

An. 1741. Accession of Elizabeth. The chief instrument in rousing the ambition of Elizabeth, and procuring her elevation to the throne, was her physician and favourite Lestocq, who, partly by his insinuating address, and partly by the assistance of French gold, brought over to Elizabeth's interest most of the royal guards. During the short regency of Anne of Mecklenburg,

a new war had commenced between Russia and Sweden; and this war was carried on with considerable acrimony and some success by Elizabeth. The Russian forces took possession of Abo, and made themselves masters of nearly all Finland. But at length, in 1743, in consequence of the negotiations that were carrying on regarding the succession to the Swedish crown, a peace was concluded between the two powers, on the condition that Elizabeth should restore the greater part of Finland.

Soon after her accession, Elizabeth determined to nominate her successor to the imperial throne, and had fixed her eyes on Charles Peter Ulric, son of the Duke of Holstein-Gottorp, by Anne, daughter of Peter the Great. This prince was accordingly invited into Russia, persuaded to become a member of the Greek church, and proclaimed Grand Duke of Russia, and heir of the empire. The ceremony of his baptism was performed on the 18th of November 1742, when he received the name of Peter Feodorovitch. He was at this time only fourteen years of age; but before he had attained his sixteenth year, his aunt had destined him a consort in the person of Sophia Augusta Frederica, daughter of Christian Augustus prince of Anhalt-Zerbst-Dornburg. This princess, on entering the Greek church, took the name of Catherine which she afterwards bore on the throne.

Having thus settled the order of succession, Elizabeth began to take an active part in the politics of Europe. The death of Charles VI. emperor of Germany, had left his daughter, Maria Theresa queen of Hungary, at the mercy of the enterprising king of Prussia, till a formidable party was organized in her behalf. To this confederacy the empress of Russia acceded, and in 1747 sent a considerable body of troops into Germany, to the assistance of the empress-queen. The events of this long and bloody contest have been fully detailed in the article PRUSSIA. The more private transactions of the court of St Petersburg, as far as they are connected with the intrigues of her niece Catherine and the follies of the Grand Duke Peter, have also been related in our life of CATHERINE II., or they will be found at greater length in the recently (1859) published *Memoirs of Catherine II.*, said with every appearance of truth to have been written by herself, and extending from her birth in 1729 to 1759. Elizabeth died on the 5th of January 1762, the victim of disease brought on by intemperance.

The grand duke ascended the throne by the name of Peter III. He entered on the government possessed of an enthusiastic admiration of the virtues of the King of Prussia, with whom he immediately made peace. He is said to have aimed at reforms which Peter the Great durst not attempt; and to have even ventured to cut off the beards of his clergy. He was certainly a weak man, who had no opinions of his own, but childishly adopted the sentiments of any person who took the trouble to teach him. His chief amusement was buffoonery; and he would sit for hours looking with pleasure at a merry-andrew singing drunken and vulgar songs. He was a stranger to the country, its inhabitants, and their manners; and suffered himself to be persuaded by those about him that the Russians were fools and beasts unworthy of his attention, except to make them, by means of the Prussian discipline, good fighting machines.

Becoming attached to a lady of the noble family of Vorontzoff, he disgusted his wife, who was then a beautiful woman in the prime of life, of great natural talents and great acquired accomplishments; whilst the lady whom he preferred to her was but one degree above an idiot. The Princess Dashkoff, the favourite's sister, who was married to a man whose genius was not superior to that of the emperor, being *dame d'honneur* and lady of the bed-chamber, had of course much of the empress's company. Similarity of situations knit these two illustrious personages in the

History.

An. 1742. Peter duke of Holstein-Gottorp made Grand Duke of Russia.

Elizabeth engages in the Seven Years' War.

An. 1762. Accession of Peter III.

His imprudences.

History. closest friendship. The princess, being a zealous admirer of the French *économistes*, could make her conversation both amusing and instructive. She retailed all her statistical knowledge; and finding the empress a willing hearer, she spoke of her in every company as a prodigy of knowledge, judgment, and philanthropy. Whilst the emperor, by his buffoonery and attachment to foreign manners, was daily incurring more and more the hatred of his subjects, the popularity of his wife was rapidly increasing; and some persons about the court expressed their regret that so much knowledge of government, such love of humanity, and such ardent wishes for the prosperity of Russia, should only furnish conversations with Catharina Romanovna (the Princess Dashkoff). The empress and her favourite did not let these expressions pass unobserved, but continued their studies in concert; and whilst the former was employed on her famous code of laws for a great empire, the latter always reported progress, till the middling circles of Moscow and St Petersburg began to speak familiarly of the blessings which they might enjoy if these speculations could be realized.

Meanwhile Peter III. was giving fresh cause of discontent. He had recalled from Siberia Count Munnich, who was indeed a sensible, brave, and worthy man; but Munnich, as he was smarting under the effects of Russian despotism, and had grounds of resentment against most of the great families, did not much discourage the emperor's unpopular conduct, trying only to moderate it and give it a system. Peter, however, was impatient. He publicly ridiculed the exercise and evolutions of the Russian troops; and hastily adopting the Prussian discipline, without digesting and fitting it for the constitution of his own forces, he completely ruined himself by disgusting the army.

Catherine forms a party in her favour.

In the midst of these imprudences, indeed, Peter was sometimes disturbed by the advice of virtuous counsellors. But these remonstrances produced only a temporary gleam of reformation, and he soon relapsed into his accustomed sensuality. What he lost in popularity was gained by the emissaries of Catherine. Four regiments of guards, amounting to eight thousand men, were speedily brought over by the three brothers Orlof, who had contrived to ingratiate themselves with their officers. The people at large were in a state of indifference, out of which they were partially roused by the following means. A little manuscript was handed about, containing principles of legislation for Russia, founded on natural rights, and on the claims of the different classes of people, which, insensibly formed, became so familiar as to appear natural. In that performance was proposed a convention of deputies from all the classes, and from every part of the empire, to converse, but without authority, on the subjects of which it treated, and to inform the senate of the result of their deliberations. It passed for the work of her majesty, and was much admired.

While Catherine was thus high in the public esteem and affection, the emperor took the alarm at her popularity, and in a few days came to the resolution of confining her for life, and then of marrying his favourite. The servants of that lady betrayed her to her sister, who imparted the intelligence to the empress. Catherine saw her danger, and instantly formed her resolution. She must either tamely submit to perpetual imprisonment, and perhaps a cruel and ignominious death, or contrive to hurl her husband from his throne. No other alternative was left her, and the consequence was what was undoubtedly expected. The proper steps were taken. Folly fell before abilities and address, and in three days the revolution was accomplished.

Peter de-throned and put to death.

When the emperor saw that all was lost, he attempted to enter Cronstadt from Oranienbaum, a town on the Gulf of Finland, thirty versts, or nearly twenty-six miles, from St Petersburg. The sentinels at the harbour presented their muskets at the barge; and though they were not loaded, and the men had no cartridges, he drew back.

History. Munnich received him again, and exhorted him to mount his horse and head his guards, swearing to live and die with him. He said, "No, I see it cannot be done without shedding much of the blood of my brave Holsteiners. I am not worthy of the sacrifice."

Six days had already elapsed since the revolution, and that great event had been apparently terminated without any violence that might leave odious impressions upon the mind of the public. Peter had been removed from Peterhof to a pleasant retreat called Ropscha, about thirty miles from St Petersburg; and here he supposed he should be detained but a short time previous to his being sent into Germany. He therefore transmitted a message to Catherine, desiring permission to have for his attendant a favourite negro, and that she would send him a dog, of which he was very fond, together with his violin, a bible, and a few romances; telling her that, disgusted with the wickedness of mankind, he was resolved henceforth to devote himself to a philosophical life. However reasonable these requests, not one of them was granted, and his plans of wisdom were turned into ridicule.

In the mean time the soldiers were amazed at what they had done. They could not conceive by what fascination they had been hurried so far as to dethrone the grandson of Peter the Great, in order to give his crown to a German woman. The majority, without plan or consciousness of what they were doing, had been mechanically led on by the movements of others; and each individual now reflecting on his baseness, after the pleasure of disposing of a crown had vanished, was filled only with remorse. The sailors, who had never been engaged in the insurrection, openly reproached the guards in the tippling-houses with having sold their emperor for beer. One night a band of soldiers attached to the empress took the alarm, from an idle fear, and exclaimed that their mother was in danger, and that she must be awaked, that they might see her. During the next night there was a fresh commotion more serious than the former. So long as the life of the emperor left a pretext for inquietude, it was thought that no tranquillity was to be expected.

On the sixth day of the emperor's imprisonment at Ropscha, Alexei Orlof, accompanied by an officer named Teploff, came to him with the news of his speedy deliverance, and asked permission to dine with him. According to the custom of that country, wine glasses and brandy were brought previous to dinner; and while the officer amused the czar with some trifling discourse, his chief filled the glasses, and poured a poisonous mixture into that which he intended for the prince. The czar, without any distrust, swallowed the potion, on which he immediately experienced the most severe pains; and on his being offered a second glass, on pretence of its giving him relief, he refused it, with reproaches against him that offered it. He called aloud for milk, but the two monsters offered him poison again, and pressed him to take it. A French valet-de-chambre, greatly attached to him, now ran in. Peter threw himself into his arms, saying in a faint tone of voice, "It was not enough, then, to prevent me from reigning in Sweden, and to deprive me of the crown of Russia. I must also be put to death."

The valet-de-chambre presumed to intercede for his master; but the two miscreants forced this dangerous witness out of the room, and continued their ill treatment of the czar. In the midst of this tumult the younger of the Princes Baratinsky came in, and joined the two former. Orlof, who had already thrown down the emperor, was pressing upon his breast with both his knees, and firmly gripping his throat with his hand. The unhappy monarch now struggling with that strength which arises from despair, the two other assassins threw a napkin round his neck, and put an end to his life by suffocation.

History.

It is not known with certainty what share the empress had in this event; but it is affirmed that on the very day on which it happened, while the empress was beginning her dinner with much gaiety, an officer, supposed to be one of the assassins, precipitately entered the apartment with his hair dishevelled, his face covered with sweat and dust, his clothes torn, and his countenance agitated with horror and dismay. On entering, his eyes, sparkling and confused, met those of the empress. She arose in silence, and went into a closet, whither he followed her. A few moments afterwards she sent for Count Panin, the former governor of Peter, who was already appointed her minister, and, informing him that the emperor was dead, consulted him on the manner of announcing his death to the public. Panin advised her to let one night pass over, and to spread the news next day, as if they had received it during the night. This counsel being approved, the empress returned with the same countenance, and continued her dinner with the same gaiety. On the day following, when it was published that Peter had died of an hæmorrhoidal colic, she appeared bathed in tears, and proclaimed her grief by an edict.

The corpse was brought to St Petersburg, there to be exposed. The face was black, and the neck excoriated. Notwithstanding these horrible marks, in order to assuage the commotions, which began to excite apprehension, and to prevent impostors from hereafter disturbing the empire, it was left three days exposed to all the people, with only the ornaments of a Holstein officer. The soldiers, disbanded and disarmed, mingled with the crowd, and as they beheld their sovereign, their countenances indicated a mixture of compassion, contempt, and shame. They were soon afterwards embarked for their country; but, as the sequel of their cruel destiny, almost all of these unfortunate men perished in a storm. Some of them had saved themselves on the rocks adjacent to the coast; but they again fell a prey to the waves, while the commandant of Cronstadt despatched a messenger to St Petersburg to know whether he might be permitted to assist them. Thus fell the unhappy Peter III. in 1762, in the thirty-fourth year of his age, after having enjoyed the imperial dignity only six months.

Catherine II. ascends the imperial throne.

On her accession, Catherine behaved with great magnanimity and forbearance towards those who had opposed her elevation, or were the declared friends of the deceased emperor. She gave to Prince George, in exchange for his title of Duke of Courland, conferred on him by Peter, the government of Holstein. She reinstated Biren in his dukedom of Courland, received into favour Marshal Munnich, who had readily transferred his fidelity from the dead to the living, and even pardoned her rival the Countess Vorontzoff, and permitted her to retain the tokens of her lover's munificence. She permitted Gudovitch, who was high in the confidence of Peter, and had incurred her particular displeasure, to retire to his native country. Perhaps the most unexpected part of her conduct towards the friends of Peter, was her adhering to the treaty of peace which that monarch had concluded with the king of Prussia six months before. The death of his inveterate enemy Elizabeth had relieved Frederick from a load of solicitude, and had extricated him from his dangerous situation. He now, as he thought, saw himself again involved in a war with the same formidable power; but, to his great joy, he found that Catherine, from motives of policy, declined entering on a war at the commencement of her reign.

An. 1764. Assassination of the dethroned czar.

In one particular the empress showed her jealousy and her fears. She increased the vigilance with which the young prince Ivan was confined in the castle of Schlussemburg, from which Peter III. had expressed a resolution to release him. Not long after her accession, this unfortunate prince was assassinated, though whether this event was to be imputed to the empress or her counsellors, cannot

be positively determined. But a manifesto published by the court of St Petersburg, and supposed to have been written by the empress herself, admitted that the prince was put to death by the officers of his guard, alleging that this was necessary, in consequence of an attempt to carry him off.

Were we to offer a detailed account of the principal transactions that took place during the long reign of Catherine, we should far exceed the limits within which this article must be confined, and should at the same time repeat much of what has already been given under other heads. As the events that distinguished the life of Catherine, however, are too important to be wholly omitted, we shall present our readers with the following chronological sketch of them, referring for a more particular account to Tooke's Life of Catherine II., and to the articles CATHERINE II., BRITAIN, FRANCE, POLAND, PRUSSIA, SWEDEN, and TURKEY, in this work.

The year 1766 presented at St Petersburg the grandest spectacle that perhaps was ever seen in Europe. At an entertainment, which the empress chose to name a carousal, the principal nobility appeared in the most sumptuous dresses, sparkling with diamonds, and mounted on horses richly caparisoned, in a magnificent theatre erected for that purpose. Here all that has been read of the ancient jousts and tournaments was realized and exceeded in the presence of thousands of spectators, who seemed to vie with each other in the brilliancy of their appearance.

In 1768, the empress composed instructions for a new code of laws for her dominions; and the same year she submitted to the danger of inoculation, in order that her subjects, to whom the practice was unknown, might be benefited by her example.

In the same year a war broke out with the Ottoman Porte. The various events of this long and important conflict, which continued for seven years, must here be only briefly enumerated, as they will hereafter be more particularly noticed under the article TURKEY. In this war our countryman Greig, then an admiral in the Russian service, highly distinguished himself by his conduct in a naval engagement with the Turks, in the harbour of Tchesme, in the Archipelago, in which the Turkish fleet was entirely defeated, and their magazines destroyed. This took place on the 4th of November 1772.

In the beginning of the year 1769, the khan of the Crimea made an attack on the territory of Bachmut, on the river Bog, where he was several times bravely repulsed, with his army of Tartars and Turks, by Major-General Romanus and Prince Proserofskoi. At the same time were fought the battles of Zekanofca and Sorooca on the Dnieper, when the large magazines of the enemy were burned. In February the Polish Kozaks in the voyvodship of Brac-lau put themselves under the Russian sceptre. In the same month the Nisovian Saporogian Kozaks gained a battle in the deserts of Krim. In March the Polish rebels were subdued, and their town taken, by Major-General Ismailoff. On the 2d of April the fort of Taganrog, on the Sea of Azof, was taken. On the 15th the Russian army, under the general-in-chief Prince Galitzin, crossed the Dniester. On the 19th a victory was gained by Prince Galitzin near Chotzim. On the 21st the Turks were defeated not far from Chotzim by Lieutenant-General Count Soltikof. The 29th, an action was fought between the Russian Kalmucks and the Kuban Tartars, to the disadvantage of the latter. June the 8th, the Turks were defeated at the mouth of the Dnieper, near Otchakof. An action took place on the Dniester on the 19th, when the troops of Prince Proserofskoi forced the Turks to repass the river in great disorder. Chotzim was taken on the 19th of September. Yassy, in Moldavia, was taken on the 27th of September. Bukarescht, in Wallachia, was taken, and the hospodar made prisoner, in November 1770. A victory was gained

History.

Chronological sketch of the affairs of Russia during the reign of Catherine II.

An. 1766.

An. 1768. Establishment of a code of laws.

War with the Turks.

An. 1769.

Progress and conclusion of the war with Turkey.

History. by the Russians under Generals Podhorilshany and Potemkin, near Fokshany. The town of Shursha was taken by Lieutenant-General Von Stoffeln, February 4. A Russian fleet appeared in the port of Maina, in the Morea, on the 17th February. Mistra, the Lacedæmon of the ancients, and several other towns of the Morea, were taken in February. Arcadim in Greece surrendered, and a multitude of Turks were made prisoners, in the same month. The Turks and Tartars were driven from their intrenchments near the Pruth, by Count Romantzof, Prince Repnin, and General Bauer, 11th–16th June. Prince Proserofskoi gained several advantages near Otchakof, June 18. The Russian fleet, under Count Alexei Orlof, gained a complete victory over the Turks near Tschesme, 24th June; the consequence of this victory was the destruction of the whole Turkish fleet, near Tschesme, where it was burned by Admiral Greig on the 26th of June. A battle was fought on the Kagul, in which Count Romantzof defeated the Turkish army, consisting of a hundred and fifty thousand men, and took their camp, and all the artillery, July 21. The fortress Bender was taken July 22. The town of Ismail was taken by Prince Repnin, July 26; Kilia by Prince Repnin, August 21; and Akjerman in October. Brailof was taken on the 10th of November 1771; the town of Kaffa, June 29; and numberless other victories were obtained by sea and land, till peace was concluded on the 13th January 1775. By this the Crimea was declared independent of the Porte, and all the vast tract of country between the Bog and Dnieper was ceded to Russia, besides the Kuban and the isle of Taman, with free navigation in all the Turkish seas, including the passage of the Dardanelles, privileges granted to the most favoured nations, and stipulations in behalf of the inhabitants of Moldavia and Wallachia.

An. 1779. In 1779, the empress intending to divide the empire into viceroalties, began in January with the viceroyalty of Orlof. March 21st, a new treaty was signed at Constantinople between Russia and the Porte. May 13th, the treaty of peace between the belligerent powers in Germany and the French king was signed under the mediation of her majesty. In October, a ship built at Taganrog, named the Prince Constantine, sailed to Smyrna with Russian commodities. December 3d, the viceroyalty of Voronetsk was instituted; and the 27th, Count Romantzof Zadunaïski opened the viceroyalty of Kursk with great solemnity.

An. 1780-1. In 1780, February 28th, appeared the memorable declaration of her imperial majesty, relating to the safety of navigation and commerce of the neutral powers. In 1781, March 1st, the empress became mediatrix between England and Holland; April 5th, instituted the first public school in St Petersburg.

An. 1782. In 1782, by a command of her majesty, dated January the 18th, a Roman Catholic archbishop was installed in the city of Mohilcf, with authority over all the Catholic churches and convents in the Russian empire. August 7th, the famous equestrian statue of Peter the Great, being finished, was uncovered to the public in presence of the empress, on which occasion she published a proclamation containing pardons for several criminals. November 22d, the order of St Vladimir was instituted. The 27th, the empress published a new tariff.

An. 1783. In 1783, May 7th, the empress instituted a seminary for the education of young persons of quality at Kursk. June 21st, a treaty of commerce was concluded with the Ottoman Porte. July, the institution of the other viceroalties of the empire followed in succession. On July 21st, the empress published a manifesto by her commander-in-chief Prince Potemkin, in the Krim, in regard to the taking possession of that peninsula, the Kuban, and the island of Taman. The 24th, a treaty was concluded with Heraclius II. czar of Kartalinia and Kachetti, by which he submitted himself, his heirs and successors for ever, with his territo-

ries and dominions, to the sceptre of her majesty, her heirs and successors. On the 29th, accounts were received from the camp of Prince Potemkin, at Karas-Basar, that the clergy, the beys, and other persons of distinction, with the towns of Karas-Basar, Bachtshiserai, Achmetchet, Kaffa, Kosloff, with the districts of Turkanskoikut and Neubasar, and that of Perekop, in the peninsula of the Krim, together with the hordes of Edissank and Dshambolusk, the sultan Alim Giray, and his vassals, with all the Budshaks and Bashkirs there, and all the tribes dwelling beyond the river Kuban, the sultan Boatur Giray and his vassals, took the oath of allegiance to her imperial majesty, and with willing hearts submitted for ever to her glorious sway. On the 30th the hospodar of Wallachia was deposed, and Draco Suto set up in his place. September 22d, her majesty raised Gabriel, archbishop of Novgorod and St Petersburg, to the dignity of metropolitan. October 21st, in the great hall of the Academy of Sciences, the new institution of the Imperial Russian Academy was opened, after a most solemn consecration by the metropolitan Gabriel, and others of the clergy, under the presidency of the Princess Dashkoff. November 7th, the empress became mediatrix for accommodating the differences between the king of Prussia and the city of Dantzic. The school for surgery was opened at St Petersburg on the 18th. December 13th, a school commission was instituted for superintending all the public schools. On the 28th, an act was concluded with the Ottoman Porte, by which the possession and sovereignty of the Krim, the Kuban, and Taman, were solemnly made over to the empress.

1784. January 1st, the senate, in a speech by Field-Marshal Count Razomofskoi, performed the ceremony, repeated annually, of most humbly thanking her majesty for the benefactions which she had graciously bestowed on the whole empire in the preceding year. October 14th, the Lesgiers, having crossed the river Alasan, and invaded the dominions of Georgia, were repulsed with great loss by a detachment of Russian troops. December 29th, Katolikos Maksim, the serdar and court-marshal Prince Zeretelli, and the chief justice Kuinichese, ambassadors from David, czar of Imeretia, were admitted to a public audience of her majesty, at which they submitted, in the name of the czar, him and his subjects to the will and powerful protection of her imperial majesty, as the rightful head of all the sons of the orthodox eastern church, and sovereign ruler and defender of the Georgian nations.

1785. The 12th of January, Maurocordato, hospodar of Wallachia, was deposed, and Alexander Maurocordato, his uncle, restored to that dignity. The 21st, the empress visited the principal national school, and passed a long time in examining the classes, and the proficiency of the youth in that seminary; on which occasion a marble tablet was fixed in the wall of the fourth class, with this inscription, in gold letters: THOU VISITEST THE VINEYARD WHICH THINE OWN HAND HATH PLANTED. April 21st, the privileges of the nobility were confirmed, and on the same day the burghers of towns constituted into bodies corporate, by a particular manifesto. The public school in Voronetsk was opened. July 14th, a manifesto was issued, granting full liberty of religion and commerce to all foreigners settling in the regions of Mount Caucasus, under the Russian government. September 15th, the public school at Nishnei Novgorod was opened. October 12th, the Jesuits in White Russia, in a general assembly, elected a vicar-general of their order. November 1st, a treaty of commerce was concluded with the emperor of Germany. The 24th, the Russian consul in Alexandria made his public entry on horseback, an honour never before granted to any power; erected the imperial standard on his house, with discharge of cannon, &c. December 28th, a Russian mercantile frigate, fully freighted, arrived at Leghorn from Constantinople.

History

An. 1784. Georgia annexed to the Russian empire.

An. 1785. Several provincial schools established.

History.

An. 1786.
The roads
repaired at
the expense
of govern-
ment. A
loan bank
established.

1786. The 29th of January, the empress confirmed the plan of a navigation school. February 12th, by a decree, the usual slavish subscriptions to petitions were to be discontinued; and, instead of them, only the words *humble* or *faithful subject*, and in certain cases only *subject*, were ordained to be used. March 2d, the empress granted the university of Moscow a hundred and twenty-five thousand roubles, and all the materials of the palace Kremlin, for increasing its buildings. The 25th, a decree was passed for making and repairing the roads throughout the whole empire at the sole expense of the crown, and four millions of roubles were immediately allotted for the road between St Petersburg and Moscow. April 10th, a new war establishment for the army was signed; 23d, the hospodar of Wallachia was deposed, and Mavroyeni set up in his place. June 28th, the empress instituted a loan bank at St Petersburg, to the fund whereof she allotted twenty-two millions to be advanced to the nobility, and eleven millions to the burghers of the town, on very advantageous terms. August 5th, there were published rules to be observed in the public schools. October 4th, a large Russian ship, with Russian productions, from St Petersburg, arrived at Cadiz. November 24th, the empress erected public schools at Tambov. December 14th, Prince Ypsilanti was appointed hospodar of Moldavia, in the room of the deposed Maurocordato. December 31st, a treaty of commerce and navigation was concluded between Russia and France.

An. 1787.
Renewal of
hostilities
with Tur-
key.

1787. March, public schools were endowed and opened at Rostof, Uglitsh, Molaga, and Romanof, in the viceroyalty of Yaroslavl; also at Ustiug and Arasovitz, in the viceroyalty of Vologda. April 21st, a manifesto was issued for promoting peace and concord among the burghers of the empire. The 25th, took place the concerted interview between the empress and the king of Poland, near the Polish town of Konief. The treaty of commerce with England being expired, the British factory were informed that they must henceforward pay the duties on imports in silver money, like the other nations who had no commercial treaty. May 7th, the empress hearing that the emperor of Germany was at Cherson, proceeded thither, and met him there on the 12th. June 28th, the twenty-fifth anniversary of her reign, she displayed various marks of her bounty. The debtors to the crown were forgiven, prisoners released, imposts taken off, soldiers rewarded, &c. The 12th July, the new-built school at Riga, called a *Lyceum*, was solemnly dedicated. August 5th, Bulgakoff, the Russian ambassador at the Ottoman Porte, was imprisoned in the Seven Towers, contrary to the law of nations, which the empress regarded as a public declaration of war. 21st, The Turkish fleet at Otchakof attacked the Russian frigate Skorui and the sloop Bitingi, but was repulsed and put to flight by the bravery of the latter. Many signal advantages were gained over the Turks; several public schools founded in various parts of the empire between this and August following, during which time the war broke out with Sweden.

An. 1788.
War with
Sweden.

1788. August 12th, in the expedition beyond the Kuban, the Russian troops entirely routed a company of four thousand Arutayans and Alcasinians; eight hundred of the enemy were slain, and five villages destroyed. 15th, The surrender of the Turkish fortress of Dubitsha took place. 18th, The Turks made a violent sortie from Otchakof, but were repulsed by the Russian yagers, and, after a battle of four hours, were driven back with the loss of five hundred men. 23d, A fierce battle was fought between the Russian troops and Sacubanians, in which the latter lost a thousand men. The Russian fleet kept the Swedish blocked up in Sveaborg ever since the battle of July 6th. The Swedish army left the Russian territory in Finland. September 18th, The town and fortress of Chotzim surrendered to the Russians, with the garrison of two thousand men, a hundred and fifty-three cannon fourteen mortars, and much ammunition.

19th–29th, A small Russian squadron from the fleet at Sevastopol, cruising along the coast of Anatolia, destroyed many of the enemy's vessels, prevented the transporting of the Turkish troops, and returned with great booty. 20th, Usenier Shamanachin, chief of the Bsheduchovians, was, on his petition, admitted a subject of Russia. 26th, A numerous host of Kubanians and Turks were beaten on the river Ubin, with the loss of fifteen hundred men. November 7th, Prince Potemkin, at the head of his Kozaks, took the island Beresan, with many prisoners and much ammunition. December 6th, the town and fortress of Otchakof were taken by Prince Potemkin Tavritsheskoi; nine thousand five hundred and ten of the enemy were killed, four thousand taken prisoners, a hundred and eighty standards, three hundred and ten cannons and mortars. All the inhabitants were taken prisoners, amounting to twenty-five thousand; the Russians lost nine hundred and fifty-six killed and eighteen hundred and twenty-four wounded. December 19th, General Kamenskoy gained considerable advantages over the Turks near Gangur.

1789. April 16th, Colonel Rimskey Korsakoff was surrounded by the Turks, who were beaten, with great slaughter, by Lieutenant-General Von Derfelden. 17th–28th, Some Russian cruisers from Sevastopol effected a landing on Cape Karakarmen, burnt six mosques, and carried off great booty. 20th, General Derfelden drove the Turks from Galatli, gained a complete victory, killed two thousand, took fifteen hundred prisoners, with the seraskier Ibrahim Pasha, and the whole camp. Several skirmishes took place between the Russians and Swedes in Finland, always to the advantage of the former. May 31st, another victory was gained over the Swedes. June 5th, Sulkof was taken from the Swedes, and Fort St Michael on the 8th. July 15th, Admiral Tchitchagoff engaged the Swedish fleet under the command of the Duke of Sudermania; but no ship was lost on either side. 21st, A battle was fought at Fokshany, to the great loss of the Turks, and Fokshany was taken. August 13th, the Russian galley fleet fought the Swedish under Count Ehrenscherdt, the former took a frigate and five other ships, and two thousand prisoners. August 21st, another sea-fight took place, and Prince Nassau Siegen made good his landing of the Russian troops in sight of the king of Sweden at the head of his army. September 7th, Prince Repnin attacked the seraskier Hassan Pasha near the river Selt-ska, and took his whole camp. 11th, Count Suwaroff and prince of Saxe-Cobourg engaged near the river Kymnik the grand Turkish army of nearly a hundred thousand men, and gained a complete victory; from which Count Suwaroff received the surname Kymnikskoi. 14th, The Russian troops under General Ribas took the Turkish citadel Chodshabey, in the sight of the whole of the enemy's fleet. 30th, The fortress Palanka being taken, the town of Belgorod or Akjerman surrendered to Prince Potemkin Tavritsheskoi. November 4th, the town and castle of Bender submitted at discretion to the same commander.

History.

An. 1789.
Numerous
victories
over the
Turks and
Swedes.

1790. April 24, General Numsen gained a victory over the Swedes near Memel. May 2, a sea-fight took place off Peace with Revel, in which the Russians captured the Prince Charles of sixty-four guns from the Swedes; and in this engagement those two gallant English officers Captains Trevenian and Dennison were killed. 23d, The fleet under Vice-Admiral Kruse engaged the Swedish fleet near the island Siskar in the Gulf of Finland, without any advantage being gained on either side, though they fought the whole day. 24th, An action was fought at Savataipala, when the Swedes were forced to fly. June 6th, the Swedes were defeated by Major Buxhovden, on the island Uransari. June 22, the whole Swedish fleet, commanded by the Duke of Sudermania, was entirely defeated by Admiral Tchitchagoff and the Prince of Nassau Siegen; on this occasion five thousand prisoners were taken, amongst whom were the centre admiral and two hundred officers. 28th, General Denisoff defeated

An. 1790.
Peace with
Sweden.

History. the Swedes near Davidoff. July 9th, Admiral Ushakoff obtained a victory over the Turkish fleet commanded by the capudan pasha, at the mouth of the Straits of Yenikali. August 3d, peace was concluded with Sweden, without the mediation of any other power. August 28th, 29th, an engagement took place on the Euxine, not far from Chodshabey, between the Russian admiral Ushakoff and the capudan pasha, when the principal Turkish ship, of eighty guns, was burnt, one of seventy guns and three others taken, the admiral Said Bey being made prisoner, and another ship sunk; the rest made off. September 30th, a great victory was obtained over the Turks by General Germann, with much slaughter, and the seraskier Batal Bey, and the whole camp, were taken. October 18th, Kilia surrendered to Major Ribas. November 6th, 7th, the fortress Cultsha and the Turkish flotilla were taken. December 11th, the important fortress of Ismail, after a storming for seven hours without intermission, surrendered to Count Suwaroff, with the garrison of forty-two thousand men; thirty thousand eight hundred and sixteen were slain on the spot, two thousand died of their wounds, nine thousand were taken prisoners, with two hundred and sixty-five pieces of cannon, an incredible store of ammunition, &c. The Russians lost only eighteen hundred and fifteen killed, and two thousand four hundred and fifty wounded.

An. 1791. 1791. March 25th–31st, the campaign opened by the troops under Prince Potemkin, not far from Brailof, when the Turks were defeated in several battles, in which they lost upwards of four thousand men. June 5th, the troops under General Golenitshef Kutusoff, near Tultsha, drove the Turks beyond the Danube, and at Babada entirely routed a body of fifteen thousand men, of whom fifteen hundred were left dead upon the field. 22d, The fortress Anapuas was taken by storm, when the whole garrison, consisting of twenty-five thousand men, were put to the sword, excepting one thousand who were taken prisoners. 28th, The troops under Prince Repnin attacked the Turkish army, consisting of nearly eighty thousand men, commanded by the grand vizir Yussuf Pasha, eight pashas, two Tartar sultans, and two beys of Anatolia; and after a bloody battle of six hours, entirely routed them: five thousand Turks were killed in their flight. June 28th, Sudskuk Kale was taken. July 31st, Admiral Ushakoff beat the Turkish fleet on the coasts of Rumelia. Prince Repnin and Yussuf Pasha signed the preliminaries of peace between the Russian empire and the Ottoman Porte, by which the Dniester was made the boundary of the two empires, with the cession of the countries lying between the Bog and Dniester to Russia. August 15th, 16th, at Pilnitz, near Dresden, a congress was held by the emperor of Germany, the king of Prussia, the elector of Saxony, the Count d'Artois, &c. &c. One of the most important events in this year was the death of Prince Potemkin, at Yassy in Moldavia, on the 15th October.

An. 1792. 1792. Early in this year Bulgakoff, the Russian minister at Warsaw, declared war against Poland; and the Polish patriots raised an army in which Thaddeus Kosciuszko soon bore a conspicuous part.

In 1788, the diet of Poland had abrogated the constitution which the empress of Russia had, in 1775, compelled that nation to adopt, and had formed an alliance with the king of Prussia, by way of defence against the further encroachments of the Russian despot. Three years after, viz. on the 3d of May 1791, the new constitution, which was intended further to destroy the ambitious hopes of Catharine, was decreed at Warsaw. (See POLAND.) These were affronts which the Russian empress could not forgive, and in one of the *conciliabula*, in which the ministers of state, and the favourite for the time being, sat to regulate the affairs of the north of Europe, and to determine the fate of the surrounding nations, the annihilation of the Polish monarchy was resolved on.

History. The declaration of war above mentioned was denounced by Bulgakoff at an assembly of the diet. That body received the declaration with a majestic calmness, and resolved to take measures for the defence of the nation. The generous enthusiasm of liberty soon spread throughout the state, and even the king pretended to share in the general indignation. An army was hastily collected, and the command of it bestowed on Prince Joseph Poniatowsky, a general whose inexperience and frivolous pursuits were but ill adapted to so important a charge.

In the mean time several Russian armies were preparing to overwhelm the small and disunited forces of the Poles. A body of eighty thousand Russians extended itself along the Bog, another of ten thousand was collected in the environs of Kief, and a third of thirty thousand penetrated into Lithuania. While these armies were carrying murder and desolation throughout the Polish territories, Catherine was employing all her arts to induce the neighbouring powers to join in the partition of Poland; and in this she was but too successful. A treaty was accordingly concluded between the empress and the king of Prussia, by which each appropriated to itself a share of the remains of Poland. Stanislas Augustus, the powerless head of that state, was prevailed on to make a public declaration that there was a necessity for yielding to the superiority of the Russian arms.

An. 1793. 1793. On the 9th of April the Polish confederation of the partisans of Russia assembled at Grodno; and on this occasion the Russian general placed himself under the canopy of that throne which he was about to declare for ever vacant, and the Russian minister Sievers produced a manifesto, declaring the intention of his mistress to incorporate with her domains all the Polish territory which her arms had conquered.

The Russian soldiers dispersed throughout the provinces committed depredations and ravages of which history furnishes but few examples. Warsaw became especially the theatre of their excesses. Their general, Igelstrom, who governed in that city, connived at the disorders of the soldiers, and made the wretched inhabitants feel the whole weight of his arrogance and barbarity. The patriots of Poland had been obliged to disperse, their property was confiscated, and their families reduced to servitude. Goaded by so many calamities, they once more took the resolution to free their country from the oppression of the Russians, or perish in the attempt. Some of them assembled, and sent an invitation to Kosciuszko, to come and lead them on against the invaders of their freedom.

Kosciuszko had retired to Leipsig, with a few other Poles, all eminent for patriotism and military ardour. These hesitated not a moment in giving their approbation to the resolution adopted by their indignant countrymen; but they were sensible that, in order to succeed, they must begin by emancipating the peasants from the state of servitude under which they then groaned. Kosciuszko and Zagonchek repaired with all expedition to the frontiers of Poland, and the latter proceeded to Warsaw, where he held conferences with the chief of the conspirators, and particularly with several officers, who declared their detestation of the Russian yoke. All appeared ripe for a general insurrection; and the Russian commanders, whose suspicions had been excited by the appearance of Kosciuszko on the frontiers, obliged that leader and his confederates to postpone for a time the execution of their plan. In order to deceive the Russians, Kosciuszko retired into Italy, and Zagonchek repaired to Dresden, whither Ignatius Potoski and Kolontay had gone before him. On a sudden, however, Zagonchek appeared again at Warsaw, but was impeached by the king to General Igelstrom, and, in a conference with the general, was ordered to quit the Polish territory. He must now have abandoned his enterprise altogether, or immediately proceed to open insurrection. He chose the latter.

Fresh invasion of Poland.

History.
An. 1794.
Attempts of
the patriots
to oppose
the en-
croach-
ments of
Russia.

1794. Kosciuszko was recalled from Italy, and arrived at Cracow, where the Poles received him as their deliverer. Here he was joined by some other officers, and took the command of his little army, consisting of about three thousand infantry and twelve hundred cavalry. On the 24th of March was published the manifesto of the patriots, in which they declared the motives for their insurrection, and called on their countrymen to unite in the glorious attempt to free the republic from a foreign yoke. Kosciuszko was soon joined by three hundred peasants armed with scythes, and some other small reinforcements gradually came in. A body of seven thousand Russians had collected to oppose the movements of this little army, and a battle took place, in which the patriots were successful.

While the insurrection had thus auspiciously commenced on the frontiers, the confederates of the capital were nearly crushed by the exertions of the Russian general. Hearing at Warsaw of the success of Kosciuszko, Igelsstrom caused all those whom he suspected of having any concern in the insurrection to be arrested; but these measures served only to irritate the conspirators. On the 18th of April they openly avowed their confederacy with the patriots of the frontiers, and proceeded in great numbers to attack the Russian garrison. Two thousand Russians were put to the sword, and the general, being besieged in his house, proposed a capitulation; but, profiting by the delay that had been granted him, he escaped to the Prussian camp, which lay at a little distance from Warsaw.

Wilna, the capital of Lithuania, followed the example of Warsaw; but the triumph of the insurgents was there less terrible, as Colonel Yasinsky, who headed the patriots, conducted himself with so much skill, that he made all the Russians prisoners without bloodshed. The inhabitants of the cantons of Chelm and Lublin also declared themselves in a state of insurrection, and three Polish regiments who were employed in the service of Russia espoused the cause of their country. Some of the principal partisans of Russia were arrested, and sentenced to be hanged.

Kosciuszko exerted himself to the utmost to augment his army. He procured recruits among the peasants, and to inspire them with the more emulation, he adopted their dress, ate with them, and distributed rewards among such as appeared most to merit encouragement. All his attempts to inspire the lower orders of the Poles with the ardour of patriotism were, however, unavailing. A mutual distrust prevailed between the nobles and the peasants, and this was fomented by the arts of Stanislas and the other partisans of Russia.

The empress had sent into Poland two of her best generals, Suwaroff and Fersen. For some time Kosciuszko succeeded in preventing the junction of these commanders, and several engagements took place between the Russians and patriots, in which the former were generally successful. At length, on the 4th of October, the fate of Poland was decided by a sanguinary conflict between Kosciuszko and Fersen, at Macieyovitch, a small town of Little Poland, about sixty miles from Warsaw. The talents, courage, and desperation of Kosciuszko could not prevent the Poles from yielding to superior numbers. Almost the whole of his army was either cut in pieces or compelled to surrender at discretion, and the hero himself, covered with wounds, fell senseless on the field of battle, and was made prisoner.

The small number that escaped fled to Warsaw, and shut themselves up in the suburb of Praga. Hither they were pursued by Suwaroff, who immediately laid siege to the suburb, and prepared to carry it by storm. On the 2d of November he gave the assault, and having made himself master of the place, put to the sword both the soldiers and the peaceable inhabitants, without distinction of age or sex. It is computed that twenty thousand persons fell victims to the savage ferocity of the Russian general; and, covered

with the blood of the slaughtered inhabitants, the barbarian entered Warsaw in triumph.

Thus terminated the feeble resistance of the Polish patriots. The partition of the remaining provinces was soon effected, and Stanislas Augustus, who had long enjoyed merely the appearance of royalty, and had degraded himself by becoming the instrument of Russian usurpation, retired to Grodno, there to pass the remainder of his days, on a pension granted him by the empress.

1795. On the 18th of February, a treaty of defensive alliance between the empress of Russia and his Britannic majesty was signed at St Petersburg. The ostensible object of this treaty was to maintain the general tranquillity of Europe, and more especially of the north; and by it Russia agreed to furnish Great Britain with ten thousand infantry and two thousand horse in case of invasion; while Great Britain was, under similar circumstances, to send her imperial majesty a squadron consisting of two ships of seventy-four guns, six of sixty, and four of fifty, with a complement of four thousand five hundred and sixty men. On the 18th of March was signed the act by which the duchy of Courland, together with the circle of Pilten, all of which had lately belonged to the Duke of Courland, but had long retained only the shadow of independence, submitted themselves to the Russian dominion.

In this year there took place between the courts of St Petersburg and Stockholm a dispute which threatened to terminate in a war. Gustavus III. had been assassinated by Ankerstroem at a masquerade, on the 15th of March 1791; and the young king Gustavus Adolphus being still a minor, the Duke of Sudermania, his uncle, had been appointed regent of the kingdom. The regent had determined to effect a marriage between his nephew and a princess of the house of Mecklenburg; but Catherine publicly declared that the late king had betrothed his son to one of her grand-daughters. The misunderstanding hence originating was increased by the rude and indecorous behaviour of the Baron von Budberg, the Russian minister at Stockholm; and matters seemed tending to an open rupture, when, in the year 1796, a French emigrant named Christin effected a reconciliation, and General Budberg, the baron's uncle, was sent as ambassador to Stockholm from the Russian court.

In consequence of this reconciliation, the young king, attended by the regent, and a numerous train of Swedish courtiers, set out on a visit to St Petersburg, where they arrived on the 24th of August, and an interview took place between the empress and her royal visitors, for the purpose of finally adjusting the projected matrimonial alliance. Gustavus Adolphus was much pleased with the appearance of the Grand Duchess Alexandra, but informed the empress, that by the fundamental laws of Sweden he could not sign the marriage-contract before the princess had abjured the Greek religion; and as neither the solicitations nor the flatteries of Catherine could prevail on the young monarch to depart from the received custom of his country, the negotiation ended, and the next day Gustavus and his retinue quitted St Petersburg.

The last transaction of importance in the reign of Catherine was her invasion of the Persian territories, undertaken for the purpose of acquiring certain possessions on the shores of the Caspian. A Russian army entered Daghestan, and made itself master of Derbent, but was afterwards defeated by the Persians under Aga Mahmoud. The death of the empress took place, as we have elsewhere stated, on the 9th of November of this year; and the Grand Duke Paul Petrovitch ascended the throne under the title of Paul I.

Paul Petrovitch had attained his forty-second year before the death of his mother placed him on the imperial throne; but for many years before her death he had lived in a state of comparative obscurity and retirement, and had apparently been considered by the empress as incapable of taking

Final dis-
member-
ment of
Poland.

History.

An. 1795.

Dispute
with Swe-
den.

An. 1796.

Reign of
Paul.

History. any active part in the administration of affairs. It is well known that Catherine never admitted him to any participation of power, and kept him in a state of the most abject and mortifying separation from court, and in almost total ignorance of the affairs of the empire. Although by his birth he was generalissimo of the armies, president of the admiralty, and grand admiral of the Baltic, he was never permitted to head even a regiment, and was interdicted from visiting the fleet at Cronstadt. From these circumstances, it is evident that the empress either had conceived some jealousy of her son, or saw in him some mental imbecility, which appeared to her to disqualify him for the arduous concerns of government. There is little doubt, from the circumstances which distinguished his short reign, that Catherine had been chiefly influenced in her treatment of the grand duke by the latter consideration. There were certainly times at which Paul displayed evident marks of insanity, though he occasionally gave proofs of a generous and tender disposition, and even of intellectual vigour.

It is generally believed that, a short time before her death, Catherine committed to Plato Zuboff, her last favourite, a declaration of her will, addressed to the senate, desiring that Paul should be passed over in the succession, and that on her death the Grand Duke Alexander should ascend the vacant throne. As soon as Zuboff was made acquainted with the sudden death of the empress, he flew to Pavlovsk, about twenty-three miles from St Petersburg, where Paul occasionally resided; but meeting the grand duke on the road, he, after a short explanation, delivered up the important document. Paul, charmed with his zeal and loyalty, rewarded the favourite, by permitting him to retain the wealth and honours which had been heaped on him by his mistress, while a general and rapid dispersion soon took place among the other adherents of the late sovereign. On the day following the death of his mother, Paul made his public entry into St Petersburg, amidst the acclamations of all ranks of people.

Singular funeral of Peter III.

One of the first measures adopted by the new emperor excited considerable surprise, and divided the opinions of the public with respect to the motives by which it had been suggested; some attributing it to his respect for the memory of his late father, and others to a culpable reflection on that of his mother. He ordered the corpse of Peter III. to be removed from the sepulchre in which it had been deposited in the church of St Alexander Nefsky, solemnly crowned it, and caused it to lie in state for three weeks, while it was watched day and night by the only two remaining conspirators who had assisted at his assassination. After this dreadful mark of his justice on the murderers of his father, surely more terrible to the guilty mind than death itself, he consigned the ashes to the sepulchre of Catherine II. in the cathedral of St Peter and St Paul, obliging the assassins to walk in the procession as chief mourners.

Few political events of any importance marked the reign of Paul previously to the year 1798, when, in consequence of a treaty between him and the emperor of Germany, a Russian army of forty-five thousand men, under Field-Marshal Suwaroff, joined the imperialists in the Austrian territories in Italy. The progress of Suwaroff, his successes over Moreau, and his final recall by his master, have already been related in the article FRANCE.

An. 1799. Treaty of alliance between Russia and Britain.

In 1799, Paul entered into a treaty of offensive and defensive alliance with his Britannic majesty. This treaty was signed at St Petersburg on the 22d of June, having

History. been preceded by a provisional treaty between the same powers at the end of the year 1798. By the latter, which was fortified by a relative treaty with Austria, it had been stipulated that Paul should assist the king of Prussia, if the latter could be persuaded to join his arms to the allied powers against France, with forty-five thousand men, and that the king of Great Britain should pay to Russia a subsidy of L.75,000 sterling per month; and in case the king of Prussia should refuse to join the coalition, the same number of troops, in consideration of the same subsidy, should be employed, as occasion might require, to assist the common cause. By the new treaty, the emperor of Russia, instead of the forty-five thousand troops, engaged to furnish seventeen thousand five hundred and ninety-three, with the necessary artillery, to be employed in an expedition against Holland; and six ships, five frigates, and two transports, for the purpose of transporting part of the invading army from Britain to the continent. In consideration of these succours, the court of London engaged to advance to Russia a subsidy of L.44,000 sterling per month; to pay the sum of L.58,929. 10s. sterling for the expenses of equipping the fleet; and after the period of three months had elapsed from such equipment, to pay a further subsidy of L.19,642. 10s. sterling per month, as long as the fleet should remain under the command of his Britannic majesty.

In consequence of this treaty, a Russian fleet joined that of Britain in Yarmouth Roads, and took part in the unfortunate expedition to the coast of Holland, which was undertaken in the summer of 1799. The military fame of Russia was more augmented by the share which its army under Suwaroff took in the campaign of Italy during the same year, although the victories which won for the veteran his name of Italinski were far more than overbalanced by the misfortunes which ensued in Switzerland under the emperor's favourite Korsakoff. But in December 1800, Paul, after having laid an embargo on the British shipping which lay in his ports, openly abandoned his relations with our country, and proclaimed, in confederacy with Sweden and Denmark, to whom Prussia afterwards added herself, the great Northern Coalition with France against Great Britain.

In the beginning of the year 1801, all Europe was astonished or amused by a paragraph which appeared in the Hamburg Gazette of the 16th of January. It was dated from Petersburg, the 30th December 1800, and is as follows.

An. 1801. Paul's challenge to the sovereigns of Europe.

"We learn from Petersburg, that the emperor of Russia, finding that the powers of Europe cannot agree among themselves, and being desirous to put an end to a war which has desolated it for eleven years past, intends to point out a spot to which he will invite all the other sovereigns, to repair and fight in single combat; bringing with them, as seconds and squires, their most enlightened ministers and their most able generals, such as Messrs Thugot, Pitt, and Bernstorff; and that the emperor himself proposes being attended by Generals Count de Pahlen and Khutosof. We know not if this report be worthy of credit; however, the thing appears not destitute of some foundation, and bears strong marks of what he has been often taxed with."

This paragraph was immediately copied or translated into all the public papers, and it was strongly affirmed by many that it was the composition of Paul himself. This has since been confirmed by the poet Kotzebue, who was employed by the emperor of Russia to translate the original into German, for the express purpose of its being inserted in the Hamburg Gazette.¹

¹ This paragraph is such a curious *morceau* of witty insanity, that we shall here give the original French, as written by Paul himself, and published by Kotzebue in his account of his exile into Siberia. "On apprend de Petersbourg, que l'Empereur de Russie, voyant que les puissances de l'Europe ne pouvoient s'accorder entr'elles, et voulant mettre fin à une guerre qui la désoloit depuis onze ans, vouloit proposer un lieu où il inviteroit tous les autres Souverains, de se rendre et y combattre en champ clos, ayant avec eux pour écuyers juges de camp et heros des armes leurs ministres les plus éclairés et les généraux les plus habiles, tels que MM. Thugot, Pitt, Bernstorff; lui-même se proposant de prendre avec lui les généraux C. de Pahlen et Khutosof. On ne sçait si on doit y ajouter foi; toutefois, la chose ne paroît pas dénuée de fondement, en portant l'empreinte de ce dont il a souvent été taxé."

History.
Other
marks of
the emper-
or's de-
rangement.

This was not the only mark of mental derangement displayed by the unhappy monarch. The army, which formed his favourite employment, was tormented by incessant caprices affecting its discipline; and the press, the native Russians, and the resident foreigners, suffered tyrannical and unaccountable restrictions. His favours and his displeasure were alternately experienced by some of his most distinguished courtiers and adherents. Stanislas, the deposed king of Poland, partook by turns of his beneficence and his severity; and at length, on the death of that monarch, Paul assisted at his funeral, commanded in person the guards that attended on the ceremony, and uncovering himself with the utmost emotion, saluted the coffin as it passed. To the memory of the aged Suwaroff, who is said to have fallen a broken-hearted victim to the distraction of his imperial master, he raised a colossal statue of bronze; and on the days when he reviewed his troops in the square where the figure had been erected, he used to command them to march by in open order, and face the monument. Notwithstanding the important service that had been rendered him by Zuboff, the emperor soon became disgusted with him; spoke of him to his friends with great asperity; at length denounced him as a defaulter to the imperial treasury of half a million of roubles; and, convinced of the justice of the allegation, proceeded to sequester the vast estates which belonged to him and his two brothers. Driven to desperation by such conduct, the second brother of the favourite one day walked up boldly to the emperor upon the parade, and with manly eloquence represented the injustice of his measures. Paul received him without anger, heard him without interruption, and restored the property; but soon afterwards he ordered Plato Zuboff to reside on his estate, though he again restored him to favour.

Conspiracy
formed
against the
emperor.

It is not surprising that these instances of folly and caprice should alarm and disgust many of the nobles. In particular, Count Pahlen, the governor of St Petersburg, with some other men of rank, entered into a confederacy with Zuboff and his brothers for removing the emperor. In their conferences, which were managed with great prudence and discretion, it was resolved that Paul should die, and that the day of the festival called Maslaintza, the 11th of March O. S. 1801, should be the day for executing the awful deed. At the time of this plot, the emperor and his family resided in the new palace of St Michael, an enormous quadrangular pile standing at the bottom of the summer gardens. Paul being anxious to inhabit this palace soon after he was crowned, the masons, carpenters, and various artificers, toiled with incredible labour, by day and by torch-light, under the sultry sun of the summer, and in all the severity of a polar winter; and in three years this enormous and magnificent fabric was completed. The whole is moated round; and when the stranger surveys its bastions of granite, and numerous draw-bridges, he is naturally led to conclude that it was intended for the last asylum of a prince at war with his subjects. Those who have seen its massive walls, and the capaciousness and variety of its chambers, will easily admit that an act of violence might be committed in one room, and not be heard by those who occupy the adjoining one; and that a massacre might be perpetrated at one end, and not known at the other. Paul took possession of this palace as a place of strength, and beheld it with rapture, because his imperial mother had never even seen it. While his family were here, by every act of tenderness endeavouring to soothe the terrible perturbation of his mind, there were not wanting those who exerted every stratagem to inflame and increase it. These people were constantly insinuating that every hand was armed against him. With this impression, which added fuel to his burning brain, he ordered a secret staircase to be constructed, which, leading from his own

chamber, passed under a false stove in the anti-room, and led by a small door to the terrace. History.

It was the custom of the emperor to sleep in an apartment next to the empress's, upon a sofa, in his regimentals and boots, whilst the grand duke and duchess, and the rest of the imperial family, were lodged at various distances, in apartments below the story which he occupied. On the 10th March, the day preceding the fatal night, whether Paul's apprehension, or anonymous information, suggested the idea, is not known; but conceiving that a storm was ready to burst upon him, he sent for Count Pahlen: "I am informed," said the emperor, "that there is a conspiracy on foot against me; do you think it necessary to take any precaution?" The count, without betraying the least emotion, replied, "Sire, do not suffer such apprehensions to haunt your mind; if there were any combinations forming against your majesty's person, I am sure I should be acquainted with it." "Then I am satisfied," said the emperor; and the governor withdrew. Before Paul retired to rest, he, beyond his usual custom, expressed the most tender solicitude for the empress and his children, kissed them with all the warmth of farewell fondness, and remained with them for a considerable time. He afterwards visited the sentinels at their different posts, and then retired to his chamber. Soon after the emperor had retired, the guard that was always placed at his chamber door was, on some pretext, changed by the officers who had the command for the night, and who were engaged in the conspiracy. One man only remained. This was a hussar whom the emperor had honoured with particular marks of attention, and who always slept at night in the antechamber, at his sovereign's bed-room door. This faithful soldier it was found impossible to remove, except by force, which at that time the conspirators did not think proper to employ. Silence now reigned throughout the palace, disturbed only by the pacing of the sentinels, or by the distant murmurs of the Neva; and only a few straggling lights were to be seen, irregularly gleaming through the windows of the palace. In the dead of the night, Zuboff and his friends, amounting to eight or nine persons, passed the draw-bridge, ascended the staircase that led to the emperor's apartments, and met with no opposition till they reached the antechamber, where the faithful hussar, awakened by the noise, challenged them, and presented his fusée. Though they must have admired the brave fidelity of the guard, neither time nor circumstances would admit of an act of generosity which might have endangered their whole plan of operations. Zuboff therefore drew his sabre, and cut the poor fellow down. In the mean time, Paul, roused by the unusual bustle, sprang from his couch. At this moment the whole party rushed into his chamber. The unhappy sovereign, anticipating their design, at first endeavoured to intrench himself behind the chairs and tables; but soon recovering some share of his natural courage, he assumed a high tone, told them they were his prisoners, and required them to surrender. Finding that they fixed their eyes steadily and fiercely upon him, and continued to advance, he implored them to spare his life, declared his willingness instantly to relinquish the sceptre, and to accept of any terms which they might dictate. He even offered to make them princes, and to confer on them orders and estates. Regardless alike of his threats and promises, they now began to press on him, when he made a convulsive effort to reach the window, but failed in the attempt; and, indeed, had he succeeded in his endeavour to escape that way, the height from the window to the ground was so great, that the expedient would probably have only put a more speedy period to his existence. As the conspirators drew him back, he grasped a chair, with which he knocked down one of the assailants, and a desperate conflict now took place. So great was the noise, that notwithstanding the massive walls and double folding

His assassi-
nation.

History. doors that divided Paul's apartments from those of the empress, she was disturbed, and began to call for help, when a voice whispered in her ear, commanding her to remain quiet, and threatening that if she uttered another word she should instantly be put to death.

Paul was now making his last struggle, when one of the party struck him on the temple with his fist, and laid him prostrate on the floor. Recovering from the blow, the unhappy monarch again implored his life. At this moment the heart of one of the conspirators relented, and he was observed to hesitate and tremble, when a young Hanoverian who was present exclaimed, we have passed the Rubicon; if we spare his life, we shall, before the setting of to-morrow's sun, become his victims; on saying which he took off his sash, turned it twice round the naked neck of the emperor, and giving one end to Zuboff, he himself drew the other, till the object of their attack expired.

Accession of Alexander Paulovitch. The Emperor Alexander, Paul's eldest son, was in his twenty-fourth year when he ascended the throne, and from his amiable disposition had acquired the love and respect of all his subjects. The first measure which he adopted, his proclamation, and his first imperial orders, all tended to encourage and confirm the confidence with which the people beheld him ascend the throne of his forefathers. He solemnly promised to tread in the steps of Catherine II.; he allowed every one to dress according to his own fancy; he exonerated the inhabitants of the capital from the trouble and duty of alighting from their carriages on the approach of the imperial family; he dismissed the court advocate, who was universally and justly detested; he suppressed the secret inquisition, that had become the scourge of the country; he restored to the senate its former authority, set at liberty the state prisoners, and recalled from Siberia several of the exiles. He even extended his mercy to the assassins of the late emperor. Zuboff was ordered not to approach the imperial residence, and the governor of the city was transferred to Riga.

It is not easy to explain the motives that induced Alexander to forego that vengeance which justice seemed to demand on the heads of his father's assassins. It has been attributed by one of his panegyrists to a forlorn and melancholy conviction that the murderers had been prompted to commit the bloody deed solely by a regard for the salvation of the empire. This conviction might have induced the young monarch to diminish the weight of the punishment which piety and justice called on him to inflict, but can scarcely account for his total forbearance.

Amicable disposition of Alexander towards Britain. Alexander, on his accession to the throne, appeared desirous to cultivate the friendship of the neighbouring states, and especially that of Great Britain. His late father, among other projects, had procured himself to be elected grand-master of the knights of Malta, and had laid claim to the sovereignty of that island. This claim, which had nearly produced a rupture between the courts of London and St Petersburg, Alexander consented to abandon, though he expressed a wish to be elected grand-master of the order, by the free suffrages of the knights. A confederacy, as we have seen, had been formed among the northern powers of Europe, with a view to oppose the British claim to the sovereignty of the seas; but by the spirited interference of the British court, especially with the cabinet of St Petersburg, the good understanding between Britain and the northern states was re-established, and the embargo which had been laid on British vessels in the Russian ports was taken off. Alexander, however, earnestly desired to maintain peaceful relations with France; and expressed this wish, both in public manifestos, and in private communications addressed to the First Consul.

Treaty of amity and commerce with Sweden. Early in the same year there was signed at St Petersburg a treaty of amity, commerce, and navigation, between Russia and Sweden, to continue for twelve years, by which Sweden was allowed to import into Russia, alum,

salt herrings, and salt, on the payment of one half of the duties then exacted, and into Russian Finland the produce of Swedish Finland duty free; while the importation of Russia into Sweden, of hemp, linen, and tallow, was allowed at one half of the existing duties, and of linseed at two thirds. The most remarkable part of this treaty was the recognition, by the court of St Petersburg, of the northern confederacy, which the amicable adjustment with Britain appeared to have done away. The commerce of Russia had now recovered its former splendour. The exports from the city of Riga alone, for the year ending July 1801, amounted to L.1,043,806, and of these exports England alone imported to the value of L.386,935.

On the 25th of March 1802 was signed at Amiens the definitive treaty of peace between the belligerent powers of Europe, by one material article of which the islands of Malta, Gozo, and Comino, were to be restored to the knights of St John of Jerusalem, under the protection and guarantee of France, Great Britain, Austria, Spain, Russia, and Prussia; and his Sicilian majesty was invited to furnish two thousand men, natives of his states, to serve in garrisons at the different fortresses of the said islands, for one year after their restitution to the knights, or until they should be replaced by a force deemed sufficient by the guaranteeing powers. Some time after the conclusion of this treaty, disputes arose among the contracting powers relative to the sovereignty of Malta, which the emperor of Russia insisted should be yielded to Naples, otherwise he would not undertake to guarantee the order, and would separate from it the priories of Russia. The result of these disputes is well known, as they afforded a reason for renewing the bloody contest which so long desolated Europe.

During the short interval of peace, the emperor of Russia made several prudent regulations in the internal administration of his empire. On the 12th of September 1801, a manifesto had been published, proclaiming the union of Georgia, or Russian Grusinia, with the empire; and on the 1st of April 1802, Alexander sent a deputation to establish the new government at Teflis, the capital of the province. On the 28th of May the emperor wrote a letter to the chamberlain Wittostoff, president of the commission for ameliorating the condition of the poor of St Petersburg, in which he recommended to the commission to follow the example of a similar establishment at Hamburg, in selecting proper objects for their charitable bequests, preferring the humble and industrious pauper to the idle and sturdy beggar. He also offered considerable premiums to persons who should introduce any new or advantageous mode of agriculture, or who should bring to perfection any old invention, open any new branch of commerce, establish any new manufacture, or contrive any machine or process that might be useful in the arts.

Early in the year 1803, the emperor fitted out, at his own expense, two vessels for a voyage of discovery round the world, under the command of Captain Krusenstern. These ships were provided with every necessary for accomplishing the object of the voyage; and several men of eminence for science and literature, among whom was Churchman the American astronomer, volunteered their services on this occasion.

In the beginning of 1804 the emperor established a university at Kharkof, in Lithuania, for the cultivation and diffusion of the arts and sciences in that part of the Russian empire; and Mr Fletcher Campbell, a Scotch gentleman, was employed to procure masters for this new institution. Some time after, the emperor ordered that meteorological observations should be regularly made at all the universities and public schools, and the results published. It appears that at the end of this year the sums allotted by the Russian government for defraying the expenses of these institutions amounted to L.331,337, besides a gift of nearly L.9250 towards erecting the new university.

History.

An. 1802. Russia guarantees the sovereignty of Malta to the knights of St John of Jerusalem.

Prudent regulations of the Emperor Alexander.

An. 1803. A voyage of discovery set on foot.

An. 1804. Establishment of an university in Lithuania.

History.
Emancipation of the Jews in Russia.

Dispute with France.

About this time an imperial ukase was published, granting to the Jews a complete emancipation from the shackles under which that devoted people had long groaned, and allowing them the privileges of educating their children in any of the schools and universities of the empire, or establishing schools at their own expense.

For some time the genius of discord, which had again actuated the minds of the European sovereigns, failed to extend her baleful influence over the Russian empire; but it was scarcely possible that the emperor should long remain an impartial spectator of the renewed disputes between his more powerful neighbours. An important change had, in the latter end of 1802, taken place in the ministry of the empire; and Count Worontzoff, brother of the late ambassador at London, had been appointed great chancellor-in-chief of the department of foreign affairs, with Prince Adam Czartoryski for his assistant. How far this change in the councils of the empire influenced the political measures of the court of St Petersburg, it is not easy to determine; but in the latter end of 1803, Alexander appeared to view with a jealous eye the presumption and violence exercised by France among the German states, and the encroachments which she appeared desirous of making on the freedom of the Baltic. Alexander had offered his mediation between Great Britain and France, but without effect; and both these parties strove to bring over the Russian emperor to their alliance. France seems to have held out to the ambition of Alexander the bait of a partition of the Turkish territories, the dismemberment of which had long been a favourite object with his predecessors. At length, however, the court of London prevailed, and the Russian ambassador, by his master's orders, took leave of the First Consul of the French republic, though without demonstrating any intentions of immediate hostility. A new levy of a hundred thousand men was immediately ordered, to recruit the Russian army; and, to prevent any jealousy on the side of Turkey, assurances were given to the Sublime Porte of the amicable intentions of Russia towards that power.

An. 1805.
Treaty of concert between Great Britain and Russia.

On the 11th of April 1805 a treaty of concert was concluded between Great Britain and Russia, in which the two governments agreed to adopt the most efficacious means for forming a general league of the states of Europe, to be directed against the power of France. From the terms of the treaty, its objects appear to have been, first, the evacuation of the country of Hanover and the north of Germany; secondly, the establishment of the independence of the republics of Holland and Switzerland; thirdly, the re-establishment of the king of Sardinia in Piedmont; fourthly, the future security of the kingdom of Naples, and the complete evacuation of Italy, the island of Elba included, by the French forces; fifthly, the establishment of an order of things in Europe, which might effectually guarantee the security and independence of the different states, and present a solid barrier against future usurpation.

For the prosecution of the great objects of this treaty, it was proposed by the first article that an army of five hundred thousand men should be levied; but in a subsequent separate article, the contracting parties, after observing that it was more desirable than easy to assemble so large a force, agreed that the treaty should be carried into execution as soon as it should be possible to oppose to France an active force of four hundred thousand men. It was understood and stipulated that these troops should be provided by the powers of the continent who should become parties to the league, and subsidies should be granted by Great Britain in the proportion of L.1,250,000 sterling for every hundred thousand men, besides a considerable additional sum for the necessary expense occasioned in bringing them into the field.

About this time the occupation of Genoa by the French,

on the pretence that that republic was too feeble to support itself against the attacks of Great Britain, was communicated to the different courts of Europe, and excited in every quarter the highest indignation. The Emperor Alexander, in particular, was incensed at this new outrage. Such an open violation of those principles which were justly regarded as essential to the general safety, committed not only during the peace of the continent, but when passports had been delivered to his ambassador, in order that a negotiation might be commenced for the purpose of providing for the permanent security and repose of Europe, he considered as an indecent insult to his person and crown. He issued immediate orders for the recall of M. Novosiltzoff; and the messenger despatched upon this occasion was commanded to repair with the utmost diligence to Berlin. M. Novosiltzoff had not yet left that city; he immediately therefore returned his passports to the Prussian minister of state, Baron de Hardenberg, and at the same time delivered, by order of his court, a spirited memorial explanatory of the object of his mission, and of the circumstances which had led to its termination.

The recall of the Russian envoy appeared to be the signal of hostilities on the part of Russia and Austria against France. These hostilities may be said to have commenced and terminated in the autumn of this year. The military operations that distinguished this short but bloody conflict, the rapid successes of the French, the capitulation of Ulm on the 17th of October, the occupation of Vienna by the French on the 12th of the same month, and the sanguinary battle of Austerlitz on the 27th of November, have been already noticed under the head of FRANCE. The consequences of these disastrous events were, first a cessation of hostilities, and at length a treaty of firm alliance between France and Russia. (See FRANCE.)

But before Alexander finally stooped to the imperial eagles of Napoleon, he was determined to make one more effort to preserve his independence. The Russian envoy at Paris, D'Oubril, had hastily concluded a preliminary treaty of peace between his master and the emperor of the French, which he signed at Paris on the 8th of July 1806, and instantly set out for St Petersburg to procure the ratification of his master. When the terms of this convention were laid before the privy council by Alexander, they appeared so derogatory to the interests of Russia, that the emperor refused them his sanction, and declared that the counsellor of state, D'Oubril, when he signed the convention, had not only departed from the instructions he had received, but had acted directly contrary to the sense and intention of the commission with which he had been intrusted. His imperial majesty, however, signified his willingness to renew the negotiations for peace, but only on such terms as were consistent with the dignity of his crown and the interests of his empire.

In the mean time the king of Prussia began, when it was too late, to see the folly and imprudence of the neutrality with which he had so long maintained, and he at length prepared to oppose his now feeble efforts to the growing power of France. He brought together in the summer of this year an army of at least two hundred thousand men, near Weimar and Jena, while the French myriads assembled in Franconia and on the frontiers of Saxony. Previously to the commencement of hostilities, his Prussian majesty issued a spirited manifesto, in which he explained his motives for abandoning his plan of neutrality, and appealed to Europe for the justice of his cause. He entered into an alliance with the Emperor Alexander, and with the king of Sweden; and it was expected that these united forces would at length hurl the tyrant of Europe from his throne, or at least compel him to listen to equitable terms of pacification. These expectations were, however, miserably disappointed. The same extraordinary success was still to attend the arms of France,

History.
Open rupture with France.

All. 1806.

Alliance with Prussia against France.

History. and the north of Europe was again condemned to submit in silence to her yoke.

On the 13th of October 1806, the Prussians received a dreadful check at the battle of Jena; and on the 27th of the same month Napoleon entered Berlin. While the French were thus successful, the troops of the Emperor Alexander occupied Prussian Poland, and took up their residence at Warsaw; but they were soon attacked by the French under Murat, who on the 28th entered Warsaw with his cavalry, on which the Russians retreated across the Vistula, burning the bridge over which they had passed. On the 26th of December, a dreadful engagement took place between the Russians commanded by General Benningsen, and the French under Generals Murat, Davoust, and Lannes. The scene of action was at Ostralenka, about sixty miles from Warsaw, and the fighting continued for three days. The loss was immense on both sides, though the advantage appears to have been on the side of the French. According to French accounts, the Russian army lost twelve thousand men in killed and wounded, together with eighty pieces of cannon, and all its ammunition waggon; while the Russian account states the loss of the French at five thousand men.

An. 1807.
Battle of
Eylau.

In the beginning of February 1807, the Russians obtained a partial advantage in the battle of Eylau. According to the account of this battle, given by General de Budberg in a despatch to the Marquis of Douglas, the British ambassador at St Petersburg, the Russian general Benningsen, after having fallen back for the purpose of choosing a position which he judged well adapted for manœuvring the troops under his command, drew up his army at Preussisch Eylau. During four days successively his rear-guard had to withstand several vigorous assaults; and on the 7th of February, at three o'clock in the afternoon, the battle became general throughout the whole line of the main army. The contest was destructive, and night came on before it could be decided. Early on the following morning the French renewed the attack, and the action was contested with obstinacy on both sides; but towards the evening of that day the assailants were repulsed, and the Russian general remained master of the field. In this action Napoleon commanded in person, having under him Augereau, Davoust, Soult, Ney, and Bessières at the head of the imperial guards. The loss of the Russians in that engagement was by themselves stated at above six thousand men, while they estimated that of the French, probably untruly, at nearly double that number.

Battle of
Friedland.

This was the last important stand made by the Russian army. In May, Dantzic, defended by eighteen thousand Russians and Prussians, surrendered to the French. Several actions succeeded at Spanden, at Lamitten, at Guttotadt, and at Heilsberg, in all of which the French had the advantage, till at length, on the 14th of June, the Russians appeared in considerable force upon the bridge of Friedland, whither the French army under Napoleon was advancing. At three in the morning the report of cannon was first heard, and at this time Marshals Lannes and Mortier were engaged with the Russians. After various manœuvres, the Russian troops received a check, and filed off towards Königsberg. In the afternoon the French army drew up in order of battle, having Marshal Ney on the right, Lannes in the centre, and Mortier on the left, while Victor commanded a corps de reserve, consisting of the guards. At half-past five the attack began on the side of Marshal Ney; and notwithstanding the different movements of the Russians to effect a diversion, the French soon carried all before them. The loss of the Russians, according to the usual exaggerations of the French bulletins, was estimated at from ten thousand to fifteen thousand men, and twenty-five of their generals were said to have been killed, wounded, or taken. In consequence of this victory the French became masters of all the

country round Königsberg, and Marshal Soult entered that city in triumph. Thus concluded the campaign in Germany, in which the Russians sustained a loss of at least thirty thousand of their choicest troops.

While these military operations were going forward on the continent of Europe, the emissaries of France were busily employed at Constantinople in exciting the divan to declare against their ancient enemies. They at length succeeded; for on the 30th of December 1806 war with Russia was proclaimed, and twenty-eight regiments of janissaries assembled under the command of the grand vizir. But the disturbances which broke out in the latter end of May 1807 prevented any operations of importance from taking place; and the pacification which was soon concluded between Russia and France, though it did not entirely put a stop to the war between the former power and Turkey, in some measure diminished their hostile preparations.

War declared
against
Russia by
Turkey.

The defeats which the allied armies had sustained in Prussia and Poland rendered peace, on almost any terms, a desirable object; and Alexander found himself constrained to meet, at least with the appearance of friendship, the conqueror of his armies. Propositions for an armistice had been made by the Prussian general to Murat near Tilsit, and after the battle of Friedland the Russian prince Labanoff had a conference, on similar views, with the prince of Neufchatel, soon after which an armistice was concluded between the French and Russians. On the 25th of June an amicable meeting took place on the river Niemen, between the emperors of France and Russia, and adjoining apartments were fitted up for the reception of both courts in the town of Tilsit. This politic friendship was soon after cemented by the treaty of Tilsit, concluded between the emperor of the French on the one part, and the emperor of Russia and the king of Prussia (whom it despoiled of a fourth of his dominions) on the other, on the 7th and 12th of July in this year. Thenceforth, until Napoleon's star began to wane, Alexander was his firm partisan; and his faithlessness towards his former allies gave them no temptation to repose further confidence in him.

The conclusion of the treaty of Tilsit was notified to the court of London on the 1st of August; and at the same time a proposal was made from his imperial majesty for mediating a peace between France and Britain. This mediation, however, was declined on the part of Great Britain, until his Britannic majesty should be made acquainted with the stipulations of the treaty of Tilsit, and should find them such as might afford him a just hope of the attainment of a secure and honourable peace. This declining of the mediation of Russia was no doubt expected by the court of St Petersburg; but it served as a pretext for binding more closely the alliance between that power and France, by breaking off her connection with Great Britain. Accordingly, in October, Lord Granville Leveson Gower, who had succeeded the Marquis of Douglas as British envoy, received a note from the government, intimating that, as a British ambassador, he could no longer be received at the court of St Petersburg, which he therefore soon after quitted. An embargo was laid on all British vessels in the ports of Russia, and it was peremptorily required by Napoleon and Alexander that Sweden should abandon her alliance with Great Britain.

An additional ground of complaint against the British court was furnished by the attack on Copenhagen, and the seizure of the Danish fleet, in the beginning of September; and though Lord Gower had attempted to justify these measures on the plea of anticipating the French in the same transaction, the emperor of Russia expressed, in the warmest terms, his indignation at what he called an unjust attack on a neutral power. A considerable Russian fleet joined the French; but the combined squadrons were compelled to seek for shelter in the Tagus, where they remain-

History.

Treaty of
Tilsit.

Rupture
with Bri-
tain.

History. ed blocked up by the British, till they were surrendered by the convention of Cintra; and another fleet of fifteen sail of the line that proceeded up the Mediterranean, and advanced as far as Trieste, shared a similar fate.

On the 26th of October the emperor of Russia published a declaration, notifying to the powers of Europe that he had broken off all communication between his empire and Great Britain, until the conclusion of a peace between this power and France. In a counter-declaration, published at London on the 10th of December, his Britannic majesty repels the accusations of Russia, while he regrets the interruption of the friendly intercourse between that power and Britain. His majesty justifies his own conduct, and declares, that when the opportunity for peace between Great Britain and Russia shall arrive, he will embrace it with eagerness; satisfied if Russia shall manifest a disposition to return to her ancient feeling of friendship towards Great Britain, to a just consideration of her own true interests, and to a sense of her own dignity as an independent nation.

An. 1808.
Renewed negotiations with Britain.

In October 1808, a meeting took place at Erfurt between the emperors of France and Russia, and a letter was drawn up under their signature, addressed to his Britannic majesty. The object of this letter was, to induce the king of Great Britain to enter into negotiations for a general peace, and with that view it was despatched by Count Romanzoff, the Russian minister at Erfurt, to Mr Canning, the British secretary of state for foreign affairs. It was answered by an official note, requiring the emperors, as an indispensable condition of any treaty with Britain, to receive Sweden as a party, to protect the interests of Portugal and of the ex-king of Naples, and to extend the benefits of the projected arrangements to Ferdinand VII. of Spain. These requisitions were evidently quite inconsistent with Napoleon's views; the emperors refused to accede to them; and all hope of accommodation was in the mean time at an end.

War with Sweden.

The demand of concurrence in the views of France and Russia made on Sweden was formally repeated in a declaration of the Emperor Alexander, published at St Petersburg on the 10th of February in this year. In this declaration his imperial majesty intimated to the king of Sweden that he was making preparations to invade his territories; but that he was ready to change the measures he was about to take, to measures of precaution only, if Sweden would, without delay, join Russia and Denmark in shutting the Baltic against Great Britain, until the conclusion of a maritime peace. He professed that nothing could be more painful to him, than to see a rupture take place between Sweden and Russia; but that his Swedish majesty had it still in his power to avoid this event, by resolving without delay to adopt that course which could alone preserve strict union and perfect harmony between the two states.

The king of Sweden, however, determined to abide by the measures which he had for some time pursued, and to adhere to the terms of the convention which had just been concluded between him and the king of Great Britain. In consequence of this determination, a Russian army entered Finland in the beginning of March, under the command of General Buxhovden, and advanced against Helsingfors, which was occupied by a single battalion of a Swedish regiment. This small force retired into the fortress of Sweaborg, where they maintained themselves with great bravery till the 17th of April, when they were obliged to capitulate. The loss of this fortress, though inconsiderable in itself, so highly enraged the king of Sweden, that he dismissed the naval and military commanders who had been concerned in the capitulation.

On the 27th of April, some slight advantage was gained over the Russians near Rivolax, by the Swedish army under General Count Klinspor; but this was only a partial gleam

History. of success. The Russians soon overran almost all Finland, took possession of Wasa, Old and New Carleby, and reduced under subjection the whole province of which Wasa is the capital. The army of Field-Marshal Klinspor, which originally consisted of sixteen thousand regulars, and many boors, was, by the end of the campaign, reduced to little more than nine thousand men.

The king of Sweden sent some reinforcements to his army in Finland; but the forces which should have supported Klinspor were foolishly employed in a fruitless attempt to conquer Norway; and in 1809 the Swedes were compelled to cede Finland to Russia.

Russia continued to appear in the unworthy character of Napoleon's ally; and when Austria made an effort in 1809 to recover her losses, a Russian army advanced to co-operate with the French. The diversion which this produced was one cause of the final success of Napoleon, whose situation after the battle of Aspern was extremely critical. When Austria was at last compelled to accept of peace on humiliating terms, Russia received as the reward of her services the district of Tarnopol in Galicia, with a population of four hundred thousand souls. This district was restored to Austria in 1815.

In 1811, hostilities commenced between Russia and the Porte. It is of little consequence to inquire into the causes of this rupture; a powerful and ambitious government in the neighbourhood of a weak one never wants pretexts for war. The result might have been serious, if not fatal to the Porte, had not the prospect of a more arduous struggle induced Russia to suspend her efforts in that quarter, and conclude a peace on condition of receiving a part of Moldavia and Bessarabia.

The great contest was now approaching which was to try the resources of Russia, and ultimately to raise her to unexampled greatness. The seizure by France of the territories of the Prince of Oldenburg, who was the emperor of Russia's brother-in-law, on the one hand, and the admission of British produce into the Russian harbours on the other, furnished the ostensible grounds of the quarrel. After some fruitless negotiations, Napoleon dismissed the Russian ambassador, and left Paris to join the army on the 9th of May 1812. The events of this disastrous expedition into Russia have been minutely related in the article FRANCE; and the reader does not require to be reminded of those lamentable sufferings of the French army, which were its principal result. The spirited resistance of Russia now roused Prussia and Austria; and early in 1813 a league was formed between these powers, to which Bavaria and other small states acceded. The battle of Leipsic, fought on the 18th of October, led to the final overthrow of the French domination. In all the transactions which followed, Russia bore a leading part. At the congress of Vienna in 1814, the duchy of Warsaw, consisting of part of the original conquests of Austria and Prussia in Poland, was assigned to Russia, which thus ultimately obtained about four fifths of the territory and three fourths of the population of that ancient kingdom.

In passing to the new system of foreign policy which has prevailed in Russia, as well as in the rest of Europe, since the year 1815, we must pause for a moment to remark the accessions of territory which the empire had made during the half century which preceded that epoch. The reign of Catherine II. had, as we have seen, been by far the most fertile in foreign acquisitions. Her conquests included the Crimea, which was an incorporated portion of Russia since 1783; Georgia, gained in 1785, though, as we have observed, not formally annexed till 1801; Bessarabia, with a part of Moldavia, and other Turkish possessions, finally secured to Russia by the treaty of Bukaresht in 1812; Courland, acquired in 1795; and the extensive spoils of Poland in 1793 and 1794. Paul's reign made no permanent addition of import-

History. ance, except some districts within the Persian frontier. Alexander's gave to Russia in the first years of the present century several of the tribes of the Caucasus; Finland in 1809; Daghestan and other large territories ceded by Persia in 1813; and in 1814, Napoleon's grand duchy of Warsaw, which was erected into a kingdom of Poland. The total population of these new Russian provinces cannot at the very least be estimated under fifteen millions, and probably exceeds that number.

Alexander's foreign policy after 1815.

During the ten years of Alexander's reign which succeeded the peace, and ended with his death in 1825, he acquired no new territory as a substantive addition to his dominions, but occupied himself assiduously in that indirect augmentation of Russian influence on the states around the frontier, which had before his time formed, and has since continued to form, the first step in all the schemes of conquest projected by his ambitious nation. The objects of Alexander's foreign policy after 1815 were chiefly three; the suppression of constitutional, or, as they were called by preference, revolutionary movements, in the central and southern states of Europe; the weakening of Turkey, and the gradual reduction of that power into a state of dependence on the cabinet of St Petersburg, so as to pave the way for the Russians towards the sovereignty of the Levant; and the extension of the Russian influence in Persia and those adjacent states, which must form the stepping-stones by which the Muscovites will strive to pass, if they shall ever make the attempt, to the throne of British India. For the attainment of the first of these great ends, there was formed, under the guidance and by the suggestion of Alexander, that league of princes which has been named the Holy Alliance; a confederacy whose bitter fruits have been tasted in full measure by Italy and Spain, but whose conception is in one view an encouraging tribute to the growing enlightenment of the world, since it is the earliest instance in which despots, conspiring against truth and freedom, have condescended to speak the language of Christianity and peace. In reference to Turkey, the policy of Alexander aimed at gradually detaching the Porte from its friendly relations with Great Britain and other European powers, and insidiously advancing towards a position in which the sultan should find himself powerless against his neighbours and his own subjects, until Russia should stretch forth her protecting hand; but a check was administered to this train of diplomacy, and a peculiar relation introduced between the courts of Constantinople and St Petersburg, by the insurrection of Greece in 1821. To the founder and head of the Holy Alliance the Greeks must have appeared to be mere rebels, whom it was his duty as a neighbouring sovereign to assist in punishing; while to the watchful power which desired by every available means to weaken and circumscribe the power of Turkey, such an opportunity as the Greek revolution was unusually tempting, and indeed the sultan's ministers openly alleged that the disturbances had been fomented by Russian agents. The result of the rising in Greece has been related in our article on that country; and the other misunderstandings between Russia and Turkey, the principal of which related to the appointment of the hospodars in Wallachia and Moldavia, were not sufficient to disturb the diplomatic system which was resumed after the Greek question had been settled by the interposition of the other great European powers. The designs of the emperor on the side of India chiefly exhibited themselves in intrigues among the northern neighbours of our possessions in that country; and the system scarcely came to light till after Alexander's death.

Alexander's internal government. In the internal government of the empire, Alexander introduced many salutary changes, especially in the early part of his reign; but here, not less than in his foreign policy, the last ten years of his life exhibited a marked contrast to its earlier portion. The transition in his mind from a

History. love of liberal institutions to a distrust of every thing that seemed to threaten the stability of thrones, began almost with his alliance with Napoleon, but reached full maturity after that extraordinary man's fall. In the first year of his reign he abolished the literary censorship, and afterwards restored it with less absurd but not less severe rules than those of his father. He at one time patronized both the education of the young and the general dissemination of religious knowledge; but after the peace the missionary societies were suppressed, and very harsh measures adopted against the universities. In several particulars a better spirit prevailed. That tolerant disposition towards the various sects of Christianity, of which we have remarked more than one instance in passing, had already become systematic, and was never departed from. The emancipation of the peasants from their state of serfdom was long a favourite object with the emperor, who was able to attain it in Courland, Livonia, and one or two other provinces, and used openly to lament that private interests and prejudices had baffled his good intentions elsewhere. Another plan of his, which was connected with the scheme just mentioned, was that of the military colonies, of which Dr Lyall has published an interesting account. The advantages which this system promised to confer were these: the diminution of the expenses of the army in times of peace, and the easy training of a large agricultural population to the trade of war. For these purposes villages were built on the crown-estates along the western frontier of the empire, and in these, soon after the peace, formidable detachments of soldiers were settled with their families, and mixed among the boors who, belonging to the crown, had previously been the sole or the principal inhabitants of the districts. The whole male population of these new settlements was to occupy itself alternately in rural labour and military exercises; and while the troops who had already seen service were always in a position to take the field again, the boors were gradually to qualify themselves for acting as a corps de reserve, and for filling up vacancies. The plan excited considerable opposition; and although the obstacles were finally to appearance vanquished, and the colonies speedily mustered four hundred thousand fighting men, yet new difficulties arose after his death, and his successor at length abandoned the idea of extending the principle, or of making it permanent.

During the last few years of Alexander's life he appears to have been completely miserable. To family misfortunes, religious despondency, and disappointment in political schemes, was added the continual terror of conspiracies in the heart of the empire, which were said to have ramifications everywhere, and to aim at nothing less than a total revolution, and the assassination of the whole royal family. Those constant travels through the several Russian provinces in which Alexander was engaged for two or three years before his death, have been mainly attributed by some writers to his dread of poison or the dagger. In the course of one of these journeys he died at Taganrog, on the Sea of Azof, on the 1st day of December 1825.

Alexander's brother, the Grand Duke Constantine, whose conduct as governor of Poland has been described in our article on the history of that country, was immediately proclaimed emperor at St Petersburg; and whatever may have been the feelings of the Russians themselves, foreigners who were acquainted with the new sovereign by his general reputation, looked on his accession with pity for his subjects and alarm for the peace of Europe. But the danger had been foreseen and averted by Alexander and the rest of the family. Constantine had been induced to resign his claims to the crown by a formal deed executed in 1822. The senate, on opening the will of Alexander, found it to contain a nomination of his second brother, the Grand Duke Nicholas, as his successor in the empire. The act of resigna-

Resignation of the Grand Duke Constantine.

History.

nation was at the same time discovered, and in a few days there arrived from Warsaw a communication from Constantine, in which he acknowledged the existence and validity of the deed, and anew waived his right of succession.

Nicholas I.

Accordingly Nicholas I. ascended the throne, announcing the event by a proclamation of the 23d of December 1825. The disturbance of the natural order of succession was seized by the discontented as a favourable pretext for insurrection; and the reign of the new emperor was opened by a military mutiny in St Petersburg, which, after having been suppressed with bloodshed, was followed by several executions, and many imprisonments and banishments to Siberia. Nicholas and his spouse, the princess-royal of Prussia, were crowned at Moscow in 1826, and at Warsaw in 1829. Scarcely had Nicholas ascended the throne when war was declared against Persia. It originated in a dispute respecting the boundaries between the two countries, and was continued till 1828, when the Persians were obliged to sue for peace. This was only granted them on condition of their yielding up the provinces of Erivan and Nakshivan, and paying about L.3,000,000 sterling to account of the war. The peace of Turkmanchai was concluded in February 1828, and in May of the same year the war with Turkey broke out. In that month a Russian force of about 150,000 men, under the command of General Wittgenstein, crossed the Pruth at three different points, took possession of Jassy, Bucharest, and Galatz, and in a few weeks occupied the whole of the left bank of the Danube. It was resolved to cross the river at Braila; and in order to accomplish this, the army was formed into two divisions, one of which invested the town, while the other successfully crossed the river and continued its march southward. In the meantime, the siege of Braila continued, and after a series of sanguinary assaults the garrison capitulated. The besieging force then crossed the Danube, and in a short time all the Dobroudscha was in the possession of the Russians. An attempt upon Shumla failed, though in the first instance directed by the czar in person. They were more successful, however, with Varna, which surrendered on 10th October, after a vigorous defence of more than two months. The utmost efforts were now made to reduce Silistria; but from the advanced state of the season, and the difficulties of the attempt, nothing of importance could be effected; and the Russians retired beyond the Danube to winter in Wallachia. Notwithstanding the success of this campaign, it had been attended with a great loss of life to the Russians. A number had fallen by the hand of the Turks, but many more fell by disease; so that of the number that crossed the Danube not more than one-half remained.

War with
Turkey,
1828-9.

Meanwhile, in Asia operations had been carried on with equal vigour, and with even a greater measure of success, under General Paskievitch. His force consisted of about 21,000 infantry and 5500 cavalry. In the brief space of a week he invested and took Kars, one of the strongest and most formidable fortresses in Asia, obtaining thereby a large store of ammunition, a number of cannon, and 7000 prisoners. This was on the 15th of July; and Poti, a fortress on the east coast of the Black Sea, surrendered on the 26th. The general now resolved to attack the town and fortress of Akhalzik, a place strongly fortified both by nature and art, and defended by a garrison of 10,000 men. A battle was fought under the walls of the town on 4th September, when the Turkish army, though greatly inferior in numbers, fought with great bravery, but was defeated with much slaughter. The Russians now prosecuted the siege with vigour, and a breach was at length effected in the walls. The assault was made on the 7th of September, but such was the desperate valour of the Turks, that not till the city was reduced to a heap of ashes, and a great number of its defenders destroyed, could the survivors be

brought to capitulate. The surrender of Akhalzik was followed by that of other important fortresses in Asia before the close of the campaign of 1828.

History.

Both sides now made vigorous exertions for the renewal of hostilities in the following spring. Troops were summoned from various parts of the Turkish empire, and the garrison of Shumla was augmented from 10,000 to 40,000. The Russian force was strengthened by an addition of 70,000, and the command entrusted to Count Diebitsch, an officer of high military attainments, General Wittgenstein having retired from active service. On the 10th of May 1829 the Russians again crossed the Danube, and immediately besieged Silistria, while General Kouprianoff was stationed with a force at Pravadi, a fortress on the east of Shumla, and important as lying in the line of communication between Silistria and Varna. Redschid Pasha, who had been appointed commander-in-chief, perceiving the position of the invading army, formed the design of attacking Pravadi and Varna, which would also have the effect of drawing off the troops from Silistria. He accordingly set out from Shumla at the head of 36,000 men, leaving only a small garrison behind him under Ibrahim Pasha, and advanced rapidly on Pravadi. General Diebitsch, however, on being informed of his design, instead of advancing to meet him at Pravadi resolved to cut off his communication with Shumla; and accordingly, leaving one of his generals to continue the siege, he hastened southward at the head of 20,000 men to put his design in execution, and sent word to General Roth at Varna to co-operate with him. He took up a favourable position near Koulevscha, a village between Pravadi and Shumla, scarcely 3 miles from the latter. His army was posted on the hills on each side of the road through which the Turkish army had to pass on their return to Shumla, and so concealed that only a very small portion of them were visible. Redschid, not knowing that Diebitsch had quitted Silistria, and believing that his opponents were only a portion of the army at Varna, did not hesitate to force his passage, sending a body of cavalry to disperse the enemy. He soon found out his mistake, for the Russian army rushing down upon them in a body, instantly put them to flight. Every attempt to bring them to a stand proved abortive, and Redschid himself escaped with difficulty. The artillery and baggage fell into the hands of the enemy; but the loss of men to the Turks was by no means so great as might have been expected, the killed, wounded, and prisoners amounting only to about 6500. Had Count Diebitsch immediately on this victory attacked Shumla, he would in all probability have taken it; but instead of this, he contented himself with some minor operations, till the grand vizier, with the scattered remains of his army, had thrown himself into the town. After the battle of Koulevscha, the siege of Silistria was carried on with redoubled vigour; and on the 30th of June the fortress surrendered, when the whole garrison, amounting to about 8000 men, were made prisoners of war. The fall of Silistria now determined the Russian general to cross the Balkan. Leaving, therefore, a body of troops before Shumla, he set out for Aidos on the 17th of July. The town of Sizeboli, on the other side of the Balkans, having one of the best and safest harbours on the western shores of the Black Sea, had been already seized by a naval *coup de main* to form a *depôt* where the troops might refresh themselves for a short time after their arduous undertaking. The Russians crossed the Balkans without opposition, the Turks everywhere fleeing before them. Towards the end of July, when General Rudiger, with his division, was advancing on Aidos, a body of 40,000 or 12,000 men were sent out to attack him, but as soon as their skirmishers were beaten back, the Turks fled in precipitation, passing through the town, which they left to the enemy without firing a shot. Here the Russians obtained

History. an immense booty of ammunition and military stores. After this it is not to be wondered at that the Russians soon found themselves within sight of Adrianople. During their progress they had scarcely met with an appearance of opposition, whereas had only a feeble stand been made at some of the Balkan passes, or even afterwards, it would have been impossible for the Russians to have advanced. Yea, even had they been harassed by small parties of the enemy during their march, they could not have ventured to Adrianople. As it was, they were now unable to attempt any active operations. Their force, originally small, was now weakened by sickness and fatigue, while hundreds of them were dying daily. Diebitsch, however, carefully concealed his real condition from the Turks, and by acting on their fear and ignorance he was able to obtain terms of peace as a conqueror.

In the meantime, General Paskievitch was following up his brilliant successes in the Asiatic portion of the sultan's dominions. One of the first operations of the Turkish army was an attempt to recover the fortress of Akhalzik, which, notwithstanding the valour displayed by the sultan's forces, was in vain. General Paskievitch anticipated every movement, and defeated every attack. On the 1st of July, anticipating the junction of the seraskier of Erzeroom with Hagki Pasha in the valley of Zevine, he marched first against the former, whom he put to flight, and on the next day defeated the latter, whom he made prisoner. In these two actions the Russians took about 1500 prisoners, with a large quantity of artillery, ammunition, and provisions. Paskievitch now pushed on with all possible rapidity to Erzeroom; and on the 5th of July took the strong fortress of Hassan Kale, the key of that capital. After a feeble resistance, Erzeroom surrendered on the 9th of July, and in it was found 150 cannon, and large magazines of ammunition and provisions. The seraskier himself and four of his pashas were made prisoners. The Russian commander next directed his movements towards Trebizond, and on the 19th of July took Baibout, a fortified town on the road to Trebizond. The pasha of Trebizond having collected a body of troops, set out to attack the Russians; and General Bursow, who commanded in Baibout, marched out to meet him, and attacked him on the 30th July near the village of Chart. The Russians being greatly inferior in numbers, were repulsed with the loss of their commander. On learning of this reverse, Count Paskievitch brought up the main body of his army and attacked the Turkish camp on the 8th of August. A series of severe engagements took place on that and the following day, which terminated in the Russians carrying the entrenched camp of the enemy, who fell back in confusion upon Trebizond. It was at this stage of his victorious course that Paskievitch received intelligence that the war was at an end.

Treaty of Adrianople The celebrated treaty of Ardianople, which concluded the war of 1828-9, was signed 14th September 1829, and contained sixteen distinct articles, the substance of which was as follows:—The principalities of Wallachia and Moldavia, and all the conquered places in Bulgaria and Roumelia were to be restored to the Porte, with the exception of the islands at the mouth of the Danube, which were to remain in possession of Russia, the Pruth continuing to form the boundary of the two empires, from the point where that river touches the territory of Moldavia to its mouth in the Danube, and thence the boundary-line was to be the Danube and its southernmost mouth, St George. In Asia the boundary between the two countries was to be the line which, following the present boundary of the province of Gouriel from the Black Sea, ascends to that of Imeritia, and thence in the most direct line to the point where the frontiers of the pashalies of Akhalzik and of Kars unite with those of Georgia, Russia thus acquiring that portion

History. of the coast of the Black Sea lying between the mouth of the Kouban and the port of St Nicholas inclusively, comprising a considerable extent of country, and the forts of Anapa, Akhalzik, and others. The principalities of Moldavia and Wallachia were to enjoy the free exercise of their worship, perfect security, an independent national government, and full liberty of commerce; and the conditions of previous treaties were to be implemented regarding Servia. Russian subjects should enjoy throughout Turkey, as well by land as by sea, the full and entire freedom of trade guaranteed to them by previous treaties; and were to be under the exclusive jurisdiction of the Russian ministers and consuls. Russian ships were not to be subjected to any search by the Turks either at sea or in port. The trade and navigation of the Black Sea were to be impeded in no manner, and the passage of the Strait of Constantinople and of the Dardanelles was declared to be entirely free and open to all Russian vessels, and to all vessels trading with Russia belonging to powers at peace with the Porte. An indemnity of L.750,000 was to be paid to the Russian government for losses incurred at various times by Russian merchants and others. The Russian government was also to receive a sum of money, the amount of which was to be afterwards fixed, as indemnification for the expenses of the war. Russia was not to evacuate the territories of which she had taken possession till the articles relative to the European and Asiatic boundaries, and the privileges of Wallachia, Moldavia, and Servia, "could be considered as fulfilled," and until the complete evacuation of the territories occupied by the Russian troops; the administration and the order of things established under the influence of the court of Russia was to be maintained, and the Porte was bound not to interfere with them in any manner. To this treaty two separate acts were annexed, explanatory of some of its most important conditions, which bore much harder upon Turkey, and betrayed a much more grasping and insidious disposition on the part of Russia than the treaty itself. One of these related to the amount of the indemnification to be paid to Russia, and which was now fixed at the exorbitant sum of L.5,000,000 sterling, to be paid in ten equal annual instalments of half-a-million each. The smaller sum of L.750,000 was to be paid in four separate instalments: the sum of L.50,000 upon the ratification of the treaty, L.200,000 within six months, L.250,000 in the six months following, and the last instalment of L.250,000 in the next six months. Within the space of one month after payment of the first instalment the Russians were to evacuate Adrianople; within a month after the second payment they were to retreat across the Balkan; on the third payment they were to cross the Danube, but they were to retain possession of Moldavia, Wallachia, and Silistria, till the balance of this as well as the whole of the other sum of L.5,000,000 were paid. Thus the possession of the Principalities was secured to her for at least ten years, and the treaty had already provided that while she remained in possession the order of things established by her could not be interfered with. By the other supplementary article alterations of great importance, and permanent in their nature, were introduced into the administration of the Principalities themselves. The hospodars were to be elected for life instead of for seven years as previously. They were to govern within their respective principalities as they and their divans might think proper, without being interfered with in any manner by the Porte or any of its officers. The Turkish government relinquished all claim to those contributions in kind which it had hitherto received from the Principalities; and as an indemnification for this sacrifice, it was to be allowed an annual sum of money, the amount of which was to be afterwards determined, but which, as well as the regular tribute, was not to commence until two years after the

History.

total evacuation of the Principalities by the Russian troops. Further, the Porte was to surrender everything on the left bank of the Danube to the Principalities,—cities, fortresses, and lands; not a single Mussulman being allowed to reside there, and such as already possessed soil there were required to dispose of it within the space of eighteen months. The manifest object of these articles was to weaken the power of the Porte over these principalities, and to pave the way for their annexation to Russia.

Polish insurrection.

Nicholas was crowned at Warsaw on the 24th of May 1829; and on the 29th of November 1830 the Polish insurrection broke out, an account of which has already been given. (See POLAND.) The Poles stood unaided and alone, and displayed bravery worthy of any age or country. General Diebitsch perished in the struggle, the victim of disease, chagrin, and fatigue, and was succeeded in the command by Paskievitch. The war was brought to an end by the celebrated battle of Warsaw, fought on the 5th, 6th, and 7th of September 1831. The Poles submitted; and fearful was the vengeance taken by Nicholas upon his prostrate foe. Every species of punishment was inflicted upon the vanquished, and neither property nor the ties of family were respected. Siberia, the Caucasus, and the army were the lot of multitudes of these unhappy beings, and every attempt was made to destroy every sentiment or vestige of nationality. The Russian division of governments was substituted for the Polish division of palatinates, the Russian weights and measures for those of Poland, and the old Julian calendar for the modern one. It was further attempted to banish the Polish language out of the country by commanding the use of the Russian language in the schools, and forbidding the youth to speak in their own native tongue, suppressing its use in the different administrations, and dismissing those functionaries who were unacquainted with Russian.

Caucasian struggle.

The territory ceded to Russia by the treaty of Adrianople included the Caucasus, a mountainous region inhabited by several independent races who owed no allegiance to the sultan, and who therefore refused to acknowledge the supremacy of Russia. Nicholas at first endeavoured to gain over the chiefs of the various tribes by means of military appointments, decorations, and pensions, but these being ineffectual, he at length had recourse to arms. The two tribes who have come most prominently forward in this struggle are the Lesghians and the Circassians; and though the contest has been going on with little intermission for nearly thirty years, at an enormous expense of men and money, the Russians have yet been able to effect little of permanent advantage. (See CAUCASUS, and CIRCASSIA.)

Farther treaties.

The revolt of the Pasha of Egypt, and the series of successes that attended the advance of his son Ibrahim Pasha, rendered it necessary for the sultan to apply for aid to his old enemy the czar. This was readily granted; and on peace being established, the treaty of Unkiar-Skelessi was entered into between the sultan and the Emperor of Russia. This treaty, which was signed at Constantinople on the 8th of July 1833, purported to be a defensive alliance between the two contracting powers; but its real import was expressed in a separate and secret article, which provided that, as the Emperor of Russia was willing to spare his ally the expense and inconvenience of affording him military aid, "the Sublime Ottoman Porte, in place of the aid which it is bound to furnish in case of need, according to the principle of reciprocity of the patent treaty, shall confine its action in favour of the imperial court of Russia to closing the Strait of the Dardanelles; that is to say, to not allowing any foreign vessels of war to enter therein under any pretext whatsoever." In 1834 another treaty was entered into between these two powers, by which the sultan ceded to the czar an extensive district in Asia, in consideration of which the czar relinquished his right to three-fourths of

History.

what remained to be paid of the indemnities fixed by the treaty of Adrianople, and agreed to leave the Principalities as soon as hospodars shall be chosen, the Sublime Porte formally recognising the regulations made, while the Russian troops occupied these provinces, by the principal inhabitants for their internal administration. In addition to these stipulations, the free passage of the Dardanelles was permitted to Russian ships. Silistria, however, still remained in the hands of Russia; and it was not till 1836, when it was agreed that it should be given up upon payment of one-half of the balance still remaining due to the czar, that the Turks obtained possession of this important fortress.

The peace between the Sultan and the Pasha of Egypt was not of long duration, and the war broke out afresh in 1839. (See TURKEY.) At length England and France interfered in behalf of the Sultan; and on the 27th of July 1839 a note was signed, by which the Ottoman empire was placed under the common safeguard of the five great European powers,—England, France, Prussia, Russia, and Austria, instead of exclusively under the protectorate of Russia. This was followed by a convention, signed at London on the 15th of July 1840, for "maintaining the integrity and independence of the Ottoman empire, as a security for the peace of Europe." The allies bound themselves to unite their efforts in order to bring about peace; and the Sultan, on his part, declared it to be his firm resolution to adhere to the ancient rule of the Ottoman empire, which prohibited ships of war of foreign powers from entering the Straits of the Dardanelles and the Bosphorus,—thus virtually setting aside the treaty of Unkiar-Skelessi.

In 1840 an expedition was fitted out against Khiva; but 1840-50. after encountering numerous obstacles and suffering many disasters, it was obliged to return without being able to get beyond the Russian frontier. In the beginning of June 1844 the emperor spent eight days in England. In February 1846 an insurrection broke out in Cracow, which had been established as an independent state under the protection of Russia, Prussia, and Austria by the treaty of Vienna in 1815. The town was immediately seized upon by the allied troops, and by agreement between the three powers it was annexed to Austria; and thus this last remnant of independent Poland was abolished. Soon after, the Russian portion of Poland was entirely incorporated with the empire, and made a Russian province. During the time of the revolution in Germany in 1848 Russia stood quite aloof, and the emperor contented himself with strengthening his army at all points, and watching, without taking part in the events that filled all Europe with astonishment. In 1849, however, she readily responded to the call of Austria for aid against the Hungarians, and sent a powerful army into the country. This turned the scale in favour of Austria, whose forces had previously been several times beaten and driven out of the country. (See HUNGARY.) After the fall of Hungary a number of the civil and military leaders, and others, took refuge in Turkey. Russia and Austria demanded the expulsion of the refugees, but this was peremptorily refused by the sultan. The Emperor of Russia attempted to threaten him into compliance, and even suspended all diplomatic intercourse between the two countries; but the appearance of a British fleet in the Dardanelles induced him to lower his tone, and he contented himself with requiring that they should be removed to a distant part of the empire.

Before entering upon the last important event in the reign of Nicholas, it may be necessary to glance shortly at the general character of his policy. In this respect he has followed the course pursued by his brother since the peace of 1815, but with an additional degree of force and boldness, which may be attributable partly to the natural progress of the political tactics which were common to both, and partly to the more energetic will, and greater attachment to mili-

History. tary principles and forms, which distinguished the younger brother. Nicholas was in moral endowments far behind his predecessor. In his political principles he was strictly despotic, and when necessary carried these out with unmitigated cruelty. His favourite pursuits were those connected with the military sciences and military operations; but he had also a taste for the fine arts and for music. He was upwards of six feet in height, muscular, and well-proportioned, and was admitted to be one of the handsomest men in his empire. His features, however, were stern and severe; and his manner was cold, inanimate, and without grace. In his personal habits he was simple, abstemious, and of indefatigable industry. In foreign policy his great object was the extension of the Russian empire by unscrupulous diplomacy, and when that failed, by war. If we look at the three questions which were described above as forming the main business of Alexander in his foreign policy, we find the position of Russia regarding them to have remained, with slight alterations, the same. The anti-constitutional views of the Holy Alliance were necessarily modified, but not abandoned. Turkey had been reduced to a state of servile and helpless dependence till the other powers of Europe stepped in for its defence. In the direction of Persia, and undoubtedly not without an eye towards India, Russia was likewise rapidly extending her dominion. The domestic government of Nicholas had little to distinguish it from that of his brother. Education was to some extent more favoured than it had recently been by Alexander; the Catholic and Lutheran churches continued to receive the support of the government, which also lent its aid to missions to the Calmucks and other nomadic hordes; trade and manufactures had been furthered by regulations devised with much liberality; and the laws since 1826 had received a tolerably complete revision and concentration.

History of
the late
war with
Turkey.

Russia had been looking for an occasion of quarrel with Turkey long before the outbreak of the late war, and there can be little doubt that a chief object of his imperial majesty's visit to England in 1844 was to come to some arrangement with the British government as to the Turkish empire. On that occasion he had several conversations with the Duke of Wellington and the Earl of Aberdeen, who was then foreign secretary, relative to the state of Turkey; and on his return to Russia his views on that subject were embodied in a memorandum, drawn up by his chancellor Count Nesselrode, and forwarded to the British government. This document, read in the light which subsequent events have thrown upon it, shows clearly that even at that time the czar had been looking forward to a war with Turkey at no distant period, and was endeavouring to obtain the countenance, or at least to lull the suspicions, of England in such a case. It states that it was for the interest of both that they should unite in maintaining the integrity of the Turkish empire; but that the Porte had a constant tendency to free itself from the engagements imposed upon it by treaties concluded with other powers, and that it reckoned upon the mutual jealousies of the cabinets to enable it to do so with impunity. It was essential not to confirm the Porte in this delusion, but to exhort it to act rightly towards the cabinet demanding its just rights; and the Porte, on perceiving that it was not supported by the other cabinets, would give way, and consent to an amicable arrangement of the differences. Another difficulty existed in reconciling the respect due to the sovereign authority of the sultan, founded on the Mussulman law, with the forbearance required by the interests of the Christian population of the empire; and it was necessary ever to impress upon the Porte that it could only reckon upon the support of the great powers while it treated its Christian subjects with mildness and toleration. It was by all the great powers pursuing this line of policy that they would be most likely to preserve the existence of Turkey; but at the same

History. time that empire contains within itself so many elements of dissolution, that unforeseen circumstances may hasten its fall without it being in the power of friendly cabinets to prevent it, and the danger which may result from such a catastrophe will be much diminished if, in the event of its occurring, Russia and England shall have come to an understanding as to the course to be taken by them in common. That understanding would also have the full assent of Austria, as between her and Russia there exists already an entire conformity of principles in regard to the affairs of Turkey. It concludes as follows:—"The object for which Russia and England will have to come to an understanding may be expressed in the following manner: (1.) To seek to maintain the existence of the Ottoman empire in its present state so long as that political combination shall be possible. (2.) If we foresee that it must crumble to pieces, to enter into previous concert as to everything relating to the establishment of a new order of things intended to replace that which now exists, and in conjunction with each other to see that the change which may have occurred in the internal situation of that empire shall not injuriously affect either the security of their own state, and the rights which the treaties assure to them respectively, or the maintenance of the balance of power in Europe. For the purpose thus stated the policy of Russia and Austria, as we have already said, is closely united by the principle of perfect identity. If England, as the principal maritime power, acts in concert with them, it is to be supposed that France will find herself obliged to act in conformity with the course agreed upon between St Petersburg, London, and Vienna. Conflict between the great powers being thus obviated, it is to be hoped that the peace of Europe will be maintained even in the midst of such serious circumstances. It is to secure this object of common interest, if the case occurs, that, as the emperor agreed with her Britannic Majesty's ministers during his residence in England, the previous understanding which Russia and England shall establish between themselves must be directed." In the early part of 1853 his imperial majesty had several interviews with the British ambassador at his court, which plainly show his intentions with regard to Turkey, and that he thought the time of her dissolution had arrived. "Turkey," he said, "has by degrees fallen into such a state of decrepitude, that, as I told you the other night, eager as we all are for the prolonged existence of the man (and that I am as desirous as you can be for the continuance of his life I beg you to believe), he may suddenly die upon our hands; we cannot resuscitate what is dead: if the Turkish empire falls, it falls to rise no more. And I put it to you, therefore, whether it is not better to be provided beforehand for a contingency than to incur the chaos, confusion, and the certainty of a European war, all of which must attend the catastrophe, if it should occur unexpectedly, and before some ulterior system has been sketched? This is the point to which I am desirous that you should call the attention of your government." "If your government has been led to believe that Turkey retains any elements of existence, your government must have received incorrect information. I repeat to you that the sick man is dying, and we can never allow such an event to take us by surprise." "I am not so eager about what shall be done when the sick man dies as I am to determine with England what shall not be done upon that event taking place." When requested to explain his own ideas upon this negative policy, he for some time declined doing so; but at length said, "Well, there are several things which I never will tolerate: I will begin by ourselves. I will not tolerate the permanent occupation of Constantinople by the Russians. Having said this, I will say that it never shall be held by the English or French, or any other great nation. Again, I never will permit an attempt at the re-construction of a Byzantine empire, or

History. such an extension of Greece as would render her a powerful state; still less will I permit the breaking up of Turkey into little republics, asylums for the Kossuths, and Mazzinis, and other revolutionists of Europe. Rather than submit to any of these arrangements I would go to war; and as long as I have a man and a musket left, would carry it on." The emperor went on to say that, in the event of a dissolution of the Ottoman empire, he thought it might be less difficult to arrive at a satisfactory territorial arrangement than was commonly believed. "The Principalities are," he said, "in fact an independent state under my protection; this might so continue. Servia might receive the same form of government. So again with Bulgaria. There seems to be no reason why this province should not form an independent state. As to Egypt, I quite understand the importance to England of that territory. I can then only say that if, in the event of a distribution of the Ottoman succession upon the fall of the empire, you should take possession of Egypt, I shall have no objection to offer. I would say the same thing of Candia; that island might suit you, and I do not know why it should not become an English possession."

The Greek question.

At this time a dispute was going on between the Greek and Latin churches relative to the guardianship of the holy places in Palestine, and Russia warmly espoused the cause of the former. At length, however, this question was brought to an apparent settlement, chiefly through the unremitting efforts of Lord Stratford de Redcliffe, her British Majesty's ambassador at Constantinople. But while the Russian government was holding out that the mission of Menschikoff to Constantinople was exclusively for the purpose of effecting a settlement of the dispute regarding the holy places, that minister was pressing upon the Porte other demands of a far more serious and important character, which, if complied with, would have had the effect of virtually admitting the sovereignty of the emperor over the Greek Church in Turkey. This the sultan refused to do; and Prince Menschikoff quitted Constantinople on the 21st of May 1853, declaring that the refusal of his demands would impose upon his government the necessity of seeking a guarantee by its own power. On the 28th of the same month an official note was transmitted by the Turkish government to the different embassies of the foreign powers, in which it said: "The Porte announces that the question of the holy places has terminated in a manner satisfactory to all parties; nevertheless the Prince Menschikoff, not satisfied with that, has demanded of the Porte a treaty to guarantee the rights and privileges of all kinds accorded by the sultan to his Greek subjects. However great may be the desire of the Porte to cherish and preserve more and more the most amicable relations with Russia, she can never engage herself by such a guarantee towards a foreign government, either concluding with it a treaty, or signing a simple official note, without compromising gravely her independence, and the most fundamental rights of the sultan over his own subjects."¹

The emperor based his claim to interpose himself as protector of the Greek Church in Turkey on the treaty of Kainardji, concluded in 1774; but the only parts of that treaty bearing upon the Christian religion are contained in the 7th and 14th articles, and they do not afford the smallest countenance to the claim of the emperor to interfere in behalf of the religious privileges of the Christians throughout the Ottoman empire. In the 7th article of the treaty "the Sublime Porte promises to protect constantly the Christian religion and its churches; and also it allows the ministers of the imperial court of Russia to make on all

occasions representations as well in favour of the new church at Constantinople, of which mention will be made in the 14th article, as in favour of those who officiate therein." And by article 14th "it is permitted to the high court of Russia, in addition to the chapel built in the house of the minister, to construct in the Galata quarter, in the street called Bey Ogla, a public church of the Greek rite, which shall be always under the protection of the minister of that empire, and shielded from all obstruction and all damage." It will be observed that here the Porte does not promise to allow Russia to interfere for the protection of the Christian religion and its churches, but to afford that protection itself; and the only right of protection accorded to Russia is limited to a chapel and a church at Constantinople. In a note of 31st May Count Nesselrode intimated to Reschid Pasha that in a few weeks the Russian forces would receive orders to cross the frontier and occupy the Principalities, not to wage war, but until the Ottoman government should give to Russia the moral securities she had in vain demanded. No time was lost in putting this threat into execution; and on the 2d and 3d of July two divisions of Russian troops, amounting to 80,000 men, under the command of Prince Gortschakoff, crossed the Pruth, one at Skoaliani and the other at Leovd. The news of this proceeding caused great excitement at Constantinople; and a formal protest against the invasion of the Moldo-Wallachian provinces was drawn up by the Ottoman Porte, and issued on the 14th of July. Its tone was conciliatory, but at the same time firm; and it stated that the Sublime Porte "is still disposed, if an arrangement of a nature to satisfy Russia can be arrived at without prejudice to the sacred rights of the sultan, to send an ambassador extraordinary to St Petersburg to seek in concert with the Russian cabinet the means of arriving at that end." On the 1st of June a despatch was forwarded by her Majesty's government to Lord Stratford de Redcliffe, authorizing him in certain specific contingencies to send for the fleet; and instructions were also sent to Admiral Dundas to proceed to the neighbourhood of the Dardanelles, and there to place himself in communication with her Majesty's ambassador. Similar orders were about the same time issued by the French government to their fleet, and they both anchored in Besika Bay about the middle of June. Soon after, a conference of the representatives of the four great powers was held at Vienna, and by the end of July a Note, originally drawn up by the French government, and sanctioned, with some modifications, by those of Britain and Austria, was finally adopted by the conference, and submitted for acceptance to Russia and Turkey. It was immediately acceded to by the former, but the latter declined doing so until some alterations were made in the wording of the Note, which might be misconstrued. At first the conduct of the Porte was disapproved by the four powers, but they afterwards admitted that the objections were well-founded. The czar, however, refused to receive the Note as altered, and would only accept of it in its original form. That the objections of the Porte were valid, was evinced by the fact, that the interpretation which in subsequent communications Russia insisted on putting upon it was just that which was not intended.

On the 5th of October the Porte issued a formal declaration of war, and on receiving intimation thereof, Omar Pasha, the Turkish general, who was then at Shunla, despatched a letter to Prince Gortschakoff, the Russian commander-in-chief in the Principalities, offering him fifteen days to evacuate that territory before commencing hostilities. To

History.

Declaration of war.

¹ According to a census taken in 1844, the total population of European Turkey was 15,500,000, of which only 4,550,000 were Mussulmans, while 10,000,000 were members of the Greek Church, 640,000 Roman Catholics, and 70,000 Jews. In Asia Minor the proportions were of course very different. The total population there in that year subject to the Porte was 16,050,000, of whom 12,650,000 were Mussulmans, 3,000,000 Greek Church, and 260,000 Roman Catholics.

History. this the Russian general replied, that he "had no orders to commence hostilities, nor to conclude peace, nor to evacuate the Principalities." On the 14th of October the combined fleets of England and France, which had been for some time lying at Besika Bay, entered the Straits of the Dardanelles at the request of the sultan; and on the 1st of November the czar issued his manifesto of war.

In the beginning of November the Turks crossed the Danube at four places. The first passage was effected at Widdin, a place far up near the frontier of Servia, from which they pushed on to Kalafat, and occupied it with a force of 12,000 men. Lower down the river at Rustchuk a body of 2000 or 3000 men crossed, and entrenched themselves at Giurgevo. At Turtukai, still lower down, a large Turkish force crossed over to Oltenitza, where they established themselves, although they were vigorously attacked by the Russians. On the 2d and 3d of November the attacks of the Russians were repulsed with loss. On the 4th they mustered to the amount of 30,000 strong, and attacked the Turks, who numbered only about 18,000. A desperate engagement ensued, in which the Russians were defeated with a loss of about 1000 killed and twice that number wounded. Several spirited engagements subsequently took place at Kalafat and its neighbourhood, and notwithstanding all the efforts of the Russians, the Turks effectually made good their position there. Towards the end of November Omar Pasha, not deeming it prudent to expose his troops to attack during the winter, withdrew across the Danube, only retaining possession of the works at Kalafat, on the left bank of the river.

Destruction of Turkish fleet at Sinope.

An event now happened that filled Europe with horror, and gave a new character to the war. This was the unprovoked attack on, and the total destruction of, the Turkish fleet in the harbour of Sinope. On the 30th November the Turkish fleet, consisting of 7 frigates, 3 corvettes, and 2 smaller vessels, were lying at anchor in that harbour, when a Russian squadron, composed of 6 sail of the line, 3 of which were three-deckers, 2 sailing frigates, and 3 steamers, entered the bay, the frigates and steamers remaining outside the heavy ships. The action immediately commenced, and though the Turks fought with the courage of desperation, in the short space of two or three hours the whole of their vessels were burned or sunk, except one small steamer which got out and made for sea during the heat of the conflict. About 5000 of the Turks were killed, and only a very few escaped by swimming to land. The czar having, as we have seen, announced his determination to act only on the defensive, and to repel the advance of the Turks into the Principalities, this blow was totally unexpected on the part of the allies, whose representatives at Vienna were still exerting themselves to bring about a peace, and had just prepared a protocol, which the Ottoman Porte had agreed to receive as a basis of negotiation, when the news of this disaster reached them. The English and French fleets, too, instead of taking possession of the Black Sea for the protection of the Turks, were lying in the Bosphorus, while the Russians were actively using that sea for the conveyance of troops, arms, and ammunition to their various military posts. When the news reached St Petersburg the czar ordered a solemn "Te Deum" in the churches, and published an exulting manifesto. The English and French, who may be said to have hitherto acted only as spectators of the war, now saw that it was necessary to have recourse to more active measures. The combined fleet was immediately ordered into the Black Sea, and though negotiations were carried on for some time after, it could not be with any sanguine hope of a peaceful termination to the war.

1854.

On the 4th of February 1854 Baron Brunow, the Russian representative at St James's, formally announced the suspension of diplomatic relations between the two countries, and in a few days afterwards he closed his embassy, and

quitted London. On the 7th Lord Clarendon wrote to Sir G. Seymour at St Petersburg, directing him to withdraw from that capital with every member of the embassy; and about the same time similar instructions were forwarded by the French government to their *charge d'affaires* there, M. de Castelbajac. On the 12th of March a treaty or convention between England, France, and the Porte was signed, regulating the terms on which the two former were to assist the latter. Previous to this, however, on the 28th February, the first detachment of troops left for the East, and landed at Malta, where they remained till the 31st of March. On the 27th and 28th March the French and English respectively declared war. A portion of the French army sailed from Marseilles on the 19th of March, and on the 30th arrived at Gallipoli, a seaport of European Turkey, near the place where the Dardanelles expand into the Sea of Marmora; and on the 5th of April they were joined by the English detachment from Malta. Powerful works were constructed here, extending from the Gulf of Saro to the Sea of Marmora, so that, in case of necessity, the allied armies might have a safe place of retreat. Afterwards the allied forces were removed to the neighbourhood of Constantinople, the English occupying Scutari. Lord Raglan, who was appointed commander-in-chief of the English troops, arrived at Constantinople on the 29th of April, and Marshal St Arnaud, the French commander-in-chief, on the 8th of May.

The campaign on the Danube opened on 6th January with a vigorous engagement between the Turks and Russians in the neighbourhood of Citate, a village where the Russians had established themselves. The Turks were victorious, and completely dislodged the enemy from the village. Attempts were made the next day, and for several succeeding days, with fresh troops, to re-take the place, but without success. A Russian report states that, in January 1854, 35,000 Russian soldiers had already perished in the Principalities. Besides those slain in battle, many had died from disease, want, and fatigue. For about a month after the battle of Citate both armies on the Danube were chiefly occupied in making preparations for fighting. About the 13th of February the Russians collected in considerable force against Giurgevo, and attacked it, so far successfully that the Turks, after an obstinate resistance of two or three days, evacuated the place, and retreated in perfect order across the Danube to Rustchuk. On the 23d of March the Russians, having been considerably re-inforced, crossed the Danube at three points, Ismael, Galatz, and Matchin, and entered the Dobrudscha with artillery and a siege-train, for the purpose of storming Silistria and attacking Omar Pasha at Shumla before the allied armies could come to his assistance. Silistria was invested on the 17th of May, and gallantly resisted for six weeks every effort of the enemy to take it. Among the besieged were two British officers, Captain Butler and Lieutenant Nasmyth, who greatly contributed to the success of the defence. The latter of these, in a letter to the *Times*, dated June 29, says,—“The Turkish army may well talk with pride. Their opponents had an army on the right bank of the Danube, which at one time amounted to 60,000 men. They had sixty guns in position, and threw upwards of 50,000 shot and shell, besides an incalculable quantity of small-arm ammunition. They constructed more than 3 miles of approaches and sprang six mines; yet during forty days not one inch of ground was gained, and they abandoned the siege, leaving the petty field-work against which their principal efforts had been directed a shapeless mass, from the effects of their mines and batteries, but still in possession of its original defenders.”

The bombardment of Odessa took place on the 22d of April, that town having fired upon an English flag of truce. The firing lasted for about ten hours, and did not cease till

History.

Operations on the Danube.

Black Sea.

History.

most of the batteries had been destroyed or silenced. The attack, however, was strictly confined to the forts, batteries, and military store-houses. On the 12th of May the *Tiger*, an English steam-frigate, ran aground near Odessa, and being attacked by artillery from the town, she surrendered after a short fight, her guns having been thrown overboard to lighten her. The crew were made prisoners and taken to Odessa, where they were well treated. About the same time a squadron dislodged the Russians from their stronghold of Redout Kaleh, on the coast of Circassia.

By the middle of May the French and English armies were in sufficient force and organization to take the field; and on the 19th of that month a council of war was held at Varna, at which Lord Raglan, Marshal St Arnaud, and Omar Pasha were present. It was then decided to bring up all the disposable forces to Varna; and accordingly, on the 29th of May the greater portion of the French and English troops disembarked at that place.

The raising of the siege of Silistria, and the retreat of the Russians, were the signal for the general advance of the Turkish army. They re-crossed the Danube in the beginning of July; and on the 8th of that month an action was fought at Giurgevo, very creditable to the Turkish arms. At night the Russians abandoned their camp, leaving an immense quantity of stores, and retreated to Bucharest. They soon afterwards quitted the latter city, and retired beyond the Sereth. Towards the end of August the Austrian troops took possession of the Principalities, in terms of a convention concluded between the Emperor of Austria and the Porte. During this time the fleet in the Black Sea was doing good service by destroying the Russian batteries at the Sulina mouth of the Danube.

Baltic
fleets.

Meanwhile the allied fleets were cruising about in the Baltic. The English fleet, under the command of Sir Charles Napier, had left Spithead on the 11th of March. It at first comprised 8 screw line-of-battle ships, 4 screw frigates, and 4 paddle-steamers, and was subsequently augmented by others, till it amounted to 42 vessels, with 2200 guns, 16,000 horse-power, and 22,000 sailors and marines. About the middle of April a French squadron of 23 vessels carrying in all 1250 guns, sailed from Brest under the command of Vice-Admiral Parseval-Deschênes. A detachment of the English fleet under Admiral Plumridge, cruising in the Gulf of Bothnia during May and the early part of June, took and destroyed 46 merchant vessels, with from 40,000 to 50,000 barrels of pitch and tar, and an immense quantity of naval stores. The only proceeding that was attended by loss of life was an attempt upon Gamle Karleby, a small seaport-town of Finland. The vessels *Odin* and *Vulture* were despatched to that place to take possession of any vessels or naval stores that might be found there, but the water off the port was so shallow that they were obliged to anchor 5 miles from the town. Four boats were therefore manned, and sent in to destroy the stores. Hoisting a flag of truce, they first demanded the surrender of the place; and this having been refused, the flag was hauled down, and the *Odin's* cutter was proceeding to reconnoitre when it was fired upon from an ambuscade, and eleven of its men killed and wounded. The firing was kept up with vigour on both sides, and the *Vulture's* paddle-box boat became so unmanageable, and her crew were so much cut up, that she drifted on shore, and became the prize of the enemy, who made prisoners of all that remained alive. Our loss amounted to fifty-four officers and men, killed, wounded, and missing. In the month of May the *Hecla* and *Arrogant* proceeded by night from Hango roads up 7 miles of a narrow river to Eknaes, destroyed a powerful battery which opened fire upon them, put to flight a large troop of horse artillery and a large body of infantry, and cut out a large merchantman laden with a valuable cargo, returning in safety with the prize. A day or two after this the large

History.

fort of Gustavus Varn in Hango Roads was shelled, and great loss inflicted upon the Russians. About the end of June the allied fleet, amounting to 51 sail, proceeded to reconnoitre Cronstadt, anchoring about 8 miles from that fortress, and sending forward six steam-vessels to take soundings, and to make a closer inspection, with orders to keep out of cannon range. The two main divisions of the allied fleets subsequently proceeded to the Bay of Ledsund, to the south of the Aland Islands, in the Gulf of Bothnia. On the 15th of July 10,000 French troops were embarked at Boulogne on board of English vessels for the Baltic. These were disembarked in the morning of the 8th of August in the vicinity of Bomarsund, a strong fortress on one of the Aland Islands. The chief fortress was a structure of granite about 40 feet in height, and mounting about 80 cannon. The land rose above this fort, and on the crests of the low hills were two granite towers, each surrounded by a broad ditch. There was also an earthen battery of 5 pieces of artillery. About 1200 marines of both nations were also landed on the north of the island, and commenced erecting a battery. On the 13th the French commenced the bombardment of the western tower, which was captured by them on the following morning. On the 15th two batteries, manned by English seamen and marines, began to play upon the eastern tower, and a complete breach having been made, and all the guns silenced, a white flag was hoisted in the evening, and the place surrendered. On the same day the bombardment of the principal fort commenced both on land and from the sea, five vessels firing shot and shell at the front of the battery from a long range. Next day the attack was renewed; but at noon a white flag was hoisted from the walls, and the garrison surrendered unconditionally. There were taken 112 mounted and 79 unmounted guns, 3 mortars and 7 field-pieces, and also 2235 prisoners. Our loss was 1 officer and 1 private killed, and 7 wounded; the French loss was somewhat greater. The fortifications were subsequently reduced to a mass of ruins. After this the allied fleets effected nothing of importance in the Baltic. The French fleet returned early in the autumn, and the English fleet returned by single vessels as the winter drew on, some remaining in the Baltic till the ice began to form, and reaching England late in November. Of the French land forces about 800 perished by cholera, besides those who had fallen in action.

The months of July and August were very calamitous Varna. for the allied armies at Varna and the neighbourhood, as well as for the fleet at Baltchik Bay. The mortality was fearful, and the men were reduced to great despondency; praying to be led against the enemy at whatever risk rather than to die the inglorious death that was so fast decimating their ranks. On the 26th of August a council of war was held at Varna by all the English and French generals; and on the 3d of September the final order for the embarkation of the British troops from Varna was issued. Their destination was the Crimea, and they were to disembark at some place not far from Sebastopol. The order of battle was formed before the landing. The troops were to enter the boats in the order in which they stood in the ranks. The boats were to form in line abreast, and to pull into the shore stoutly, steadily, and in perfect silence. On landing, they were to form in continuous columns. Three days' provisions were to be carried by each individual, both officers and men. The troops were thus ready to encounter the enemy had he met them on landing, and it is clear that such an encounter was expected. On the afternoon of the 13th of September the fleets anchored in Eupatoria Bay, and the town was summoned to surrender, which it at once did, being without the means of defence. They left early next morning, and, keeping near the shore, anchored about 12 miles below Eupatoria, where they com-

History.

History.

Battle of
the Alma.

menced to disembark, and before night they had landed without opposition 20,000 British troops, with 36 guns, and a large number of horses, and about an equal number of French. In the afternoon it rained, and a swell arose along the coast, which continued to increase. At night the rain came down in torrents, and the troops on the beach were drenched, being houseless and tentless. The swell next day impeded the landing of the guns and cavalry, and occasioned some loss in horses and boats; but during that and the following day the disembarkation was completed. As yet no enemy, except a few isolated bands of Kozzacks, had been seen; but the steamers sent to reconnoitre the coast reported that the Russians had formed a strong camp on the heights to the south of the River Alma. The troops commenced their march in the morning of the 19th, and halted for the night on the left bank of a small stream called the Bulganac. On that day there was a skirmish between our light cavalry and a party of Russian dragoons. At daybreak the following morning the Agamemnon, with the inshore squadrons, moved along the coast, and took up a position off the Alma. A column of French infantry, preceded by skirmishers, now descended from the heights about the Bulganac, and boldly advanced by the seaside. It was soon followed, more inland, by the main body of the French army. When within a mile of the Alma the French halted. They were then joined by the English, who formed into line with their allies. Both armies then moved forward, and again they halted. Before them, on the lofty cliffs and precipitous slopes on the other side of the Alma, were the enemy. Their position was well chosen, and seemed to defy attack. Running closely along the left bank of the Alma for about 2 miles from the sea, is a bold and almost precipitous range of heights of from 350 to 400 feet in height. It then makes a long sweep, forming a great amphitheatre about 2 miles in width at its mouth. Across this great opening, running parallel to the river, and at distances of from 600 to 800 yards from it, is a low ridge of heights varying from 60 to 150 feet. Across a part of the slope was a trench deep enough to protect the Russian marksmen, and to impede the progress of the assailants. On the right, and a little retired, was a powerful covered battery armed with heavy guns, which flanked the whole of the right of the position; whilst artillery were stationed on almost every eminence commanding the open ground over which our troops must advance. On the slopes of these hills, which formed a sort of table-land, were placed dense masses of the enemy's infantry, whilst on the heights above was his great reserve; the whole amounting, it is supposed, to between 45,000 and 50,000 men. The banks of the river were extremely rugged, and for the most part steep, and the willows along it were cut down to prevent them from affording shelter to the attacking party. The attack was commenced by the French division of troops under General Bosquet, which was nearest the shore. He first detached a regiment of Zouaves and a body of sharpshooters, who crossed the river near its mouth without being perceived by the enemy. Presently they were seen "swarming like ants," with extraordinary agility, up the almost perpendicular face of the cliff, and they soon reached the summit. On reaching the plateau they immediately formed into line under a deadly fire of musketry and artillery. General Bosquet now brought up the remainder of his division; and at the same time the main body of the French army, under Prince Napoleon and General Canrobert, advanced through the village of Alma-tomak, and, fording the river, gained a pathway which led up to the plateau. It was only with the greatest difficulty that the French artillery could be dragged up these rough passes; but at length one battery gained the heights, and was rapidly carried to the assistance of the Zouaves. The Zouaves and the few troops that had joined them held their ground with admirable courage and

steadiness until other French corps came up. Some regiments of the line were foiled in an attempt to force the Russian position to the left of the Zouaves; but the most deadly contest took place near a tumulus on which stood an unfinished tower. Here the main body of the enemy was collected, and to dislodge them the Zouaves, with some regiments of the line, charged with the bayonet. The Russians made a most determined stand, but after sustaining repeated and impetuous charges, they fell back apparently in good order. Seeing his left about to be turned, Prince Menschikoff now sent a considerable mass of infantry and artillery to its support. Up to this time the English had remained inactive, the arrangement being, that they were to wait until the French should have gained the heights and have turned the Russian left. But Marshal St Arnaud, seeing that fresh columns of infantry and more batteries of heavy artillery were being brought up against him, sent to request Lord Raglan to advance without further delay. The command was accordingly given to advance, and as they approached the bank of the river the Russian batteries on the slopes opened up a deadly fire. At the same time sharpshooters behind walls or in the vineyards harassed our troops, but these were soon driven over the river by our rifles. The Russians had set fire to the village of Burluik, lying between our troops and the river, but as soon as the artillery got beyond the smoke they began to play upon the enemy, and inflicted considerable damage. Partly under cover of this fire, Lord Raglan, at the head of his staff, plunged into the ford, and, amidst a thick shower of shot and shell, gained the opposite bank, close to the left of our allies. In consequence of the burning of the village two regiments of Brigadier-General Adams's brigade, being part of Sir De Lacy Evans's division, had to pass the river at a deep and difficult ford to the right, under a sharp fire; while his first brigade, under Major-General Pennefather, and the remaining regiment of Brigadier Adams, crossed to the left of the conflagration, opposed by the enemy's artillery from the heights above. In the meantime, the light division, under Sir George Brown, which was to be the first to attack, effected the passage of the Alma in their immediate front. The banks of the river, from their rugged and broken nature, were serious obstacles to their advance; while the vineyards through which they had to pass, and the trees which had been felled, created additional impediments, and rendered every attempt to form under a galling fire almost an impossibility. Nevertheless, Sir George nobly persevered. The first brigade, under Major-General Codrington, composed of the 7th, 23d, and 33d regiments, rushed up the slope in teeth of the heavy guns placed in the earthwork, and with a courage that has never been surpassed, in spite of ball and grape-shot, drove the enemy before them even to the cannon's mouth. Some of our men even leaped into the redoubt, but these were soon driven out by the awful fire of the Russian infantry. "Sir George Brown," says an eyewitness (the *Times*' correspondent), "conspicuous on a grey horse, rode in front of his light division, urging them with voice and gesture. Gallant fellows! they were worthy of such a gallant chief. The 7th, diminished by one-half, fell back to re-form their columns, lost for the time; the 23d, with eight officers dead and four wounded, were still rushing to the front, aided by the 19th, 33d, 77th, and 88th. Down went Sir George in a cloud of dust in front of the battery. He was soon up, and shouted '23d, I'm all right: be sure I'll remember this day,' and led them on again; but in the shock produced by the fall of their chief the gallant regiment suffered terribly while paralysed for a moment. Meanwhile, the Guards on the right of the light division, and the brigade of Highlanders, were storming the heights on the left. Their line was almost as regular as though they were in Hyde Park. Suddenly a tornado of round and grape rushed through from

History. the terrible battery, and a roar of musketry from behind, thinned their front ranks by dozens. It was evident that we were just able to contend against the Russians, favoured as they were by a great position. At this very time an immense mass of Russian infantry were seen moving down towards the battery. They halted. It was the crisis of the day. Sharp, angular, and solid, they looked as if they were cut out of the solid rock. It was beyond all doubt that, if our infantry, harassed and thinned as they were, got into the battery, they would have to encounter again a formidable fire, which they were but ill calculated to bear. Lord Raglan saw the difficulties of the situation. He asked if it would be possible to get a couple of guns to bear upon these masses. The reply was 'Yes;' and an artillery officer, whose name I do not know, brought up two guns to fire on the Russian squares. The first shot missed, but the next, and the next, and the next cut through the ranks so cleanly and so keenly, that a clear line could be seen for a moment through the square. After a few rounds the column of the square became broken, wavered to and fro, broke, and fled over the brow of the hill, leaving behind them six or seven distinct lines of dead lying as close as possible to each other, marking the passage of the fatal messengers. This act relieved our infantry of a deadly incubus, and they continued their magnificent and fearful progress up the hill. The duke encouraged his men by voice and example, and proved himself worthy of his proud command and of the royal race from which he comes. 'Highlanders,' said Sir C. Campbell, ere they came to the charge, 'I am going to ask a favour of you; it is that you will act so as to justify me in asking permission of the Queen for you to wear a bonnet! Don't pull a trigger till you're within a yard of the Russians.' They charged, and well they obeyed their chieftain's wish: Sir Colin had his horse shot under him; but his men took the battery at a bound. The Russians rushed out, and left multitudes of dead behind them. The Guards had stormed the right of the battery ere the Highlanders got into the left, and it is said the Scots Fusilier Guards were the first to enter. The second and light division crowned the heights. The French now turned the guns on the hill against the flying masses, which the cavalry in vain tried to cover. A few faint struggles from the scattered infantry, a few rounds of cannon and musketry, and the enemy fled to the south-east leaving 3 generals, drums, 3 guns, 700 prisoners, and 4000 wounded behind them. The battle of the Alma was won. It was won with a loss of nearly 3000 killed and wounded on our side. 'The Russians' retreat was covered by their cavalry; but if we had had an adequate force we could have captured many guns and multitudes of prisoners.' The total loss of the allies was 619 killed and 2860 wounded, of which the British counted 362 killed and 1640 wounded. The loss of the Russians is stated at somewhat less than 8000 men, besides nearly 900 prisoners. The allies had in the field about 50,000 men, but of this number some 20,000 were not engaged. The entire force of the Russians amounted to about 40,000 men.

For the next two days the allies were busy in burying the dead and taking care of the wounded, and on the 23d they commenced their march towards Sevastopol. Learning that the enemy occupied a formidable position on the left bank of the Belbek, and that this river could not readily be rendered a means of communication with the fleet, and calculating that the chief preparations for defence would be made on the north side of the town, the commanders altered their original intention of making their attack on that side; and after their first night's bivouac they made a flank movement, and striking across a woody country, through which they had to steer their way by the compass, they reached an open road leading from Baktchiserai to Balaklava. At a place called Mackenzie's Farm

our advanced guard encountered a part of the Russian army, which fled in consternation at the unexpected meeting. On the 26th we obtained possession of Balaklava without opposition. The harbour is commodious and secure, but the entrance is narrow and somewhat difficult of access. The next day the allied armies took up their positions in the valley to the north of Balaklava and on the bleak heights above Sevastopol. The allies now suffered a severe loss in the departure and death of Marshal St Arnaud. He had left France in bad health, and finding himself quite overcome by acute and severe illness, he resigned his command to General Canrobert, and died on the 29th, on his way down to Constantinople.

The position taken up by the English before Sevastopol Sevastopol. was to the right of the French, at a distance of 6 miles from their ships; while the French, on the left, rested on Cape Chersonese, and were within 3 miles of their ships. The ground in front of the French being soft, permitted the usual process of sapping and trenching to be carried on quickly, while the ground in front of the English was hard and rocky, and moreover broken by so many chasms or ravines that regular approaches were almost impracticable. The attack both by sea and land was opened on the 17th of October. Seven large Russian ships had been sunk at the mouth of the harbour, so that our ships could only fire at long range, and so produced very little effect. During this time the Russians had been exerting every effort to strengthen their position. A round stone tower at their extreme left was rapidly surrounded by strong, thick earthworks, upon which none but our heaviest artillery could make an impression; while the tower itself, originally white, was painted of the colour of the earth, so as to be a less conspicuous object to our mark. This round tower was by a line of earthworks connected with a formidable redoubt on the right known as the "Redan." Between the Redan and the arsenal at the head of Dockyard Creek were the "Barrack" batteries, and to the west of the Creek, facing the French line, was the Flagstaff Battery, united by a wall and strong defences to the Quarantine Fort and the sea. The average distance of the English batteries from the Russian lines was about 1500 yards. The French works, from the causes already mentioned, were considerably nearer than the English, but they had not so many guns in position. The attack opened early in the morning of the 17th, but the result proved that the French batteries were not strong enough, neither were their magazines well placed. About two hours after the commencement of the bombardment a French powder magazine blew up, doing considerable damage; and at 1.30 P.M. a more destructive explosion took place in their lines, rendering it necessary for their artillery to suspend its fire during the rest of the day. Between 2 and 3 P.M. a terrific explosion took place in the Redan Battery, which it was thought would have rendered this work untenable; but the Russians, with unflinching bravery, continued at their guns, and kept up the fire until nightfall, when both sides ceased. The Round Tower, being of stone, was soon knocked to pieces by our heavy guns, and completely silenced, while the Redan, which was of earth, was not materially injured. The loss of the English was 44 killed and 266 wounded; of the French, 30 killed and 164 wounded; while the Russians acknowledge a loss of 500 in killed and wounded. The siege was proceeding steadily, when, early in the morning of the 25th, the Russians made an attack upon the position in front of Balaklava. A low range of heights that runs across the plain, at the bottom of which the town stands, was protected by four small redoubts hastily constructed. Three of these had guns in them; and on a higher hill in front of the village of Camera, in advance of our right flank, was established a work of somewhat more importance. These redoubts were garrisoned by Turkish troops.

History.

First bombardment.

Battle of Balaklava.

History. The 93d Highlanders was the only British regiment in the plain, with the exception of a part of a battalion of detachments composed of weakly men, and a battery of artillery belonging to the third division; and on the heights behind our right were placed the marines. At daybreak in the morning of the 25th the enemy were seen in great force advancing up the valley of the Tchernaya. This was indeed a new army, under the command of General Liprandi, which had just arrived from the Danubian Principalities, Austria having taken upon herself the occupation of the Principalities, and thus set free both the Russian and Turkish armies. Redoubt No. 1 was carried after a feeble resistance by the Turks, and Nos. 2 and 3 were evacuated without an attempt at defence. When the news reached Balaklava, Sir Colin Campbell, who commanded there, sent the 93d Highlanders, under Lieutenant-Colonel Ainslie, to draw up in line in front of the road leading to the town. Lord Raglan also, as soon as he was apprised of this movement of the enemy, withdrew from before Sevastopol the 1st and 4th divisions, and brought them down into the plain. After the three redoubts had been carried, the Russian cavalry at once advanced, supported by artillery and dividing into two bodies, the smaller of which charged down the slope upon the 93d, whose vigorous and steady fire instantly carried death into their ranks and threw them back in disorder. The other and larger mass turned to the right to attack our heavy cavalry, advancing straight towards the camp of the Scots Greys and the Enniskillen Dragoons, whose united number did not amount to 400 men. Their first line was at least double the length of ours, and it was three times as deep; while behind them was a similar line equally strong and compact. Though the ground was very unfavourable, it presented no check to our men, who charged into the Russian column with the utmost fury. "As lightning flashes through a cloud, the Greys and Enniskilleners pierced through the dark masses of the Russians. The shock was but for a moment. There was a clash of steel and a light play of sword-blades in the air, and then the Greys and the red coats disappear in the midst of the shaken and quivering columns. In another moment we see them emerging and dashing on with diminished numbers and in broken order against the second line, which is advancing against them as fast as it can to retrieve the fortune of the charge. It was a terrible moment. . . . With unabated fire the noble hearts dashed at their enemy. It was a fight of heroes. The first line of the Russians which had been smashed utterly by our charge, and had fled off at one flank and towards the centre, were coming back to swallow up our handful of men. By sheer steel and sheer courage Enniskilleners and Scot were winning their desperate way right through the enemy's squadrons, and already grey horses and red coats had appeared right at the rear of the second mass, when, with irresistible force, like one bolt from a bow, the 1st royalists, the 4th dragoon guards, and the 5th dragoon guards rushed at the remnants of the first line of the enemy, and went through it as though it were made of pasteboard, and, dashing on the second body of Russians, as they were still disordered by the terrible assault of the Greys and their companions, put them to utter rout." (*Times'* correspondent.) As the enemy withdrew from the ground which they had momentarily occupied, and seemed to be removing the captured guns, the Earl of Lucan was desired to advance and try to prevent them from effecting their object. From some misconception of the instructions, the lieutenant-general considered that he was bound to attack at all hazards; and he accordingly ordered Major-General the Earl of Cardigan to move forward with the light brigade. By this time the Russians had re-formed their own ground, with artillery in front and upon their flanks. According to the graphic account of the *Times'* correspondent—"They advanced in

two lines, quickening their pace as they closed towards the enemy. A more fearful spectacle was never witnessed than by those who, without the power of aid, beheld their heroic countrymen rush to the arms of death. At the distance of 1200 yards the whole line of the enemy belched forth from thirty iron mouths a flood of smoke and flame, through which hissed the deadly balls. Their flight was marked by instant gaps in our ranks, by dead men and horses, by steeds flying wounded or riderless across the plain. The first line is broken; it is joined by the second; they never halt or check their speed one instant; with diminished ranks thinned by those thirty guns which the Russians had laid with the most deadly accuracy, with a halo of flashing steel above their heads, and with a cheer which was many a noble fellow's death-cry, they flew into the smoke of the batteries, but ere they were lost from view the plain was strewn with their bodies and with the carcasses of horses. They were exposed to an oblique fire from the batteries on the hills on both sides, as well as to a direct fire of musketry. Through the clouds of smoke we could see their sabres flashing as they rode up to the guns, and dashed between them, cutting down the gunners as they stood. We saw them riding through the guns, as I have said; to our delight we saw them returning, after breaking through a column of Russian infantry, and scattering them like chaff, when the flank fire of the battery on the hill swept them down, scattered and broken as they were. Wounded men and dismounted troopers flying towards us told the sad tale: demi-gods could not have done what we had failed to do. At the very moment when they were about to retreat an enormous mass of lancers was hurled on their flank. Colonel Shewell of the 8th hussars saw the danger, and rode his few men straight at them, cutting his way through with fearful loss. The other regiments turned and engaged in a desperate encounter. With courage too great almost for credence, they were breaking their way through the columns which enveloped them, when there took place an act of atrocity without parallel in the modern warfare of civilized nations. The Russian gunners, when the storm of cavalry had passed, returned to their guns. They saw their own cavalry mingled with the troops who had just ridden over them, and to the eternal disgrace of the Russian name, the miscreants poured a murderous volley of grape and canister on the mass of struggling men and horses, mingling friend and foe in one common ruin. It was as much as our heavy cavalry brigade could do to cover the retreat of the miserable remnants of that band of heroes as they returned to the place they had so lately quitted in all the pride of life." The brigade numbered only 607 men, and of these only 198 returned. The enemy made no further movement in advance; and at the close of the day the brigade of Guards of the first division and the fourth division returned to their original encampment.

The next morning several columns of infantry, accompanied by artillery, were seen issuing out of Sevastopol, to the number of 6000 or 7000, it was thought, on their way to join Liprandi's corps. Turning to the right, however, they ascended the hills, and suddenly appeared on a crest which commanded the second division under Sir De Lacy Evans. These withstood the attack with great bravery, and having at length received assistance, succeeded in putting the enemy to flight with the loss of about 600 killed and wounded, and 80 prisoners. Our loss was only about 80 killed and wounded. During all this time the siege was steadily progressing, but large re-inforcements were joining the Russian camp to the north of Sevastopol, while supplies and other re-inforcements were poured into the town itself.

On the 5th of November the Russian army, augmented by re-inforcements from the north, and animated by the presence of the Grand Dukes Michael and Nicholas, attacked

History.

Battle of Inkermann

History.

our position overlooking the ruins of Inkermann. Shortly before daylight strong columns of the Russians came upon the advanced pickets covering the right of the English position. These defended the ground foot by foot with the utmost gallantry, until the 2d division, with its field guns, was got into position. The morning was extremely dark and drizzly; but it soon became apparent that the enemy had advanced numerous batteries of large calibre to the high grounds to the left and front of the 2d division, while powerful columns of infantry attacked with great vigour the brigade of guards. Additional batteries of heavy artillery were also placed on the slopes whence they could best tell upon us, until the guns in the field actually amounted to 90 pieces, independently of the ships' guns and the guns of Sevastopol, which were also playing upon our men. Protected by a tremendous fire of shot, shell, and grape, the Russian columns advanced in great force, requiring every effort on our part to resist them. Two battalions of French infantry now joined our right, and contributed materially to our success. About the same time a determined assault was made on our extreme left, and for a moment the Russians possessed themselves of four of our guns, but these were speedily re-captured. In the opposite direction the brigade of Guards was engaged in a severe conflict. The enemy advanced in two heavy bodies under cover of a thick brushwood, and assaulted with great determination a small unarmed redoubt. The combat here was most arduous, and the brigade, after displaying the utmost bravery and gallantry, was obliged to retire. Again and again they advanced to the charge, and again and again were driven back. At length a body of French troops came to their assistance, and occupied the redoubt, while the Guards speedily reformed in rear of the right flank of the 2d division. Subsequently to this the battle continued with unabated vigour, and with no positive result, till towards the afternoon, when symptoms of giving way first became apparent; and shortly after, although the fire did not cease, the retreat became general. Thus for more than six hours 8000 English and 6000 French sustained a hand-to-hand fight against 50,000 Russians. "The battle of Inkermann," says the *Times*' correspondent, "admits of no description. It was a series of dreadful deeds of daring, of sanguinary hand-to-hand fights, of despairing rallies, of desperate assaults,—in glens and valleys, in bushwood glades and remote dells, hidden from all human eyes, and from which the conquerors, Russian or British, issued only to engage fresh foes, till our old supremacy, so rudely assailed, was triumphantly asserted, and the battalions of the czar gave way before our steady courage and the chivalrous fire of France." The loss of the enemy is estimated at about 9000; our loss was 632 killed, 1878 wounded, and 63 missing, total 2573; and that of the French was 1726 in killed and wounded.

On the 14th of November a terrible hurricane occurred on the Black Sea, and did great damage both on sea and shore. The tempest commenced at Balaklava about seven o'clock in the morning, and in less than two hours eleven transports had been wrecked, and six more dismantled and rendered unfit for service. The steamship *Prince*, a magnificent vessel of 2700 tons, which had arrived only a few days before, and had a valuable cargo of stores and necessities for the war, was driven on the rocks with such force that hardly a piece of her was left. Of a crew of 150 men only six were saved. The French vessels suffered equally with ours. The pecuniary loss of the English alone was estimated at about a million sterling, while that of the French could not have been less. The total loss of men was estimated at about 1000, besides about 400 or 500 more who were taken prisoners and carried into Sevastopol.

On land the tents of our soldiers were torn up and blown about in all directions. Snow also fell in abundance; and before the tempest had ceased, which was not till the afternoon of the 16th, the inland hills and ridges were deeply covered by it. After Inkermann the Russians did not for a long time make any grand attack upon the allies. The latter also contented themselves with remaining on the defensive till the arrival of re-inforcements should enable them to take more active measures. They too were besieged as well as being besiegers, having on their flank a force far superior to their own, and in front an irregular fortress of great strength, and an arsenal with almost unlimited resources. Re-inforcements and supplies were also constantly pouring into the place, which, from our limited forces, it was impossible to check. The allies were now suffering severely from disease and the want of necessities, which became more felt as the winter set in. These pressed less heavily on the French than on us, their medical and commissariat departments being much better managed than ours. Indeed, the shameful neglect, carelessness, and ignorance that were manifested in the commissariat department of our army are scarcely credible. Thousands of our brave countrymen fell victims to this deplorable state of things. Many of them had to lie on the cold, damp earth under the wide canopy of heaven, thus frequently contracting diseases which there were no medicines to cure or comforts to allay; what food they obtained (and they were frequently on short rations) had often to be consumed in an unprepared state; 1500 sick and wounded after the battle of Alma were sent to Scutari, many of whom had not had their wounds dressed, though five or six days had elapsed on the passage.¹ Not the least culpable part of the business was, that abundant supplies had been provided by the government, most of which were lying at Balaklava, but from a blind adherence to form could not be removed, or were stowed away where they could not be reached or could not be found. It is well known that articles sent out for the army in the Crimea were brought back in the same vessels, and articles intended for the sick at Scutari were carried to Balaklava. The road, too, between the camp and Balaklava soon became such a wilderness of mud as to be almost impassable. According to the Report of the committee of the House of Commons, "from the middle of November this army was, during a period of many weeks, reduced to a condition which it is melancholy to contemplate, but which was endured both by officers and men with a fortitude and heroism unsurpassed in the annals of war. They were exposed under single canvas to all the sufferings and inconveniences of cold, rain, mud, and snow, on high ground and in the depth of winter. They suffered from overwork, want of clothing, insufficient supplies for the healthy, and imperfect accommodation for the sick." When the news of this state of matters reached England it naturally excited the greatest indignation and sympathy. In the beginning of October the *Times* originated a subscription for the sick and wounded, and in less than a fortnight L.15,000 were collected, which a special commissioner was sent out to administer. A few days later the "Patriotic Fund" was set on foot, and before the end of the year the subscriptions had reached half a million, and soon afterwards they amounted to about a million and a quarter. The Society for the Propagation of the Gospel in Foreign Parts also sent out to the hospitals and the camp, with the concurrence and partly at the expense of the government, twenty-four additional chaplains. About the same time Miss Florence Nightingale, a lady singularly adapted for the work, set out with thirty-seven nurses to attend the sick in the hospital.

History.

¹ At the beginning of February 1855 the grand total of our army in the East was 44,948, of whom 5773 were in the camp hospital, and 12,344 in that of Scutari, making a total of 18,117 sick.

History. During the last three months of the year 1854, 9000 English re-inforcements were landed in the Crimea, but these being chiefly raw recruits, many of them, by the hardships which they had to endure, were soon rendered unfit for duty. Meanwhile the Russians, under the direction of General Todleben, were incessantly employed in improving their position, by strengthening their old fortifications and by the addition of new works. They scarp'd the ground in front of all their batteries; constructed a strong abattis in front of all their lines; threw up earthworks and mounted guns on every available point; and made sunken batteries before their redoubts, the Redan and Malakoff, as well as along the scarps of the slopes.

In the beginning of the year an insurrection broke out among the Greek subjects of the sultan, at the instigation of Russia, and aided and abetted by the Greek nation. A series of early successes emboldened the insurgents, and the movement was rapidly gaining ground. Ineffectual remonstrances with King Otho led to an open rupture between Turkey and Greece, and on the 28th of March the Greek ambassador quitted Constantinople. Turkish troops were now poured into the disaffected districts, and their arms were generally successful; but still the rebels held out, encouraged by the free Greeks, and confidently relying on the speedy advance of the Russians to their assistance. On the 18th May the allies declared the whole of Greece to be in a state of blockade, and about the same time a body of French and English troops were landed at the Piræus. These energetic measures speedily brought King Otho to submit to the terms imposed upon him, and to engage to maintain a strict neutrality towards Turkey. Many of the insurgents now submitted, and one or two successes over the remainder speedily put an end to the insurrection. Early in summer a small squadron, consisting of the *Miranda* and *Brisk*, screw steamers of 15 and 16 guns respectively, and the *Eurydice*, a sailing-vessel of 26 guns, were despatched to the White Sea to blockade Archangel. Leaving the *Eurydice* at the mouth of the Dwina, the bar at which they were unable to cross, to maintain the blockade, the other vessels attacked and destroyed several places in that quarter. Kola, the capital of Russian Lapland, they took and destroyed, as also the town of Novitska. They also landed and destroyed all the public buildings and government stores at Shayley Island. An attack on the town of Solovetskoi, however, was unsuccessful, and they retired after twelve hours' firing. The squadron thereafter returned to England.

In the Pacific a fleet of the allies suffered a severe check before the town of Petropaulowski. It consisted of 3 French and 3 English ships of war, carrying in all 194 guns; and was on the outlook for two Russian war frigates that had caused some alarm in these seas. This town is the principal seaport of Kamschatka, and was strongly fortified both by nature and art. The firing of the ships commenced on the 28th of August, and was kept up for some days, and a partial landing did some damage, but a subsequent attempt to storm the town was unsuccessful. Our loss was 30 men killed and 156 wounded, while the French loss was about as great. The English admiral Price fell by a pistol-shot from his own hand on the first day of the attack, and survived only a few hours.

The war in Asia was maintained by Turkish troops, but with them were a considerable number of European officers to aid and counsel them. Chief among these was M. Guyon, an English gentleman, who had been an officer in the Austrian service, but having married a Hungarian lady of noble birth and large fortune, he left the army, and subsequently took part in the Hungarian war of 1848-49, in which he greatly distinguished himself. On the termination of that struggle he was of those that took refuge in Turkey. He accepted the offer made by the Turkish government to enter that service, and was sent to Damascus

History. to organize and instruct the army. The ability and skill of Guyon, however, was almost entirely neutralized by the wrongheadedness and incompetency of the commander-in-chief, Zarif Pacha, who would rarely follow his counsel, while his refusal to embrace the Mohammedan faith incapacitated him from having any direct authority over the soldiery. In July a body of 8000 Turks, under Selim Pacha, were totally defeated at Bayazid by a detachment of General Bebutoff's army. When news of this reached the Turkish army, which was lying 40,000 strong in a position of considerable strength a few miles in advance of Kars, Guyon advised an immediate attack on the main body of Bebutoff's army before it could be joined by the other portion or receive further assistance. Instead of this, however, several days were allowed to elapse before the attack was made, and by that time the Russian army was increased from 12,000 to 20,000 men, and was prepared to receive them. The 6th of August was the day of attack, but before the battle was well begun many of the Turks were fleeing, and the others were speedily put to flight. The loss of the Turks was 1200 killed, 1800 wounded, and 2018 prisoners. Had the Russian general marched directly upon Kars it is believed that he would have taken it without striking a blow; as it was, the defeated Turks got time to recover from their consternation and to gather strength; so that, as will be subsequently noticed, they made a most heroic defence. On 20th August Schamyl appeared suddenly before Tiflis, and did considerable damage, carrying off a large booty and a number of prisoners. This compelled the Russian general Bebutoff to send a portion of his troops to defend that place.

In the beginning of 1855 the allies received an accession of strength in the King of Sardinia. On the 26th of January Victor Emmanuel II. acceded to the convention concluded between Great Britain and France, and agreed to furnish and keep up for the war a body of 15,000 men, consisting of infantry, cavalry, and artillery; France and England guaranteeing the integrity of his dominions during the period of the war. England also undertook to furnish gratuitously the means of transport to the Sardinian troops, and also to recommend to Parliament to advance in loan to the King of Sardinia £1,000,000 sterling, the interest to be at the rate of 4 per cent., of which 1 per cent. was to form a sinking-fund.

At daybreak on the 17th of February a strong body of the Russians made an attack upon Eupatoria, which was defended by Omer Pacha at the head of a Turkish body of troops, and a French detachment. After a cannonade of some duration, the Russians advanced to the assault. Three times they attempted to carry the town, but were as often beaten back, and were at length obliged to retire with considerable loss. Their great superiority in cavalry and artillery prevented the garrison from molesting them on their retreat. The Turks behaved admirably on this occasion, and made a most gallant defence.

On the afternoon of the 2d of March all Europe was startled by the intelligence that the Emperor of Russia was dead. He was attacked by influenza on the 14th of February, but persisted in going out as usual, and on the 22d held a review of a corps of infantry of the Guards. After this he became much worse, but continued working as usual in his cabinet. On the 1st of March, however, soon after hearing of the unsuccessful attack upon Eupatoria, he became slightly delirious, and expired about noon of the 2d. He was succeeded on the throne by his eldest son Alexander II.

On the 15th of March a conference of plenipotentiaries of the five states (England, France, Austria, Russia, and of Vienna. Turkey) was opened at Vienna, with the view of coming to some arrangement regarding the points in dispute, based upon certain preliminaries that had been previously communicated by the allies to the Russian government and

History. accepted by it. These preliminaries consisted of four articles, the substance of which was as follows:—1st, To abolish the exclusive protectorate exercised by Russia over Moldavia, Wallachia, and Servia, and henceforward to place the privileges accorded by the sultan to these principalities under the collective guarantee of the five powers; 2d, To give all the development possible to the free navigation of the Danube, for which purpose it would be necessary to place it under the control of a syndicate authority, invested with powers necessary to destroy the obstructions existing at the mouth of that river; and it would also be desirable that the course of the Lower Danube, from the point where it becomes common to the two bordering states, should be withdrawn from territorial jurisdiction; 3d, To revise the treaty of July 13, 1841, with the object of connecting the existence of the Ottoman empire more completely with the European equilibrium, and to put an end to the preponderance of Russia in the Black Sea; 4th, Russia to renounce any official protectorate of the Christian subjects of the sultan, the allies affording their mutual co-operation in obtaining from the Ottoman government the confirmation and the observance of the religious privileges of the different Christian communities, without distinction of sect. The conference, after sitting for about six weeks, dissolved, having been unable to come to any satisfactory arrangement on the third point. Afterwards Count Buol-Schauenstein, the Austrian plenipotentiary, summoned the members to meet again on the 4th of June to consider a proposition which it was believed might lead to an amicable settlement of the point in dispute. This was, instead of a mere one-sided limitation of the power of Russia in the Black Sea, to have an equality of the naval forces which each of the two coast powers should keep up in the Black Sea, and which should not exceed the actual number of Russian ships in that sea. This arrangement was to be entered into by the two powers between themselves, but was, nevertheless, to form an integral part of the general treaty. The French and English plenipotentiaries, M. Drouyn de Lhuys and Lord John Russell, had both left Vienna, but they had expressed themselves favourable to this arrangement. The proposal, however, did not meet with the favourable consideration of their governments, which saw no likelihood of a satisfactory peace being arrived at in that way. M. Drouyn de Lhuys accordingly resigned or was deprived of his office; and the conduct of Lord John Russell having given rise to a vote of censure being moved, that minister resigned his seat in the cabinet on the 16th of July.

During this time the war continued to be actively prosecuted. In front of the Malakoff, and between it and the trenches of the allies, was a slight elevation, the possession of which was of great importance to either party. This the besieged succeeded in taking possession of on the night of the 9th of March unknown to the allies, who were next morning disagreeably surprised to see it occupied by works which were hourly gaining strength. This was afterwards known to the allies as the Mamelon. On the second night after its occupation a vigorous attempt was made by the French to dislodge the enemy but without success. The Russians lost no time in sinking a number of pits before and on each side of their new acquisition, to serve as cover for riflemen, who became a source of great annoyance to the French. On the night of the 17th March the French made another attempt to possess the Mamelon. They succeeded in carrying the first and part of the second line of pits, but the heavy fire of the Russian musketry forced them to retire. On the night of the 22d March,—a dark and windy night,—a large body of the Russians issued silently from the Mamelon, and reached the advanced parallel of the French unobserved. After a short but severe struggle, the French were obliged to fall back upon their

reserves. The Russians then marched rapidly along the parallel to attack the English trenches. Here they were met by detachments of the 97th and 77th regiments, which gallantly stood their ground, and drove back the Russians at the point of the bayonet. At the same time, the French, having rallied, fell upon them, and pursued them so far that they were enabled to level and destroy a number of the rifle-pits along their front. It was on this occasion that Captain Hedley Vicars, who led on the 97th, lost his life. Our loss amounted to 182 killed and 373 wounded, besides 56 missing.

Early in April the railway between the camp and Balaklava was completed, and was of immense service to our army; and a month later London was in telegraphic communication with the seat of war. At daybreak on the morning of the 9th of April the second bombardment of Sevastopol commenced, and was continued for several days, but without any decisive result. In the beginning of May the Sardinian troops began to arrive at Balaklava, and considerably strengthened the hands of the allies. About the middle of this month a change took place in the commandership of the French army, and General Canrobert was succeeded by General Pelissier, an officer who had greatly distinguished himself in the Algerine wars. General Canrobert, with true soldier spirit, requested to be still permitted to take part in the war, and obtained the command of a division. On the night of the 2d of May the French had taken by storm the Russian counter-approaches in front of the central bastion, and the enemy then, to impede their progress and take their attacks in flank, began to construct new lines of counter-approach on the Quarantine side, connecting by a gabionnade their ambuscades at the extremity of the bay with those at the cemetery, and forming a continuous covered way between this work and the right lunette of the central bastion. This would have enabled them to make powerful sorties by assembling large bodies of men behind these defences. The French general therefore determined to carry these works; and accordingly an assault was arranged to take place on the night of the 22d of May. Two simultaneous attacks were organized,—one on the ambuscades at the bottom of the bay, the other on the ambuscades of the cemetery, by the south-east angle of that inclosure. The Russians seemed quite prepared for the attack, and were awaiting it in great force. It is thus described by the correspondent of the *Morning Chronicle*:—"From every point of the Russian batteries commanding the trench a fire of artillery was poured upon them with such density and effect that whole companies were swept away before it. Still they held their ground, though under the fire of the batteries they fell by scores. Strong parties of the enemy occupied the covering trenches, and from their position were enabled to enfilade the advanced trench with a murderous fire of infantry. It was a mere slaughter of the French. Twice driven to desperation by the cross fire from the trenches, they sallied out and attempted to carry them at the point of the bayonet; but these mere ebullitions of valour were of no avail against the strong works and well-organized resistance of the enemy. In both cases the French were driven back with loss, and retired to the cross-trench, where they still continued to melt away under the devastating fire of artillery and musketry. It was close on dawn when a message was sent to the French general informing him that nearly half the column had fallen in the attempt to hold the place; that it was a mere useless waste of life, as by daylight it would be utterly untenable. The answer was returned that they were to gather their dead and wounded, and retire. This they accordingly did at about four in the morning, after having maintained the sanguinary and unequal contest for more than six hours." Next night "the plan was better arranged under the immediate care of General Pelissier

History.

Second bombardment.

History. himself, who informed the troops that if they failed then they must attack again at daybreak, and continue to attack until the trench was in their possession. Three columns—each 3000 strong—were chosen for the assault, and started just as dusk was commencing,—two slightly in advance, for the capture of the covering trenches on each side and the centre column for the trench itself. In spite of all the vigilance of the enemy, the right and left columns closed with the covering trenches before they were discovered, and instantly attacked them. For a moment the Russians seemed bent on an obstinate resistance, but the attack at such an early hour of the evening (a little after eight) evidently took them by surprise, and after a short struggle, both trenches were captured, the enemy flying in all directions.”

On the 22d of May an expedition, comprising 3800 English, under Sir George Brown, 7500 French, under General d'Autemarre, and about 5000 Turks, was despatched for Kertch and the Straits of Yenikale, whence large supplies were constantly pouring into Sevastopol. As soon as they made their appearance before Kertch the enemy fled, blowing up their fortifications and destroying immense stores of provisions. Anapa was also abandoned; and large stores of provisions were destroyed at Genitchi, Berdiansk, Arabat, and Taganrog on the Don. It is calculated that the stores destroyed at Kertch and in the Sea of Azoff amounted to nearly four months rations for 100,000 men, the loss of which must have caused serious embarrassment to the Russian army in the Crimea. The object of the expedition being thus fully accomplished, the troops were re-embarked about the 12th of June, with the exception of those left in garrison at Yenikale and Pavlovskaya, the latter commanding the entrance to the strait at a point where it is narrowed by a sandbank to about 1½ miles across.

Third bombardment. The third bombardment of Sevastopol commenced in the afternoon of the 6th June, and next evening simultaneous attacks were made by the French upon the Mamelon and White Works (*Ouvrages Blancs*), and by the English on the Quarries. These were in each case successful. The French had to traverse a considerable extent of open space, exposed to a terrible fire of artillery and musketry, but this did not for a moment check the impetuosity of their attack. Within the redoubts a determined struggle took place, and continued for an hour before the Russians were driven out of the works. The French pursued them as far as the Malakoff, and even made an attempt to storm that work, but this not having been previously calculated upon, their force was insufficient for that purpose, and they had to retire under a terrific fire from the enemy. In this affair they took 62 guns and 400 prisoners, of whom 14 were officers. The English were equally successful in their attack upon the Quarries, which they carried in the most determined and gallant manner, and kept their ground in spite of repeated attacks by the Russians to dispossess them. The possession of these works materially strengthened the position of the allies; and it was resolved to follow up the success by an attack on the Malakoff and Redan. Accordingly, during the whole of the 17th a vigorous fire was kept up by the allies upon the town, and it was arranged to make the assault after a two hours' fire the following morning. At the suggestion of Pelissier, however, this part of the arrangement was departed from, and the attack was to commence at three o'clock in the morning at a signal from the French general. Unfortunately, General Mayran, who had the command of one of the divisions of the French army, mistook a blazing fuse for the rocket-signal that had been agreed upon as the notice for a general advance, and immediately gave the order for attack. They were immediately assailed by an overwhelming shower of ball and grape, not only from the works, but also from the enemy's steamers in the harbour. Advance was

History. impossible but not one step did they retreat; while the other divisions rushed forward to support this premature movement. They reached and scaled with impetuous gallantry the entrenchment which connected the Karabelnaia ravine with the Malakoff, and succeeded in penetrating the *enceinte* itself. But in the meantime the English attack on the Redan had failed, and the French, deprived of their simultaneous support, and exposed to a crushing fire of artillery from the Redan and other works, were compelled to give way. The retreat commenced about half-past eight o'clock, and was carried out with order and coolness, without any attempt at pursuit on the part of the enemy. In their attack upon the Redan, the English, as soon as they showed themselves beyond the trenches, were assailed by a most murderous fire of grape and musketry. “Those in advance,” says Lord Raglan in his despatch, “were either killed or wounded, and the remainder found it impossible to proceed. I never before witnessed such a continued and heavy fire of grape, combined with musketry, from the enemy's works, which appeared to be fully manned.” Another part of the English attack, however, was crowned with success, though fruitless. General Eyre was despatched, at the head of a body of 2000 men, for the purpose of making a demonstration at the head of Dockyard Creek, and withdrawing the attention of the enemy from the real object of assault. He found the enemy strongly posted between a cemetery on their left and a mound or hillock on their right, and protected by stone walls in front. This position, however, was gallantly carried under a heavy fire. Our troops held their ground until the evening, and then retired unmolested. Our loss amounted to 165 killed, 1126 wounded, and 152 missing; and the French to 1598 killed or missing, and 1740 wounded. The Russians, according to their own account, lost during the two days 787 killed, and 4029 wounded. While the assault was going on several of the vessels of the allies opened fire upon the town and its sea defences, but with little effect. The English army now sustained a severe loss in the death of its commander, Lord Raglan, in the sixty-seventh year of his age. His strength and energies had been taxed to the utmost during the whole of the Crimean war, and the failure of the attack on the 18th is believed to have preyed upon his spirit, vexed as it no doubt must have been by the previous unfavourable comments upon his conduct at home. He had been unwell for some days, but before the evening of the 28th no danger was apprehended by his medical attendants. Alarming symptoms, however, then showed themselves; he became unconscious, and sank rapidly until he expired, in the course of a few hours. He was succeeded in the command by General Simpson. On the 16th of August the Russians made another desperate effort to raise the siege. This was by the covering army under the command of General Liprandi, which had remained inactive since the battle of Inkermann, but had recently been largely augmented by re-inforcements. For some days rumours of a premeditated attack on the part of the Russians had been current, and at daybreak on the morning of the 16th they advanced against our lines on the Tchernaya, where the French and Sardinians were posted, to whom belongs the entire glory of the victory, though they received some assistance from an English battery. A paper found in the pocket of one of the Russian generals, Read, who was killed, showed the nature and magnitude of the attack. “Had they succeeded,” says General Simpson in his despatch, “Balaklava was to have been attacked by one portion of their army, while the heights on which we now are were to have been stormed by the other; at the same time, a vigorous sortie was to have been made from the town on the French works on our extreme left, from the Quarantine, and another on the works on our extreme right on Mount Sapoune. The action is most glorious to the arms

Battle of the Tchernaya.

on the Malakoff and Redan.

History. of the French and Sardinian troops. To meet the force of the Russians the former had but 12,000 infantry and 4 batteries of artillery engaged; the latter had 10,000 men in position, 4500 actually engaged, and 24 pieces of cannon. The Russian force consisted of from 50,000 to 60,000 men, with 160 pieces of artillery, and cavalry to the amount of 6000. This disparity of numbers will readily explain the difficulty that would have been experienced had an attempt been made to follow up the advantage by a pursuit. The Russian retreat, moreover, was protected by the fire from the heavy guns in position on the Mackenzie heights. The loss sustained by the Russians is estimated at between 5000 and 6000 men, including 600 prisoners; while on the part of the allies it does not amount to more than 1000 men."

Attack on
the Mala-
koff;

The French lines of approach had now been advanced so near the Malakoff, and the loss of life was daily increasing to such an extent, as to render it necessary either to take the work or retire to a greater distance. Accordingly on the 5th of September a terrific cannonade was opened and kept up till noon of the 8th, the time of the attack. "This infernal fire," says Prince Gortschakoff, "principally directed against the embrasures, proved that the enemy was endeavouring to dismount our guns, to demolish our ramparts, and to prepare for taking the city by storm. It was no longer possible to repair the damage done to our works, and our efforts were limited to covering the powder magazines and the blindages with earth. The parapets crumbled down and filled up the ravines; it was necessary to continue clearing the embrasures, and the number of artillerymen killed was so great that it was with difficulty we could bring up others to take their place. Our loss at this period of the siege was extraordinary; from the 5th to the 8th of September there were placed *hors de combat* superior officers 4, subalterns 47, and 3917 soldiers, without reckoning the artillerymen who perished at their guns." At noon precisely the French rushed upon the Malakoff, and by this time almost all the Russian guns that bore upon the attack had been silenced. They crossed the ditches with surprising agility, and climbing on the parapets attacked the enemy to the cry of "Vive l'Empereur." At the fort of Malakoff, the slopes on the inside being very high, they stopped for a moment in order to form, and then mounted on the parapet and leaped into the work. The contest, which had commenced by musket-shots, was continued with the bayonet, with the butt-ends, and stones; and in a quarter of an hour the French flag was floating on the conquered redoubt. This was the signal for our troops to attack the Redan. The assaulting column consisted of only 1000 men, preceded by a covering party of 200, and a ladder party of 320 men. They had 220 yards of ground to cross under a very heavy fire of grape, and this space was soon covered with slain. Nevertheless, this did not impede their progress; and as they came nearer the salient the enemy's fire became less fatal. They crossed the abattis without difficulty, and made straight for the salient and projecting angle of the Redan. The ditch here was about 15 feet deep, but the men, led by their officers, leaped into it, and scrambled up the other side, whence they scaled the parapet almost without opposition. The few Russians who were in front ran back and got behind their traverses and breastworks, and opened fire upon them. On reaching the parapet, our men unfortunately began loading and file-firing, instead of following their officers and attacking the breastworks. The Russians now flocked to the traverses, whence they kept up a heavy fire on the men getting over the parapet or through the embrasures; and thus so many were killed and wounded that no sufficient force was left of the first arrivals to make a rush across the open space which lay between the salient and the traverses. For nearly two hours did our troops maintain this unequal contest before they abandoned the

on the Re-
dan.

Redan and gave up the attempt. French attacks had also been directed against the Little Redan on the right and the central bastion on the left, but these were also unsuccessful. In both cases our allies succeeded in penetrating within the works, but they found themselves exposed to such a murderous fire from all sides that they were obliged to give way. The struggle for the possession of the Malakoff was long and deadly, and again and again did the Russians attempt to retake it during the day, but without success. Our loss on that day amounted to 385 killed, 1886 wounded, and 176 missing; the French loss to 1489 killed, 4259 wounded, and 1400 missing. The Russians, according to their own account, lost 2684 killed, 7243 wounded, and 1763 missing. The possession of the Malakoff rendered the south side of the town quite untenable; so that the enemy, finding every effort to retake it unavailing, began in the evening to evacuate the town. During the night they exploded their magazines, blew up their fortifications, and set fire to the town. The ships, frigates, and other sailing-vessels were all sunk, with the exception of the steamers. Next morning the allies found the town deserted and in ruins. The walls of the houses attested the force and effect of the terrible bombardment, hardly a building remaining intact from shot or shell. The number of cannon and the quantity of the materials of war obtained was immense. The French took possession of the eastern and the English of the western part of the town.

On the 29th September a body of French cavalry put to flight a strong body of Russian horse at Koughell, 5 leagues N.E. of Eupatoria. The Russians lost about 50 killed and 169 prisoners, besides 6 pieces of cannon; whereas the loss of the French was only 6 killed and 28 wounded.

On the 17th of October Kinburn surrendered to the allied fleet, after a short bombardment. This fortress is situated on a low promontory at the entrance of a gulf into which flow the Boug and the Dnieper. On the opposite side of the gulf, and about 2½ miles distant, is Oczakoff, which the Russians blew up and evacuated on our getting possession of Kinburn. The possession of these forts was of the utmost importance to the allies, as they thus commanded the sea-approach to Kherson on the Dnieper, and Nicolaieff, the naval arsenal of the Black Sea, on the Boug. The English troops soon after embarked for the Crimea, leaving a French force to garrison the forts. Soon after, a detachment of vessels from the allied fleet lying at Kertch took and destroyed the Russian establishments at Taman and Fanagoria.

On the 10th of November General Simpson resigned the command of the English army, and was succeeded by General Sir William Codrington. On the 15th of the same month a terrible explosion of 100,000 lb. of powder took place in the French siege-train, destroying an immense quantity of stores, and killing 21 and wounding 116 of the English and a still greater number of the French. On the 12th of this month the Emperor of Russia reviewed his troops in the Crimea; and soon after an imperial *ukase* was published, announcing a new Russian loan of 50 millions of silver roubles.

This year the allied fleet in the Baltic was as barren of great results as last year. Rear-Admiral Dundas commanded the English fleet, and Rear-Admiral Penaud had the command of the French. Eleven sail of the line and five paddle-steamers left the Downs on the 9th of April, and arrived at Kiel on the 19th. They were gradually re-inforced by others; and in the month of July there were in the Baltic 85 English vessels of war, mounting 2098 guns, and 16 French vessels of war, with 408 guns. In the combined fleet there were 23 line-of-battle ships, with 1853 guns; 31 frigates and corvettes, with 554 guns; 29 smaller steamers and gunboats, with 78 guns; and 18 mortar-boats and other craft, with 21 guns. The utmost

Baltic
fleet.

History.

History. indignation was excited in England by the news of a boat, landing some prisoners under a flag of truce, having been attacked, and its crew either killed or taken prisoners. The facts were these:—On the 5th of June H.M.S. *Cossack*, when off Hango Point, despatched a cutter with a flag of truce to land some prisoners taken on board of some merchant vessels. After landing the prisoners, the officer in command, with several of the boat's crew, proceeded to communicate with the officer of the station, carrying the flag of truce along with them. They had not proceeded more than 50 yards from the boat when they were suddenly fired upon by Russian soldiers in ambush, and at the same time those in the boat were also attacked. Of the crew of eleven, six were killed and four badly wounded. The survivors were carried to Eckness (except one of the wounded, who made his escape in the boat), where they were treated with great kindness; but no satisfaction was obtained for this inhuman outrage.

The allied fleet, consisting of forty vessels, lay for more than three weeks off the north side of Cronstadt without attempting any hostile movement, and afterwards Admiral Baynes was left in command of a strong squadron there. One division of this squadron advanced along the north side of the island of Cronstadt, until it cast anchor within 5 miles of the town and shipping, and in view of the spires of St Petersburg. This part of the channel was found to be thickly studded with "infernal machines," which were taken up in large numbers by the boats. The only operation of importance effected this year by the allied fleet in the Baltic was the destruction of Sweaborg, which protects the great naval station of Helsingfors. The allied fleet arrived off Sweaborg on the 6th of August, and the two following days were spent in making preparations for the attack. The French had established a siege battery of four mortars on the small island of Abraham, within 2500 yards of the forts. They opened fire on the morning of the 9th, and in less than three hours the shells were observed to cause considerable damage in the fortress. Numerous fires broke out on several points at the same time, and the flames were soon seen to rise above the dome of the church situated in the northern part of the island of Est-Swarto. A monster explosion soon after took place, and was followed by three others in the course of half-an-hour. The bombardment was kept up till the morning of the 11th, and during that time Sweaborg presented the appearance of a vast fiery furnace. Storehouses, magazines, barracks, government establishments, and a great quantity of military stores were all destroyed. The loss on the side of the allies was confined to one English sailor killed and a few slightly wounded. Nothing further of any moment was attempted by the allied fleet; and on the approach of winter the main body returned home, leaving a flying squadron to continue the blockade until the ice rendered the sea impassable by vessels.

We now turn to the seat of war in Asia. We left the Turkish army at Kars in the end of last year, and it was not till the 16th of June that the Russians made their first attack on that town. The Russian army was now nearly 40,000 strong, including 10,000 cavalry, and was under the command of General Mouravieff. The cavalry drove in the Bashi-Bazooks, who were posted in the plain to the south-east of the city, but were checked and thrown into disorder by a well-directed fire from the batteries of the Koradagh and Hafiz Pasha. They subsequently brought up their artillery and cannonaded the earthworks of those defences for some time without effect, and then retired. They, however, invested the fortress and works so as to cut off all supplies.

In the end of July Lieutenant-Colonel Williams was sent out by the English government to act as her Majesty's commissioner at the head-quarters of the Turkish

army in Asia, and reached Kars about the middle of September. No attempt was made by the Russians to carry the place by assault until the morning of the 29th of September. At daybreak on that day they advanced in three columns, supported by twenty-four guns, and attacked three different parts of the defences. The garrison received them, as soon as they came within range, by a crushing fire of artillery from all sides, but the Russians rushed up the hill against the redoubts and breastworks in the face of a deadly fire of musketry. After a long and desperate struggle, the left division was completely broken, and fled in disorder down the hill, leaving 850 men dead on the field, besides those carried off by their companions. The central column attacked the redoubts of Tahmasb and Yuksch, and here a sanguinary contest was maintained for several hours, the enemy being repulsed in all his attempts to enter the closed redoubts, which mutually flanked each other with their artillery and musketry, and made terrible havoc among the enemy. After a severe struggle, the right column turned the left flank of the entrenched wing of the Tahmasb defences, and penetrated to the rear of the Turkish position. They were here met by several bodies of re-inforcements which immediately fired upon them, and then charged them with the bayonet. At the same moment the Turkish troops made a sortie from the Tahmasb redoubts and attacked the wavering column of the Russians, which broke and fled down the heights, under a murderous fire of artillery. Meanwhile the Russians had captured, by overwhelming numbers, that portion of the defences called the English *tabias* or redoubts; but battalions of infantry were sent up, which gallantly attacked and drove them out at the point of the bayonet. The Russians now hastily retreated along the whole line, and suffered severely from the batteries, which kept up an incessant fire upon their crowded columns. General Williams, in his account of the battle says,—“During this combat, which lasted nearly seven hours, the Turkish infantry, as well as artillery, fought with the most determined courage; and when it is recollected that they had worked on their entrenchments, and guarded them by night throughout a period extending to nearly four months, I think your lordship will admit that they have proved themselves worthy of the admiration of Europe, and established an undoubted claim to be placed among the most distinguished of its troops. With regard to the enemy, as long as there was a chance of success, he persevered with undaunted courage, and the Russian officers displayed the greatest gallantry. Their loss was immense; they left on the field more than 5000 dead, which it took the Turkish infantry four days to bury. Their wounded and prisoners in our possession amount to 160, while those who were carried off are said to be upwards of 7000.” The Turkish army lost 362 dead and 631 wounded, and the towns-people, who also fought with bravery, lost 101 men.

Notwithstanding this bloody repulse the Russians continued their blockade of the town, and at length the garrison was reduced to the greatest distress. After the most dire sufferings, and seeing no appearance of relief, they at length agreed to surrender. The conditions agreed to were highly honourable to the besieged, and the whole conduct of General Mouravieff was honourable and courteous towards his unfortunate foes.

Before the close of the year 1855 Russia had given indications that she was desirous for peace; and Austria, doubtless feeling that she could not much longer remain, as she had hitherto done, an almost passive spectator of the war, strained every nerve to bring the opposing powers to terms. Accordingly, in the month of December Count Esterhazy was sent by the court of Vienna to St Petersburg with certain proposals for peace which would be consented to by the allies. These proposals were acceded to

History.
Attack on
Kars.

Peace.

War in
Asia.

History.

by Russia, and a meeting of representatives took place at Vienna on the 1st of February. It was then agreed that plenipotentiaries from each of the six states should assemble at Paris on the 26th of February. Prussia was also invited to send representatives to the conference. The conference opened on that day, and their first business was to declare an armistice, which was to cease, if not renewed, on the 31st of March next. The conference lasted until the 30th of March, on which day the treaty of peace was definitely signed, but the ratifications were not exchanged until the 27th of April following. The substance of the treaty of peace was:—That the territories conquered or occupied by the respective belligerent powers be evacuated and restored; that prisoners of war be immediately delivered up on either side, and full and entire amnesty granted to those subjects of either party that may have been compromised by connection with the enemy. Each and all of the other states engage to respect and maintain the independence and territorial integrity of the Ottoman empire, and declare the Sublime Porte admitted to participate in the advantages of the public law and system of Europe. In the event of a misunderstanding between the Sublime Porte and one or more of the other contracting powers, each engages to submit the cause of quarrel to the others before having recourse to arms. The sultan records his generous intentions towards the Christian population of his empire; and intimates his having issued a firman with the view to ameliorate the condition of his subjects, without respect to sect or race,—it being, however, clearly understood that none of the other powers shall have right to interfere in the relations of his majesty with his subjects, nor in the internal administration of his empire. The convention of 1841, which maintained the right of the sultan to close the Straits of the Dardanelles and the Bosphorus to all foreign ships of war is confirmed, reserving always to the sultan the right to grant firmans of passage for light vessels under flag of war employed in the service of the missions of foreign powers; or stationed, according to treaty, at the mouths of the Danube (in number not exceeding two for each power) to secure the execution of the regulations relative to the liberty of that river. The waters and ports of the Black Sea are thrown open to the mercantile marine of every nation, the two bordering powers engaging not to establish or maintain any military-maritime arsenal upon the coast. These two powers further mutually engage each not to have in that sea more ships of war than six steam-vessels of 50 metres (164 feet) in length at the line of floatation, of a tonnage of 800 tons at the maximum, and four light steam or sailing vessels of a tonnage which shall not exceed 200 tons each. The navigation of the Danube shall be free to the flags of all nations, in accordance with the principles established by the act of the congress of Vienna to regulate the navigation of rivers which separate or traverse different states; and to carry out these views a commission shall be named composed of a delegate for each of the seven contracting states, who shall also cause to be executed the works necessary to clear the mouths of the Danube, and put and maintain them in the best possible state for navigation; to cover the expenses of which fixed duties of a suitable rate shall be levied, but no duty or charge shall be leviable founded solely upon the fact of the navigation of the river. A permanent commission, composed of a delegate for each of Austria, Bavaria, Turkey, and Wurtemberg, and commissioners from the three Danubian principalities, subject to the approval of the Porte, shall prepare regulations of navigation and river police, remove all impediments to the navigation of the river, and on the termination of the European commission (within two years) shall assume their powers, and duties. To insure the due execution of these regulations each of the contracting powers shall have right to station at all

times two light vessels at the mouths of the Danube. In order the more fully to secure the free navigation of the Danube, and in consideration of the possessions restored to him, the Emperor of Russia consents to the rectification of his frontier in Bessarabia; the new frontier-line to be from the Black Sea, 1 kilometre east of the Lake Bournu Sola, northward to the Akerman road, then along that road and the Wall of Trajan, passing south of Bolgrad to the River Yalpuck, extending along that river to the height of Saratsika, and terminating at Katamori on the Pruth, above which the old frontier should undergo no modification; the territory thus ceded to be annexed to the principality of Moldavia, under the suzerainty of the Sublime Porte. The principalities of Wallachia and Moldavia to continue under the suzerainty of the Porte, which engages to preserve to them an independent and national administration, as well as full liberty of worship, legislation, commerce, and navigation. The laws and statutes at present in force to be revised by a special commission, to meet at Bucharest without delay; and the sultan to convoke immediately in each of the two provinces a divan *ad hoc*, representing most closely all classes of society, to express the wishes of the people in regard to the organization of the Principalities. The report of the commission having regard to the opinions expressed by the two divans, shall be submitted to a convention to meet at Paris, and in conformity with the stipulations of that convention, a hatti-sherif shall constitute definitively the organization of those provinces. No exclusive protection shall, however, be exercised over them by any of the other contracting powers, nor shall there be any separate right of interference in their international affairs. If the internal tranquillity of the Principalities shall be menaced or compromised, the Sublime Porte shall come to an understanding with the other contracting powers regarding the steps to be taken to restore peace, and no armed intervention shall take place without their sanction. The principality of Servia to continue to hold of the Sublime Porte, in conformity with the imperial hattis, which fix and determine its rights and immunities, under the collective guarantee of the contracting powers. A commission, consisting of two Russian, two Turkish, one French, and one English commissioners, to be appointed to settle the boundary between Russia and Turkey in Asia, as before the war. The Emperor of Russia further engaged to France and England that the Aland Islands should not be fortified, or any military or naval establishment maintained or created there.

Several disputes subsequently arose regarding the interpretation of certain parts of this treaty, all of which, however, were at length satisfactorily arranged. One of these was regarding the Isle of Serpents at the mouth of the Danube; another was regarding the possession of Bolgrad, and the frontier of Russia towards the Danube. On the maps before the conference, furnished by the French government, the town of Bolgrad was placed at some distance from the Lake of Yalpuck, and the Russians strongly insisted on the possession of this town, in order to have a capital for the Bulgarian colonies, that still remained in their possession. It was subsequently found, however, that Bolgrad stood at the northern extremity of the lake, and to allow it to remain in the hands of Russia was directly contrary to the spirit of that part of the treaty which was to remove Russia from all direct communication with the Danube and Lower Pruth. Accordingly, Bolgrad was assigned to Moldavia; and to meet the desire of Russia to have a capital for her Bulgarian colonies, the town of Komrat, on the right bank of the Yalpuck, was given to her, the boundary-line from the point where the Kirsau falls into the Yalpuck proceeding up the former stream instead of up the latter. The Isle of Serpents, it was agreed, should belong to Turkey, and it was also agreed that the islands

History.

Statistics. included between the different branches of the Danube at its mouth, and forming the delta of that river, should, instead of being annexed to Moldavia, be replaced under the immediate sovereignty of the Sublime Porte, of which they formerly held. A treaty in these terms was signed at Paris on 19th June 1857 by representatives of the several powers.

The final evacuation of the Crimea took place on the 12th of July, on which day Sevastopol and Balaklava were formally given up to the Russians. The coronation of the

emperor took place at Moscow on the 7th of September, under circumstances of extraordinary splendour, and was attended by special representatives from all the powers with which Russia had been recently at war. The new monarch has already done much to ameliorate the condition of his subjects, by the adoption of many liberal and enlightened measures favouring the spread of education, encouraging commerce and manufactures, alleviating the burdens of taxation, &c., as will be found noticed in the different sections of the subsequent portion of this article.

Statistics.

List of the Dukes, Czars, and Emperors of Russia, with the Date of their Accession.

I. DUKES OF KIEF.		II. GRAND DUKES OF VLADIMIR.					
	A.D.		A.D.		A.D.		A.D.
Ruric	861	Andrew I.	1157	Ivan or John II.	1353	Alexei	1645
Igor	878	Michael II.		Dimitri II.	1359	Feodor or Theodore III....	1676
Sviatoslaf	945	Vsevolod III.	1177	Vasilii or Basil III.	1389	Ivan V. and Peter I., to-	1682
Yaropolk I.	972	Yury, Igor, or George II.	1213	Vasilii or Basil IV.	1425	gether	
Vladimir I., the Great....	980	Yaroslaf II.	1238	Ivan or John III.	1462		
Yaroslaf I.	1015	Saint Alexander Neff-		Vasilii or Basil V.	1506	V. EMPERORS OF RUSSIA.	
Isiaslaf I.	1054	sky	1245	IV. CZARS OF MUSCOVY.		Peter I., the Great, alone..	1696
Vsevolod I.	1078	Yaroslaf III.	1263	Ivan or John IV.	1534	Catharine I.	1725
Sviatopolk	1093	Vasilii, or Basil I.	1270	Feodor or Theodore I.	1584	Peter II.	1727
Vladimir II.	1114	Dimitri I.	1277	Boris Dodunof	1598	Anne	1730
Mstislaf or Michael I.	1125	Daniel	1294	Feodor or Theodore II.	1605	Ivan VI.	1740
Yaropolk II.	1132	Yury, Igor, or George III.	1302	(six weeks)		Elizabeth	1741
Viatcheslaf (eight days)...	1138	Michael III.	1305	Dmitri (pretended son of	1605	Peter III.	1762
Vsevolod II.		Vasilii or Basil II.	1320	Ivan IV.)		Catharine II.	1762
Isiaslaf II.	1146	George III., restored	1325	Schuiskey or Basil VI....	1606	Paul	1796
Rostislaf	1154	III. GRAND DUKES OF MOSCOW.		Vladislaf (elected, but re-	1610	Alexander I.	1801
Isiaslaf III.		Ivan or John I.	1328	fused the crown)		Nicholas	1825
Yury, Igor, or George	1155	Simeon	1340	Mikhail or Michael (Ro-	1613	Alexander II., the present	1855
I.				manof)		emperor	

Geography and Statistics.

Geographi- Russia, the largest of all empires, ancient or modern, in cal extent. the world, forms a connected territory extending west to east from 17. 40. to 232. 30. E. Long. from Greenwich; or in words, from the frontier post-station Pyzdry in Poland, on the Prussian border, at the confluence of the Wartha and Prosna, to Observatory Inlet, opposite the N.E. point of Queen Charlotte's Island in North America; and south to north from 38. 25. to 78. 26. of N. Lat., or from the most southerly inhabited point of the Russian empire, the mouth of the Astrà River in the Caspian, to Cape Severo-Vostotchnoi in Siberia.¹ Russia thus embraces nearly 215 degrees of longitude, or two-thirds of the circumference of the earth, and more than 40 degrees of latitude; one-sixth of the habitable globe, and one twenty-third of its whole superficies. Between its two farthest points, west by east, the length in a straight line is about 9681, and the greatest breadth about 2628 miles. The sea-board, which is little available, stretches over 25,100, and the land frontier over 9200 miles. The superficial area is difficult of computation; but, as nearly as possible, it may be estimated as follows:—

	Eng. sq. miles.
The forty-nine European governments ²	1,848,564
Poland	49,167
Finland	145,668
The Caucasus	167,832
Siberia	4,940,875
North American Possessions	370,905
	7,523,011
Recent acquisitions in Daوريا and the Amoor	
region	1,059,730
Total	8,582,741

Where, however, extreme limits are not only far from precisely defined, but are even, through their vastness, partly unknown to the Russian government itself, where extension of frontier is almost yearly going on, and where the learned themselves disagree, entire accuracy is of course unattainable.

The Russian government admits of no distinction between European and Asiatic Russia, but views these divisions as forming a compact whole; some governments lying partly in Europe and partly in Asia. The natural boundary, however, betwixt European and Asiatic Russia is formed by the River Kara, the Ooral chain of mountains, the River Ooral to its mouth in the Caspian, and thence by the shores of this sea to the eastern extremity of the Caucasus. The natural division between Asiatic and North American Russia is formed by Behring's Straits. To the north Russia is bounded by Norwegian Lapland and the Arctic Ocean; to the east by British North America; to the south by the Sea of Okhotsk, the Gulf of Tartary, China, Free Tartary, the Caspian Sea (which it now mostly includes), Persia, Turkish Armenia, the Black Sea, and European Turkey; to the west by Moldavia, Galicia (including Cracow), Prussia, the Baltic Sea, Sweden and Norway. By the treaty of 1858 with China, the whole left bank of the Amoor, from its source down to the Oossoori, one of its chief affluents, belongs to Russia, and the right to China; from the Oossoori, downwards to the Gulf of Tartary, both banks now belong to Russia. The new measurement of the boundary with China will be laid down from an angle taken 60 versts (40 miles) up the Oossoori, and extending, as said, down to the Gulf of Tartary. Turning to another part of the territory, the impending absorption into Russia of the Caucasus will lend interest to a more circumstantial account of this region. The line drawn from the mouth of the Kooban,

¹ Russia, like Germany and many other powers, draws her first meridian from the island of Ferro, 20° W. from Paris, 17° 39' 50" W. of Greenwich, and 47° 59' 30" W. of Poolkova. Russia adopts this method for the sake of not having two longitudes, E. and W. She has now her own observatory at Poolkova, but calculations are made from that spot only for astronomical and chronometrical purposes. Russian navigation charts are generally constructed from Greenwich. Cape Severo-Vostotchnoi means North-East Cape.

² Those parts of the governments of Perm and Orenburg which are situated beyond the Ooral in Asia are included here.

Statistics.

which falls into the Black Sea, to the mouth of the Terek in the Caspian, is called the northern boundary, or line of the Caucasus. The southern boundary extends from the mouth of the Reon to that of the Koor. The whole length of the Caucasian mountain range, from Fort Anapa on the Black Sea, to Cape Apsherön on the Caspian, is calculated at 691 miles. The whole superficial extent of the Caucasian isthmus, reckoning from within the limits indicated, is 167,733 English square miles; of which are subjected to Russia 123,245, and are yet free 44,488. The whole population amounts to 4,058,064 souls; and of this number are already subjugated 3,391,064,—viz., Christians, 1,762,741; Mohammedans, or of other religions, 2,295,323.

The languages of all the mountain tribes are totally distinct, and show that these races were not originally a homogeneous people, but a residue of the different nations from various quarters, which were either driven to this spot of earth by other nations pressing on them, or were the subsidence both of them and of the aborigines. It is also worthy of note, that war is more seriously carried on in that region of the Caucasus which lies towards the Caspian, and in particular with the Lezghèen and Tchetchèntsi tribes; less so on the Black Sea region, with the Adèeghi, Oobèkhi, and Abkhàztsi tribes. It is further remarkable, that in the subjugated Caucasus only twenty-four souls go to the English square mile, whereas there are forty-nine to the English square mile in the unsubjugated portion; thus showing how these races are being fast hemmed in prior to their ultimate absorption into the Russian empire.

Generally, as regards the boundaries of Russia, the following remarks may be noted as of vital importance to England. The Asiatic border of Russia on China, and towards India, passes in the Keergheez region beyond the Caspian, down from Fort Peroffski on the Sir Daria, in an easterly direction, to Lake Teletski, and farther along the River Tchou round Lake Eesseek-kool, thence from Eesseek-kool to the north-east, where the regular Chinese boundary commences. The Rock-Keergheez dwell about this last-mentioned lake, in a cauldron-shaped hollow environed by snow-capped mountains of immense height. A little to the north of Lake Eesseek-kool, between it and the River Eelee, is situated Fort Vèrnoyeh, which commands the whole of this Keergheez region. Higher up, again, we come to the south-eastern boundary of Russia towards India, and would beg to call special attention to the following facts, as important to English policy. By the embankment of the Volga mouths at the Caspian, and the large establishments forming in that quarter, Russia is brought 2000 English miles nearer to India; and were once the Amoo Daria or Oxus reverted into its former course of disembogement in the Caspian, a navigable road is ready made to within 500 miles of Herat. The skill of the natives in this sort of work is quite astonishing. The consequences may be appreciated when we reflect that all past history shows how uniformly Central Asia has been the arena of events controlling the ultimate destiny of the human race. Any future struggle for mastery between Russia and England must eventually be fought out on this field. Let us look to it!

General aspect.

European Russia, together with Poland, belongs to that immense plain which begins in Holland, and extends over the north of Germany and the whole east of Europe. From the Carpathian to the Ooral range, a distance of 500 leagues, all is one undulating level, without a mountain to break the monotonous lowness of the horizon, or oppose a barrier to the winds. A great proportion of it, in the south especially, consists of those immense tracts called steppes, which, like the pampas of South America, present to the eye only a dead flat for many hundreds of miles. Occasionally, indeed, the surface is diversified by ancient tumuli, supposed to be the burial-places of the Scythians, and

Statistics.

here and there small table-lands occur; but the latter rise so gently as to be scarcely perceptible. Of these, the most worthy of notice are the Valdaï Hills, situated in the governments of Moscow, Tver, and Toola, the loftiest summit of which, lying between the villages of Toloshva and Mosti, and the towns of Ostashkoff and Valdaï, is only 1000 feet in height. No part of the Valdaï Hills is very rugged; on the contrary, they form a gently-sloping plain; but the rivers and lakes are usually inclosed by steep banks. They form the watershed between rivers flowing into the Baltic and those flowing into the Black and Caspian seas; and here, within a short distance of each other, are the sources of the rivers Volga, Dvinà, Dnieper, Lovàt, Pola, and other smaller ones. To the north-east the land gradually slopes to the shores of the Baltic Sea, themselves mostly flat, and is for the greater part covered with immense forests, marshes, and turf-moors. Between this ocean inlet and the White Sea, on the N.N.W., lies an expanse of country richer in water than any other in Europe. Here a multitude of lakes, large and small, are united together like a net-work of water, and between them extend those rocky ridges which, on the north-west, rise into the inferior Finnish chain of hills. These, however, sink again towards the Lake Enara and the River Tana, without joining the Scandinavian system of mountains. Proceeding south-west from the interior hills of Valdaï, the land also gradually sinks and changes into the immense marshes lying between Minsk and Volhynia, called Polèssieh. Through these the River Priepetz, the great feeder of the Dnieper, pursues its course, constituting their drain or outlet. The northern declivities of the Carpathian Mountains only in a few places cross the borders of the Austrian territory and enter Russia, but not as hills of any height. Near the sources of the Oder they stretch on towards the Vistula, and along this stream, in the form of a plateau 800 feet in height, rising eastwards between Pilica and the above river into groups of mountains, which extend in five parallel chains, having for a distance of 90 a breadth of about 50 miles. In two or three places they rise to the height of more than 1000 feet, and these are the loftiest points in Poland. Upon the other side, in the east, the declivities of the Carpathian range form a broad table-land, extending across the whole of Southern Russia. It thus separates the low land of the interior from the maritime country of the Black Sea. Unlike the table-land of Valdaï, which bears on its broad surface lakes and fens, this southern plateau consists of large steppes, watered by the rivers Dniester, Dnieper, and Don, which here form cataracts. Between the last-named stream and the Volga it rises as a continuation of the lower Volga range, which, under the name of the Irgheni Hills, extends southwards to the Caucasus. On the peninsula of the Crimea a wholly insulated chain of mountains rises to a considerable height, and runs from east to west nearly 120 miles, close to the coast of the Black Sea. In one part it attains an elevation of 5185 feet. Along the eastern boundary of European Russia the Ooral mountain chain extends from the shores of the Frozen Ocean southwards towards the Caspian Sea for a distance of nearly 1500 miles, unconnected with any other mountain system of Europe. The northern portion of the Ooral chain, from the Straits of Waygats to the sources of the Petchora, consists of rough naked limestone rocks, and rises to a considerable height; but this part of the country is comparatively little known. The middle portion of the chain, as far as the sources of the Oofà, called the Verkhotoorië Oorals, forms a broad table-land of moderate elevation, overspread with morasses. Farther to the south the Oorals rise again in height, and become thickly wooded; whilst in the government of Orenburg they expand into broad ramifications on both sides of the River Ooral. The chain, with all its branches, sinks towards the Caspian, without coming into contact on the

Statistics. east with the mountain systems of Asia. It is called, at different points, the Orenburg, Bashkir, and Keergheez Oorals, and sends out an offshoot on the south-west between the rivers Ooral and Samàra,—the Obshtchei-Syrt, which stretches to the banks of the Volga. The Sok Mountains form a part of this spur of the Oorals. There are seven defiles or passes through this great range, the most practicable of which are the roads from Perm and Orenburg into Asia. Between the southern declivities of the Oorals and the Caspian Sea and Lake Aral there is an opening of about 280 miles in breadth, through which more than once the hordes of Asia have poured like a flood over Europe.

Steppes and toondras.

Steppes and toondras are an important feature of the geography of Russia. These steppes are treeless tracts of country, mostly level, although not uniformly so; and often bear heather or feather-grass, called *Kovèll* (*Stipa pennata*), on a soil sometimes fertile, and sometimes arid, marshy, or sandy. They are in their nature to the south and east what the toondras are to the north of Russia, in the governments of Olonetz and Arkhangel, mostly toward the shores of the Arctic Ocean. The toondras are also treeless wastes, bearing a poor vegetation of low shrubs on a moss or turf surface. The steppe region extends from the River Pruth, across the lower water-courses of the Dniester, Boog, Dnieper, and Don, as far as the Volga and Caspian Sea. There is but one declivity in the western part of this region, Bessarabia, where the Carpathians branch off; and in the southern, where the Taurian mountains rise. It is only in the western and middle parts that rich meadow-land is met with; the rest is poorly watered, thinly-populated, and, notwithstanding the occasional fertility of the soil, but little favourable to agriculture. The Taurian peninsula, although belonging by its position to the middle part of this flat region, has quite another character, and totally differs from it in the variety of its vegetable kingdom; the mountains and their declivities being covered with building and ship-timber, and the slopes with fruitful vineyards. In the valleys, particularly of the southern coast, the most delicate fruits attain to maturity. The eastern part of this plain, mostly sandy, is covered with bogs and salt-marshes; agriculture is almost unknown, and there is little arable land, excepting at the foot of the Caucasus. The land of the Don Kozzacks, an oasis in this part of the huge level, has a better soil, favourable to the pursuits of the husbandman. According to Pallas, part of this immense level must, at some remote period, have lain beneath the tide of the ocean.

Rivers.

The soil of Russia is so slightly undulated that to consider the spaces traversed by its rivers as true basins would be an abuse of terms, notwithstanding that it contains the most important water-courses in Europe. Some eminent geographers have adopted the plan of classifying the rivers according to the seas into which they discharge themselves; and as it has several advantages over the usual method of describing the streams of a country in the order of their size and importance, we shall follow it. In the declivity which slopes to the Black Sea and the Sea of Azoff there is (1.) the Pruth, an affluent of the Danube. It descends from the mountains of Galicia or Austrian Poland, and in the northern part separates Bessarabia in Russia from Moldavia in Turkey. (2.) The Dniester, which rises also in Galicia, and flows, winding serpent-like, towards Russia. Below Chotzim it is broken by rapids, so that near Bender boat navigation is interrupted; and without receiving any tributaries of importance, it falls into the Black Sea at the broad but shallow estuary or lake of Ovidovo. (3.) The Dnieper, which has its source in the government of Smolensk, on the southern slope of the Valdai Hills, and empties itself into the Black Sea below Kherson. This noble stream receives many tributaries; amongst which, on the right, flow into it the Berezina, the Priepetz, and the Ingooletz; and on the left, the Soj, the Desna, Soola, Psiol,

Vorskla, and others. This river is the ancient Borysthenes. (4.) The Don, which originates in the small lake of Ivanovsko, in the government of Riazan. After intersecting the Kozzack territory, to which it gives name, it discharges itself below Tcherkask into the Sea of Azoff by several mouths. In summer it is shallow; in spring it overflows its low banks to a great extent, and forms unhealthy morasses. Its principal affluents on the right are the Metcha, Nepriavda, and Donetz; and on the left the Voronej (on which stream Peter the Great built his ships for the Black Sea), the Khopèr, Medvèditsa, Ilovlia, and Mânitch. (5.) The Koobàn, which descends from the northern side of Elburz in the Caucasus, flows first north and then west, upon the boundary between Asia and Europe. It separates into two main branches, the northern of which falls into the Sea of Azoff, and the southern into the Black Sea.

Statistics.

On the Caspian declivity we have (1.) the Volga, the largest river in Europe. It originates in a small lake in the government of Tver, near the village of Volgo-Verk-hóvie, in the forest of Volkonski, in N. Lat. 57. It traverses lakes Oselok, Piana, and Volga; and on receiving the waters of the River Selizarovka from Lake Seligher, it becomes navigable, and falls into the Caspian Sea at Astrakhan by eight principal arms, which have in all sixty-five mouths, forming about seventy islands. It has thirty-eight navigable and one hundred and fifty-seven unnavigable tributaries, the principal of which on the left is the Kama or Little Volga, which has a course of about 1000 miles in length. Before the Volga receives the Kama the rivers Tvertsa, Mòloga, Oonja, Vetlooga, and others, join it on the left; and on the right the Okà, which descends from the water-shed where the Don and Dnieper originate, and the Soorà, which flows from the Volga hills. The Volga is upwards of 2000 miles in length. Its breadth at Astrakhan, where it embraces many islands, is 5 leagues. The depth varies from 7 to 18 feet. In the winter it is covered with ice throughout its whole extent, but there are always many apertures in the south from which currents of air escape, and hence they are termed the lungs of the Volga. During summer the Volga is crowded with thousands of boats, constructed in the well-wooded districts of Russia, and conveying from the interior all sorts of commodities to St Petersburg, where, being destined only for a single journey, they are usually broken up and sold. This noble river is the chief commercial road of the whole interior of the Russian empire. It encircles the central table-land, receiving, as we have seen, the Okà, the principal river of this fertile region. It communicates in the upper part of its course, by the canal of Vishni-Volotchòck, with the Lakes Ladoga and Onega; and lastly, the Kama conveys to it all the waters of Eastern Russia. (2.) The Ooral, formerly the Yaik, but so called in conformity to a decree of Catherine II. in order to obliterate the remembrance of Poogatchoff's rebellion. It descends from the eastern declivities of the mountains that bear the same name, and, flowing in a smooth channel sufficiently deep for small vessels, traces out for a considerable distance the eastern and southern frontiers of the government of Orenburg, and the eastern limits of Europe. On the right it receives the Sakmara; on the left the Ilek; and after a course of above 1000 miles, falls into the Caspian near Gourieff. (3.) The Terek rises at the base of the Kazbek; receives on the right the rivers Songa and Aksai; on the left the Oorong, Tsherek, Bekhar, and Malka; and enters the Caspian by three principal mouths.

On the declivity of the Frozen Ocean we have (1.) the Petchora, which rises in the Ooral mountain range, and traverses the most solitary deserts of Russia, the governments of Arkhangel and Vologda. Its steep calcareous banks are broken by caverns and ravines; and hence its name Petchora, which in the Russian language signifies caverns. After receiving, amongst other tributaries, the

Statistics.

Oossa on the right, and the Tzma and Tsilma on the left, it falls into the Arctic Ocean in N. Lat. 67. 10., its mouths forming an immense estuary. The length of its course is about 670 miles. (2.) The Mezen, which originates in some bogs in the government of Vologda, and after a course of 500 or 600 miles discharges itself into a bay of the same name on the shores of the White Sea, almost under the Polar Circle. (3.) The Dvina is the name which the rivers Sookhona and Yoog receive after their junction near Velki-Oost-Yoog. The Sookhona flows from Lake Koobinskoië, in the government of Vologda; and the Yoog rises in the same government, but is a much smaller stream. The Dvina does not assume the dimensions of a large river till after the junction of the Vytchegda, which falls into it on the right. Near Kholmogory the Dvina divides into several arms, and after a course of above 650 miles falls into a gulf of the same name. Its mouth is greatly obstructed by a bar of mud. (4.) The Onega, which is the outlet of several lakes, but not that of Onega, although it is situated in the neighbourhood.

The declivity of the Baltic Sea is furrowed by several rivers: (1.) The Tornéo, which originates in Swedish Lapland and after the confluence of its great tributary the Muonio, forms to its mouth into the Baltic the boundary between Russia and Sweden. The Muonio likewise traces for some distance the limit of the empire on this side. The Tornéo has a course of about 280 miles. (2.) The Neva. Its length from Schlussemburg, at the south-west angle of the Ladoga Lake, to its mouth is 44 miles; its direction that of a straight line from east to west; its medium breadth about 1500 feet, and its depth, in many places 70 or 80 feet, is generally in the channel about 50 feet. The water of this river is remarkably pure. This noble stream is the only outlet for the waters of four great basins, each of which has an extensive natural reservoir of its own. These reservoirs are the lakes Onega, Ilmen, Saïma, and Ladoga, the last receiving the drains of the other three. Ten different streams flow into the Onega, whose length from north to south is 120 miles, and its breadth from east to west 46 miles. It discharges itself into the Lake Ladoga by the Sveer, a river 133 miles long, and of very unequal breadth. The Ilmen is 36 miles long from north-east to south-west, and about 20 wide from north-west to south-east. It receives eleven streams, and has its outlet into the Ladoga by the Volkoff, 135 miles long, with a medium breadth of 400 feet. The Saïma is a collection of lakes, gulfs, and bays, of all shapes and sizes, communicating with each other, rather than a single sheet of water, and is about 145 miles in length by about 50 in extreme breadth. It communicates with the Ladoga by means of the Voxa, a river about 119 miles in length, but not navigable in consequence of its several rapids, of which the most considerable, that of Imatra, has an inclination of upwards of 32 feet, forming a grander fall than that of Schaffhausen, and second only in Europe to the Trollhätta in Sweden. Besides the Sveer, Volkoff, and Voxa, the Ladoga receives the water of thirteen other streams. This, the largest lake of Europe, is about 130 miles long, 75 broad, of an oval form, and having an area of 6360 square miles. The Onega has an estimated area of 5300, the Saïma of 2660, and the Ilmen of 300 square miles. (See PETERSBURG, &c.) (3.) The Düna, or Southern Dvina, originates in a fen on the western declivities of the forest of Volkonski, in the government of Tver, not far from the sources of the Volga. It soon becomes deep enough to be navigable, but its course is broken by rapids and sandbanks; it falls into the Bay of Riga without having received in its course any affluents of importance. (4.) The Niemen, which rises in the forests of Kopisloff, in the government of Minsk, flows first in a northerly direction, and then, bending to the west, enters Prussia under the name of the Memel. On the right it receives the Vilia, a navigable stream; and on

the left one or two others, not important enough for notice. Statistics.

(5.) The Vistula rises in the principality of Teschen in Austrian Silesia, at the foot of the western Carpathian range of mountains. It flows in an easterly direction to Cracow, where it becomes navigable, and as far as Sandomir forms a boundary-line between Galicia and Poland. Amongst its affluents the most important is the Boog, which originates on the northern side of a chain or lofty ridge of hills separating the chalky lands of Volhynia from the rich plains of Podolia, and receiving at Sierock the Nareff, a river which flows from the plains of Lithuania. Its other tributaries are the Wieprz, the Pilica, the San, and the Bzura. (6.) The Wartha, a river which rises in a plateau near Kromoloff in Cracow, flows in a broad channel like the Vistula, and inundates the neighbouring fields. After receiving the Ner it becomes navigable; and though not so deep as the Vistula, may be considered a large river. After receiving the Prosna, which for a great distance forms the boundary between Poland and Prussia, the Wartha flows into the Prussian territory, and joins the Oder.

The Baltic, the Black Sea, and the Caspian, will be found described under their respective heads in this work. In the foregoing account of the rivers of Russia we have noticed four of the most considerable sheets of water in this country. Deep in the interior are a few pretty large collections of water; but lakes are not a characteristic of Russia, except in the north-west part, where Finland is situated. Here, indeed, immense numbers of winding lakes, of varied form and dimensions, intersect the country in all directions, giving rise to numerous rivers, but none of them irrigates a great extent of country. All these, surrounded by rocky shores, a sterile soil, and pine-clad hills, present the most striking scenery in European Russia, but afford few facilities for internal intercourse. The coasts of Russia are deeply penetrated by large arms of the sea, forming gulfs, bays, and creeks. Besides the Black and Baltic seas we have the Kara Sea, signifying "brown" or "hazel," which is the most easterly, and washes at once Europe and Asia. It is 450 miles in length; but navigation is almost constantly obstructed by the ice at its northern entrance. On the north-west is the Biełoië Morië, or White Sea, which itself embosoms a number of bays and gulfs of considerable size. The largest of these are the Gulfs of Mezen, Dvina, and Onega, so called from the rivers which flow into them; and Kandalask, which communicates with Lake Kovdozero. The White Sea is about the same length as that of Kara, with a breadth of from 60 to 70 miles. Between these two great inlets of the Arctic Ocean occur other gulfs; the most considerable being Tchëskaïa, which is separated from the White Sea by the peninsula of Kaniskaïa Zemliä; and that formed to the east of this by the estuary of the Petchora.

The extensive inlets of the sea above mentioned of course form numerous promontories. In looking over a good map the most striking to the eye is Cape Kanin, the north-western extremity of the peninsula of Kaniskaïa Zemliä. This neck of land, which separates the Gulf of Tchesk from the White Sea, stretches directly north into the Arctic Ocean, a distance of about 150 miles. Its breadth is between 40 and 50 miles. Cape Onega projects into the White Sea near the bottom of that gulf, and forms the Bay of Arkhangel on the N.E. and the Bay of Onega on the S.W.

The geological structure of Russia in Europe corresponds in its vastness and simplicity to the other characters of that huge empire. Single formations extend over spaces equaling whole kingdoms, and have never been broken up or subjected to those igneous convulsions which have complicated the structure of other parts of Europe. From Finland and the shores of the Baltic, till we reach the low ridges of the Ooral, and from the Arctic Sea almost to the Black Sea and the Caspian, no trace of igneous or intrusive

Lakes,
seas, and
coasts.

Capes, &c.

Geology.

Statistics. rock breaks the wide expanse of the regularly-stratified deposits.

The oldest and deepest-seated strata are the great masses of granitic and hornblendic gneiss, generally dipping S.E., which compose nearly the whole province of Finland. They form a low, undulating country, full of irregular lakes and morasses, and rarely varied even by intrusive igneous rocks except near Lake Onega. But immediately south-east of the depression from the White Sea to the Gulf of Finland, the series of fossiliferous deposits begins. The first of these is the Silurian formation, stretching from the southern extremity of Lake Ladoga, by St Petersburg and Esthonia, to the islands Dago and Oesel in the Baltic. The Lower Silurian is well seen in the cliffs of the Esthonian coast, and forms all the flat country round the capital. It begins below with beds of blue or greenish clays, marked with fucoidal impressions, and still so soft and plastic as to be readily moulded with the hand, though the equivalent in age of the hard, compact slaty rocks of Wales. Above are beds of white or yellow sand, occasionally hardened into a calcareous sandstone, named the unguilite grit by native geologists, from the abundant remains of the horny shell of the obolus or unguilite. Dark-coloured graptolite slates, often bituminous, and a thin band of greensand, containing the curious bodies named conodonts by Pander, and supposed by him to be teeth of fishes, but which are rather remains of molluscs or annelids, follow. These are covered by the Pleta or orthoceratite limestone, rich in remains of trilobites, orthidæ, orthoceratites, and other characteristic fossils, identifying it with the strata of our own country. Above these deposits, especially in the island of Oesel, bands of marly or dolomitic limestone, often grey-coloured and full of the pentamerus and other fossils, represents the Wenlock or upper Silurian of England. In this region all these beds are soft, incoherent, and slightly consolidated; and it is only where they again appear in a narrow zone skirting the western declivities of the Ooral, and pierced by the granites, syenites, porphyries, and trap rocks of that chain, that they assume a harder and denser structure, and even graduate into metamorphic and crystalline strata.

Next in order is the Devonian, or old red sandstone formation, extending over a much wider surface of 150,000 square miles, and thus considerably more than the whole British Islands. Beginning in Courland and Livonia, and resting on the Silurian beds, one branch runs north to the shores of the White Sea, beyond Arkhangel, and skirts even the west coast of the Kola peninsula. Another branch extends south and east from the Valdaï Hills, by Smolensk and Orel, to the valley of the Don, north of Voroneje. In the northern band sands and marls prevail south of St Petersburg, and in the great region from the Baltic provinces to Orel red and green marls, shales, and sands are covered by, or alternate with, laminated limestones. In these beds fossil fish,—as the gigantic *Asterolepis*, the *Osteolepis*, *Diplopterus*, *Dipterus*, *Pterichthys*, and lately the *Coccosteus*,—characteristic of Caithness and the north of Scotland,—are associated with the typical mollusca of Devonshire and the Eifel. This important fact, first recorded by Sir R. I. Murchison and his colleagues, thus casts a most valuable light on the structure of our own country, where these dissimilar types of life have never been found conjoined.

To the east and north, as is well seen in the Valdaï Hills, the Devonian strata are overlaid by a scarcely less extensive deposit of Carboniferous beds. From Cape Voronin, on the White Sea, they run down through Novgorod, Tver, and Moscow, to Riazan, forming the upper basin of the Volga, and the low plateau from which this river, the Don, Dnieper, and Dvina diverge to the far-separated Caspian, Euxine, and Baltic seas. Sinking down below the newer formations in the centre of the kingdom, they re-appear in a long, narrow zone along the flanks of the Ooral, and in other

Statistics. detached portions, showing an enormous underground extension. In all this region it is, however, chiefly the lower parts of the formation, or the mountain limestone, with its characteristic crinoids, producti, and spirifers that are seen, and the few seams of coal are thin and poor in quality. Like the associated strata of sand and clay, the coal is only half-mineralized, and more resembles the tertiary lignites than the true coal of Western Europe. Recent attempts, too, to find workable coal by boring through the overlying Jurassic beds at Moscow have failed; a small detached field between the Donetz and the Sea of Azoff alone affords a better promise. There several seams of good coal, interstratified with sandstone, shale, and limestone, have been wrought; and though the beds are often broken and highly inclined, Sir R. I. Murchison thinks that valuable and extensive deposits of this mineral may yet be discovered in that vicinity.

The Permian, which succeeds, is the most extensive formation in Russia. It was so named by Sir R. I. Murchison from its full development in the ancient kingdom of Perm. Touching on the shores of the White Sea and Arctic Ocean in the north, and skirting the base of the Oorals in the east, it occupies the whole basin of the Dvina, the Kama, and the northern tributaries of the Volga, and runs south into Orenburg and the Keerghees steppes. Everywhere the beds are nearly horizontal, but of very varied mineral character—grits, sandstones, marls, conglomerates, and limestones inclosing great masses of gypsum and rock-salt, and often impregnated with copper ores. According to Von Qualen, it consists, in the province of Orenburg, of three divisions: the lower division, very rich in copper ore, is composed of large masses of gypsum, thick beds of red, brown, and grey sandstones and conglomerates, and of various marls, with limestones and thin layers of coal. The middle division consists of clays and marls, with many beds of limestone and slaty coal, but less abundance of copper ore. Fucoids and ferns, producti, and other molluscs, with remains of fishes and Saurian reptiles, occur in this and the lower division, and in the latter, also, innumerable fragments of fossil wood. The third or upper division, of thin layers of marly or tuffaceous limestone, with no fossils, is seen only on the top of some hills and plateaux. The most remarkable feature of the Permian formation in Russia is the abundance of copper ore and gypsum. The ores of copper are chiefly malachite and azurite; but cuprite, native copper, and copper pyrites also occur. These ores are mostly mixed in the sandstones and marls, rarely in small nests, and are peculiarly rich on the broken stems and branches of trees that abound in the sandstones of the lower division. Generally there is only one metalliferous bed, from a few inches to less than six feet thick, but occasionally more than one is seen. These copper ores are found all along the foot of the Ooral in Orenburg and Perm, but decrease as the distance from the mountains is greater, and disappear beyond 300 to 350 miles from their foot. The gypsum also follows this mountain chain in an unbroken band from Orenburg to beyond 60. N. Lat., with a breadth of about 80 miles near Perm, but extends farther west into the basin of the Dvina. Numerous salt springs and beds of salt, in some places 50 feet thick, accompany this gypsum. The most remarkable salt deposit is found at Illetzkaya-Zastchita, in the barren wilderness south of Orenburg. At that place a mass of pure salt, more than a mile in diameter, is wrought at an open quarry 70 feet deep, and, according to Rose, yields about 700,000 poods of salt annually.

Resting on the Permian, though separated from it by a long geological interval, during which the Trias and Lias of other parts of Europe were deposited, come the Jurassic strata. These consist chiefly of incoherent, dark-coloured clays and sands, containing many characteristic fossils of the middle oolite,—ammonites, belemnites, gryphæa, and tere-

Statistics. bratula. In the centre of the country it extends from Moscow, where it rests on the carboniferous beds, by Vladimir to Simbirsk on the Volga. Farther north it forms the great marshes along the watershed of the Dvina and Volga, and also fills the trackless valley of the Petchora, between the Timan Mountains and the Ooral, covered by marshy forests and bleak tundras. All this region is a low, scarce hilly, land; but on the south shore of the Crimea and the flanks of the Caucasus it rises into a more varied mountain country, and contains a richer store of corals and crinoids than in its northern extension.

These Palæozoic and Jurassic strata compose the northern and larger half of European Russia. The newer cretaceous and tertiary beds occur only in the southern portion, drained by the rivers flowing to the Caspian and Black seas. Their northern boundary is marked generally by a line drawn from Memel, south-east to Voroneje on the Don, thence north to Jelatma on the Oka, and again south-east to the southern end of the Ooral and Lake Aral. The chalk is chiefly seen in the central region between the Dnieper and Volga, but probably is concealed below the tertiary beds in other parts of the great plain, as it rises through them in irregular patches in many localities. According to Von Buch, the chalk in the north belongs chiefly to the upper beds, whilst the lower Neocomian, or greensand, is seen only in the south near the Caucasus, where Abich estimates the formation as 5000 feet thick. The rocks in the north resemble those of Western Europe, or are pure white chalk, forming highly picturesque rocks on the Donetz, chalk-marls, and ferruginous sands. Near Voroneje, sandstones containing 31 per cent. of phosphate of lime have been described by Khodnieff. On both flanks of the Caucasus this formation is partly represented by a formation, several thousand feet thick, of clay slates, in which fossils characteristic of the chalk occur, though not in abundance.

The older tertiary, in many places composed of clay, and not distinguishable in aspect from the similar deposits in the London basin, extends from the Baltic to Poltava, north of the Dnieper. Large masses of it also cover the chalk strata to the west of the Volga; and in the south of the Crimea the nummulite formation is well seen resting on the chalk and oolite rocks. The upper tertiary, widely extended from the Dniester to the Caspian, and over the wide steppes from the Volga to the Ooral, is more interesting. This formation begins with blue marls and clays, alternating with a yellow calcareous tufa. In the higher part the tufa alone prevails, and is almost entirely made up of broken shells, partly fresh-water, partly brackish-water species, either identical or closely analogous to those now living in the Caspian. This formation, spread far and wide over the vast steppes round the Caspian and Aral seas, and used as the common building-stone even in Odessa, proves the former enormous extension of an inland sea of brackish water. According to Murchison, this sea, larger than the Mediterranean, was reduced by two elevations, the latter leaving only the present Caspian behind.

Connected with the same recent period must be placed the formation of the gold sands of the Ooral, and the extinction of the mammoth, rhinoceros, and urus, whose bones are so often imbedded in them. The dispersion of erratic blocks over Russia and Northern Europe is a kindred phenomenon. More important for the agriculture of Russia is the *tchornozem*, or black earth, found only in the southern provinces, and unquestionably the finest soil in the empire for the production of wheat and grass. "It is so fertile," say Sir R. I. Murchison, "as arable land, that the farmers never apply manure; and after taking many crops in succession, leave it fallow for a year or two, and then resume their scourging treatment." It has been supposed of vegetable origin, but is more probably derived from the waste of the Jurassic beds.

(For further details on the geology, &c., of this vast empire, see especially *Russia and the Ural Mountains*, by Sir R. I. Murchison, E. de Verneuil, and Count Keyserling, 2 vols. 4to; *Siluria*, by Sir R. I. Murchison, 2d edition; *Reise nach dem Ural*, von G. Rose; the *Petchora-Land*, by Count Keyserling; with many memoirs in the Russian and German scientific journals; and for the distribution of the rocks, the *Geological Map of Europe*, by Sir R. I. Murchison and Professor Nicol.) **Statistics.**

In a country of such vast dimensions, the soil must of course vary considerably in different situations. There is a vast tract of territory, 65,000 geographical square leagues in extent, which possesses a peculiar and rather remarkable soil. Indeed, Ritter, in his *Erdkunde*, informs us that there is only one other place on the surface of the earth where anything similar in soil has been discovered, and that is the north of Hindustan. It consists entirely of decomposed vegetable matter, and is deposited in a thick layer. It is situated in the S. of Russia, stretching in a broad belt from Volhynia, in a north-easterly direction, to the foot of the Ooral chain near Perm. It is prolonged on one side from this to the shores of the Black Sea; and on the other it stretches from Perm to Orenburg, and thence to the Caspian Sea. All this vast tract, exceeding in extent France, Spain, and Prussia united, is covered throughout with a stratum of vegetable mould, which varies in thickness from 3 to 5 feet. It is so extremely productive as to stand in no need of manure. Its fertility is shown in the large returns of grain, especially rye, which it yields; and in the excellent breeds of cattle which are reared upon it. From the thinness of the population, vast tracts of this country still remain unoccupied. The soils of the steppes, which cover so large a portion of Russia, we have already adverted to when describing these plains. The country between the Dniester and the Dnieper has a soil impregnated with nitre, a substance deleterious to vegetation; yet, as soon as it is removed or diminished, wheat, millet, and the arbut melon, may be cultivated with great success. The mildest and most fruitful region in all the Russian empire is that continuation of valleys arranged in natural amphitheatres at the southern base of the Taurida, along the coasts of the Black Sea. Proceeding eastward, we come to the government of Astrakhan. Only part of its soil is fertile. This portion includes the low districts on the banks of the Volga, the Ooral, and the Terek, and is by no means large; but here vegetables attain an enormous size. The soil is impregnated with saline and bituminous substances. Higher up, the land on the Volga becomes sandy and unproductive. The soil of Little Russia and the Polish Ukraine is partly sandy and not very fruitful, partly very rich and fertile. A great part of Western Russia is sandy, and intersected by vast marshes and bogs. Large tracts are covered with immense forests, the retreat of the bear, wolf, and wild boar; whilst not an inconsiderable portion of this westerly territory ranks amongst the most fertile in the empire.

It thus appears, with regard to the soil of Russia, taking a summary view of it along with the climate, that from the 44th to the 50th parallel of N. Lat., comprising Bessarabia, Podolia, Kherson, Yekaterinoslaff, and Taurida, it is for the most part low and level, little wooded, partly very fruitful, partly arid and unfruitful, besides being here and there impregnated with salt. The winters are short, with little snow; but in some parts the cold is severe. The spring is early and mild; the summer is of long duration, with oppressive heat and little rain; autumn follows late in the year. Violent whirlwinds are frequent, and the S. of Russia is subject to tremendous snow storms, called *metel*. The middle or temperate district, extending from 50° to 57°, has a rough and lasting winter, especially in the eastern territory. This district is the largest and wealthiest portion of the empire, forming broad, open, undulating

Statistics. plains, over which, up to the declivities of the Ooral chain upon the E., only slight elevations break the monotonous level. The northern district, from 57° to 67° in European Russia, has a much milder climate than the same parallels in Asia. With the exception of the wooded mountains of Finland on the W., it is, as far as the Oorals, a continuation of the former flat land, upon which forests, meadows, marshes, and moor ground alternate with one another. The poor, meagre soil only insures the husbandman a return as far as the 60th parallel. The winter here is long and severe, there being six or seven months in which sledges are the only mode of travelling. Mercury freezes in winter, and the autumn is foggy. Here only slow-growing timber succeeds, and beyond 67° is confined to dry, stunted shrubs. From 64° the rearing of cattle is always difficult, and agriculture is limited to roots. Under the parallel of 66° the sun does not set on the 21st of June, nor rise above the horizon on the 21st of December. Snow and ice often set in at St Petersburg about the middle of October, and sometimes continue till the middle of April. For 160 days,—that is, from the end of November till the middle of April, the Neva is generally bound fast with ice. In summer the W., S.W. and N.E., in winter the S.W., S., and S.E. winds prevail. The climate in this part has become much milder, through the cultivation of the soil and the hewing down of the forests. The quantity of rain which falls is about 18 English inches at St Petersburg, and the number of rainy and snowy days is reckoned at about 150 at St Petersburg. The following table has been supplied us by Academician Vesselofski, and is extracted from his recent learned work on the Climatology of Russia:—

	Number of Snowy and Rainy Days.	Quantity of Water. English Inches.
Western region.....	146	22
Baltic „	140	21
Northern and central region.....	114	20
Eastern region.....	113	16½
Southern steppe.....	83	11½

“ Taking, for St Petersburg,” Academician Kupffer informs us, “ the mean temperatures of every month, they are, during five months, below 32° Fahr. The mean annual temperature is 38°·9 Fahr. The difference between the mean temperatures of winter and summer, calling by the name of winter the months of December, January, and February, and by that of summer the months of June, July, and August, is 42°·5 Fahr. At Yakootsk in Siberia, Lat. 62. 2., Long. 129. 73. E. from Greenwich, the mean temperature of the year is + 12°·2 Fahr.; that of winter, December, January, and February, — 36°·6 Fahr.; and that of summer + 58°·3 Fahr.; the difference, therefore, between the mean temperatures of the summer and of the winter is 95°. Notwithstanding the rigour of the climate, the culture of rye has been attempted with success.” In the Arctic or hyperborean region, extending from 67° to 74°, the rigour of the climate tells both upon men and domesticated animals, as well as upon vegetation; for neither attain their full size. In Arkhangel the sun rises on the 23d of December at 2 minutes past 10, and sets 57 minutes past 1; whilst on the 23d of June it rises 14 minutes past 1 in the morning, and does not disappear below the horizon until 49 minutes past 10 in the evening. Beyond 67°, however, the climate is one long summer day and one long winter night. The summer is still much overcast with vapours, which obscure the sun. The dreary region of winter is somewhat cheered by splendid moonlight and the brilliant phenomenon of the aurora borealis. Trees entirely cease about 67°, only hardy shrubs being able to endure the intense cold of the climate. In St Petersburg in 1759 the cold was 41° Fahr. below zero, and in the winter of 1809–10 quicksilver froze into a solid mass in

Moscow, and was extended with a hammer like lead. As **Statistics.** this metal becomes solid about 32° Reaumur, we may reckon the degree of cold in this case as exceeding 40° Fahr.

From the vast extent of this empire, and the great range Vegetable of its temperature, it is not surprising that the productions produce of every clime are found, or may be successfully cultivated, tions. in some parts of its wide-spread surface. On the E., the great chain of the Ooral separates by a bold line the northern European from the northern Asiatic botany; and over this vast expanse winter reigns with excessive severity, while the almost tropical temperature of the brief summer ripens the productions of the vegetable kingdom to sudden maturity. This rapid growth is followed by as rapid a decay in autumn.

The forests of Russia are in several respects an important Forests. feature of the country: firstly, as a physical characteristic, from their overspreading such enormous tracts of country; secondly, in a commercial point of view, from the timber, tar, pitch, potash, and turpentine which they afford forming important articles of trade; and thirdly, from their supplying fuel in a country only recently found to possess coal. “ Estimating the surface of European Russia,” says Mr Schnitzler, “ at 402,100,552 dessiateens, 156,000,000 of this number are occupied by forests; 178,000,000 by uncultivated land, water, houses, and roads; 61,500,000 by arable, and a little more than 6,000,000 by meadow land. On this general view of the surface, we may compute that one dessiateen of wood occurs to every two, and five-ninths of a dessiateen without it. The forests, indeed, constitute a source of riches which may long continue inexhaustible, and which might be indefinitely increased by strict regulations for their economy and management. Seventy-six millions of dessiateens are still completely covered with pines, firs, and other cone-bearing trees, without counting the oaks, maples, beeches, poplars, and elms, which are by no means rare in the latitudes within the 52d degree, and the birch, which grows in still more northern regions. . . . The governments of Novgorod and Tver, in particular, are studded with forests, and that of Volkonski, which extends to the Valdaï Hills, is one of the largest known. In the government of Perm, out of 18,000,000 of dessiateens, 17,000,000 are forest. These immense tracts covered with wood are a great blessing in so inclement a climate, as they form a shelter against the winds from the icy seas. The provinces to the S. have not the same necessity for them, and are so destitute of wood as to occasion the burning of grass and dung for fuel.” Forest economy is now being more attended to. The trees furnish the inhabitants with fir-timber of the finest quality for building, household furniture, and utensils. The same trees supply the peasantry in some parts with torches, which they use instead of candles. The brushwood, covering a vast extent of forest land, consists almost entirely of the hazel, dwarf birch, alder, willow, and juniper. In other places the surface of the earth is covered with bilberry, and the cranberry, which latter is extensively exported.

Russia is as yet chiefly an agricultural country. It is Grain, so extensive, and in many parts yields such abundant crops hemp, and of grain, that enough is produced not only for home consumption, but for exportation in considerable quantities. The price of grain varies exceedingly in different governments. St Petersburg, Moscow, Arkhangel, Vologda, and Perm are the only governments that consume more than they raise; all the others produce more than they require. The grains most commonly cultivated are rye and oats. The best wheat is produced in Southern Russia, and in the eastern governments of Kazan, Seembeersk, and Orenburg; where also, along with millet, a little rice is raised. Hemp and flax are very largely cultivated, and yield not only material for the manufactories of the country, but a large

Statistics. surplus for exportation. (For statistics of agricultural productions, &c., see after—"Productive Industry.") Whilst corn and cattle constitute the riches of the central districts the southern abound in productions of a more precious or delicate nature. The peninsula of the Crimea is adapted, both by climate and soil, to all the productions of Italy and Greece; and here, indeed, many of them are indigenous. Government has taken a most lively interest in developing the resources of each portion of the empire; and in consequence of this, the cultivation of the vine, an indigenous plant, the mulberry tree, and the sugar-cane, have been fostered to a considerable extent. The vine cultivation is extending with great success in the south, in the governments of Astrakhan, Kherson, Podolia, the country of the Don Kozzacks, and especially in the Taurida. The mulberry tree has been as carefully attended to as the vine, and the result has been upon the whole favourable. Vast plantations of mulberries have been formed near all the principal towns of the southern districts. Every encouragement is held out to planters by the government. In the Crimea and countries of the Caucasus the rearing of the silk-worm is likewise rapidly advancing. Experiments have also been made to cultivate the sugar-cane and indigo, but they have not succeeded. In Southern Russia, a region whose climate differs little from that of Asia Minor, we find a similar variety of fruits and vegetables. The flora of Russia is very abundant in the south. As Pallas informs us, the country presents the most enchanting aspect. On the mountain-side, in the valley, in the forest, everywhere, the earth is clothed with a profusion of the loveliest flowers and most aromatic herbs, whose delicate odours embalm the atmosphere. Russia further produces hops (not sufficient for home consumption), and tobacco, the *Nicotiana paniculata*, of which the young leaves are generally removed, dried in the shade, and buried beneath hayricks, where they become of a brownish-yellow colour. Of garden vegetables there are the usual varieties found in Europe. Spanish pepper and the mustard-tree are raised on the Samara and Lower Volga; poppy in Kharkoff, where it yields a return of 160-fold; rhubarb, which grows wild in Taurida; rlapontick, which grows wild in the Oorals; and *Polygonum minus*, which in the Ookraine engenders worms that yield a beautiful crimson dye, used as paint by the Kozzack women. Genuine turpentine might be collected to a great extent. Many plants useful for dyeing are produced in a wild state; and for tanning there are several valuable plants. In short, the Crimea presents great facilities for rendering this a lucrative branch of manufacture.

Animals,
cattle,
sheep, &c.

The quadrupeds of Russia are numerous. Some appear to be peculiar to the country; but our business is chiefly with the domesticated animals. Cattle of every description are bred in vast numbers in the steppes, and they have increased with the improvement of agriculture. Black cattle and oxen are raised as far N. as the 64th parallel, but especially in Podolia and the Ookraine. Some of the calves of the latter country weight from 480 to 600 lb. Sheep are reared to a great extent. In the Taurida a poor Tartar may have in his possession 1000, and a rich Tartar 50,000. The Merino breed of sheep has been naturalized in Little Russia, in the governments comprised under the name of New Russia, on the S. and E., and in those of the shores of the Baltic Sea. (For statistics, see after—"Productive Industry.") These different regions, so remote from one another, are too dissimilar to enjoy precisely the same advantages; nevertheless, the perseverance and judicious management of the cultivators have been crowned with success. Even in those districts least favoured by nature rapid improvement has been made. At Taganrog the exports have greatly increased; and in Little Russia this branch of commerce is acquiring fresh activity. The wool trade is now also cultivated in Siberia, where a

Statistics. wool company was established in 1832. In fine, Russia, lately so poor in this species of produce, that even in 1824 her exports did not exceed annually 11,270 cwt., valued at only L.93,500; in 1857 sold 357,977 cwt., the value of which amounted to L.2,069,456. This is of course independently of the demand for home consumption, which has increased to a very large extent. The breed of horses has been considerably improved, by crossing the best native with Arab, English, and Flemish races. Count Orloff was a great benefactor of his country in this respect. So much as L.1560 have been paid for horses from the Orloff breeding-stables. The camel inhabits the warm, saline steppes of the Taurida and Kherson; asses are especially domesticated in the Taurida; and the goat, sheep, swine, and other tamed animals exist in the usual proportions and qualities. Amongst useful insects, there are bees, which yield an abundance of honey and wax for exportation. In the north the reindeer and the elk roam in countless herds; and there are many wild animals, such as the untamed steppe-horse, wild ox, the fox, bear, lynx, and wolf, besides others, the skins or furs of which constitute important items of trade in the northern parts of Russia. Birds of the usual European descriptions are very numerous, including field and water game of various kinds. The falcon is taught to chase even the wolf in the Keergheez-Lands; and in the government of Koorsk the magnificent greyhound of the country is loosed upon the flocks of bustards that are met with there. The seal and walrus haunt the waters of the north; and fish abound in the seas, lakes, and rivers. The fisheries constitute an important branch of productive industry.

Russia consists of the following countries:—Russia pro- Divisions per (originally Novgorod and Moscow); the country of the of the em- Kozzacks of the Don, and of the Black Sea; Bessarabia; pire. the khanate of the Crimea; the Caucasus; the kingdoms of Kazan and Astrakhan; Siberia; Daوريا and the Amoor region; the kingdom of Poland; the greater part of Lapland; the grand principality of Finland; the archipelagoes of Abo and Aland, with the islands of Dago and Oesel; the Baltic provinces of Courland, Esthonia, and Livonia; and possessions in North America. In administrative respects, Russia is divided into governments and provinces, of which in 1856 there were 65.

	Governments.	Provinces.	Kozzack-Lands.
European.....	47	1	1
Caucasian.....	6	0	1
Siberian.....	4	5	0
Total.....	57	6	2

The land of the Black Sea Kozzacks belongs to the Caucasus. The population of this empire, as diverse as its component parts, was estimated in 1856 at nearly 71,500,000 souls, including Poland and Finland, thus distributed:—

In Europe.

The European governments and provinces	57,602,185
The kingdom of Poland	4,696,919
The Grand Principality of Finland.....	1,632,977
	63,932,081

In Asia.

The lieutenantancy of the Caucasus, with the dependent lands.....	3,179,997
The Siberian governments and provinces, with the Keergheez-Lands.....	4,120,815
	7,300,812

In America.

Possessions of the North American Company.....	10,723
Total population.....	71,243,616

The increase may be computed at 0.88 per cent.; and the population must therefore now, in 1859, amount to 73,387,600 souls. It doubles itself in 114½ years.

Statistics.

Table of the Population and Superficies of the Russian Empire.—Each Government is taken separately, and the Number of Inhabitants is that returned for 1856, in the Tables drawn up by the Central Statistical Committee. The Area is based on the calculations of Academician Köppen, founded on the returns of the Ninth Census.

Statistics.

Governments.	Population.	Area.	Governments.	Population.	Area.
Arkhangel.....	263,630	329,778	Pskoff.....	1,689,783	17,042
Astrakhan.....	414,526	84,893	Riazan.....	1,394,235	16,213
Bessarabia.....	992,841	18,232	St Petersburg.....	1,071,909	17,318
Country of the Don Kozzacks.....	871,130	62,538	Shemakha.....	541,170	...
Country of the Black Sea Kozzacks.....	194,519	14,726	Samara.....	1,479,081	65,088
Courland.....	537,855	10,582	Saratoff.....	1,615,609	31,577
Derbent.....	427,913	8,755	Semipalatinsk.....	159,897	194,246
Erivan.....	254,077	...	Siberian Keergheez country.....	255,166	303,301
Esthonia.....	293,599	7,862	Simbirsk.....	1,118,605	18,763
Grodno.....	827,200	13,366	Smolensk.....	1,084,481	21,653
Irkootsk.....	348,187	13,153	Stavropol.....	334,425	...
Kalouga.....	1,006,671	12,176	Tamboff.....	1,808,172	25,542
Kaminietsk-Podolsk, with the military colonies.....	1,717,314	16,447	The Taurida, with Sevastopol and Kertch-Yeni.....	659,509	24,140
Kamchatka.....	7,331	635,587	Tchernegoff.....	1,401,879	21,250
Kazan.....	1,482,130	23,715	Tiflis.....	560,455	...
Keeyeff, with the military colonies.....	1,804,961	19,507	Tobolsk.....	1,011,413	574,345
Kharkoff.....	1,272,997	20,973	Tomsk.....	687,677	333,922
Kherson.....	1,083,852	28,666	Tula.....	1,125,517	11,772
Koorsk.....	1,836,949	17,382	Trans-Baikal region.....	356,688	254,447
Kootais.....	324,320	...	Tver.....	1,466,194	26,031
Kostroma.....	1,056,558	30,833	Veetebesk.....	748,524	17,212
Kovno.....	982,595	16,107	Viatka.....	2,051,944	55,356
Livonia.....	863,035	17,680	Vilna.....	840,879	16,320
Minsk.....	983,338	34,467	Vladimir.....	1,220,820	18,062
Mohileff.....	873,888	18,806	Volhynia.....	1,498,387	27,540
Moscow.....	1,580,405	12,516	Vologda.....	926,689	148,240
Nezgorod.....	1,216,081	19,613	Voronej.....	1,840,146	25,691
Novgorod.....	804,410	46,070	Yakootsk.....	214,208	1,575,730
Olonez.....	285,945	51,318	Yaroslaff.....	928,445	14,003
Orël, or Orloff.....	1,445,900	18,253	Yekaterenoslaff, with Taganrog.....	1,030,521	25,627
Orenburg, with the Kozzacks of the Ooral.....	1,893,254	146,986	Yeniseysk.....	271,500	971,295
Penza.....	1,135,979	14,662	Possessions of the North American Comp.....	54,000	...
Perm.....	2,011,453	128,562			
Poltava.....	1,753,144	19,061			
			Total.....	63,295,933	...

The central governments are the most populous; and the North American possessions the most thinly inhabited. 9·80 souls go to the English square mile in the whole Russian empire, exclusive of Poland and Finland:—

	Population.	
In European Russia.....	31·08	} are reckoned to 1 English square mile.
In the Caucasus.....	22·49	
In Siberia.....	0·74	

And in the whole empire, without the dependent lands..... 9·80

The whole population of the empire was further distributed in 1856 in the following manner:—

	Number of Inhabitants of both Sexes.		
	In Towns.	In Districts.	Total.
In the European governments and provinces.....	5,203,187	52,398,998	57,602,185
In the lieutenantancy of the Caucasus.....	288,102	2,618,895	2,906,976
In the Siberian governments and provinces.....	192,710	3,160,105	3,352,815
Total.....	5,683,999	58,177,998	63,861,997

The proportion betwixt the town and district populations was consequently as follows:—

	To every 100 Inhabitants of the Governments there lived,—	To 1 Inhabitant of Towns there falls in the	
	In Towns.	In Districts.	Districts.
In the European governments and provinces.....	9·03	90·97	10·07
In the lieutenantancy of the Caucasus.....	9·91	90·09	9·40
In the Siberian governments and provinces.....	5·75	94·25	16·39
In the whole empire.....	8·91	91·09	10·23

VOL. XIX.

Numerical Proportion of the Sexes.

	Males.	Females.	Total.
In the 49 European governments and provinces.....	28,331,969	29,270,216	57,602,185
In the 7 Caucasian do.....	1,519,220	1,387,777	2,906,997
In the 9 Siberian do.....	1,738,314	1,614,501	3,352,815
Total.....	31,589,503	32,272,494	63,861,997

Hereto add the population of the dependent possessions:—

In the Caucasus, about.....	291,000
In the Keergheez hordes of Siberia, about.....	750,000
In the North American possessions.....	10,723
	1,051,723

Total population..... 64,913,720

If we further add the number returned by the secretaries of state for Poland and Finland, we have,—

In the 5 governments of Poland.....	4,696,919
In the 8 governments of Finland.....	1,632,977
	6,329,896

Entire population of Russia, with incorporated and dependent lands in 1856..... 71,243,616

Movement of the Population in 1856.—Number of Births and Deaths; also increase of Population.

	Born.	Died.	Increase of the Population.
In the European governments and provinces.....	2,496,995	2,007,557	489,438
In the Caucasus.....	88,515	64,024	24,491
In Siberia.....	121,359	75,291	46,068
Total.....	2,706,869	2,146,872	559,997

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Statistics. From these figures, proportionally to the whole population of the empire, are deduced the following results:—

Provinces.	Proportion to every 100 souls of both Sexes.		1 Birth occurs to	1 Death occurs to	Percental Increase of the Population.
	Births.	Deaths.			
In the European governments and provinces.....	4·34	3·49	23·04	28·65	0·85
In the lieutenancy of the Caucasus.....	3·74	2·71	26·74	36·90	1·04
In the Siberian governments and provinces.....	3·62	2·25	27·62	40·00	1·37
In the whole empire.....	4·27	3·39	23·42	29·50	0·88

The result of several decennial deductions made in the present century gives the following average proportion of births:—1 born to 21–23 souls; and of deaths, 1 dead to 30–33 souls. The average annual increase would therefore be about 1 per cent., which is the utmost. This is the result returned by the statistical tables of 1856. Von Stein returns 0·88 per cent., which is nearly $\frac{1}{10}$ ths. We ourselves have many reasons, too manifold for recapitulation here, to give this return as rather nearer to $\frac{1}{10}$ ths than to $\frac{1}{10}$ ths. The returns of marriages in European Russia were 557,123. The average proportion to 100 souls of both sexes is 0·97 marriages, or 1 marriage to 103·09 souls of the whole population. In the above returns, the numbers given are only those of the tax-paying community, because most easily obtainable; the non-tax paying portion are not included, neither is the army nor fleet. The great uncertainty of the computation lies in the circumstance of the census not being taken at one and the same time, and in certain classes not being registered. It is the consistory of every government that has the charge of registering the movement of births, deaths, and marriages. Improved measures are now adopted for insuring reliable returns. It must not be thought that the learned of Russia are by any means indifferent to such a vital point. Academician Köppen's tables of measurement and population, and Mr Schweitzer's computation of areas, will most likely appear in the course of this autumn. Councillor Troinitski hopes likewise to be ready within the same period with his population returns, based on the tenth revision or census, which is now in progress on a surer basis than any of the foregoing. It is expected to show a lower amount of population. The census is taken at unequal intervals of time; the present was ordered in consequence of the late war, and of the proposed emancipation of the peasants. The number of nobles is estimated at about 400,000.

View of the Foreign Races inhabiting European Russia, taken from Academician Köppen's Returns of 1853, the latest existing.

	Both Sexes.
1. Samoyèds, in the government of Arkhangel.....	4,495
2. Loparees, " " Do.....	2,239
3. Vogools " " Perim.....	872
4. Fins,—	
A. The Tchood race, in its widest acceptance,—	
(a.) Tchoods, strictly taken (Tchhookaree), in the governments of Novgorod and Olonetz.....	15,617

	Both Sexes.	Statistics.
(b.) Vods (Tchoods), in the government of St Petersburg.....	5,148	
(c.) Esths (Tchhooknee), in the governments of Vitebsk, Livonia, Pskoff, St Petersburg, and Esthonia.....	633,496	
(d.) Leevs, in the governments of Courland and Livonia.....	2,074	
B. Karels, in the widest acceptance,—		
(a.) Ervemeisets, in the governments of Novgorod and St Petersburg.....	29,375	
(b.) Savakots, in the government of St Petersburg.....	42,979	
(c.) Izori ¹ " " ".....	17,800	
(d.) Karels, in the governments of Arkhangel, Novgorod, Olonetz, St Petersburg, Tamboff, Tver, and Yaroslaff.....	171,693	
5. Perm Races,—		
(a.) Ziriàne, in the governments of Arkhangel and Vologda.....	70,965	
(b.) Perms in the governments of Perm and Viatka.....	52,204	
(c.) Votiaks, in the governments of Viatka, Kazan, Orenburg and Samara.....	186,770	
(d.) Besermiane, in the government of Viatka....	4,545	
6. Volga races,—		
(a.) Tchermecesses, in the governments of Viatka, Kazan, Kostroma, Neezegorod, Orenburg, and Perm.....	165,076	
(b.) Mordva (Moksha, Erzia, and Karatais) in the governments of Astrakhan, Kazan, Neezegorod, Orenburg, Penza, Samara, Saratoff, Simbeersk, Taurida, Tamboff.....	480,241	
(c.) Tchooovashes, in the governments of Viatka, Kazan, Orenburg, Samara, Saratoff, Simbeersk.....	429,952	
7. Tartars, in the widest acceptance,—		
(a.) Tartars, in the strict acceptance (with the Nogais), in the governments of Astrakhan, Vilna, Viatka, Grodno, Don-Kozzack country, Kazan, Kostromà, Minsk, Neezegorod, Orenburg, Penza, Perm, Podolia, Riazan, Samara, Saratoff, Simbeersk, Stavropol, Taurida, Tamboff, Esthonia.....	1,284,234	
(b.) Bashkeers, in the governments of Viatka, Orenburg, Perm, and Samara.....	392,072	
(c.) Mestcheriaks, in the governments of Orenburg, Penza, Perm, and Saratoff.....	79,941	
(d.) Keergheezi (Kaisaks), in the governments of Astrakhan.....	82,000	
8. Mongols,—		
(a.) Kalmucks, in the government of Astrakhan, the Don-Kozzack country, Orenburg, Samara, Saratoff, Stavropol.....	119,162	
9. Lithuanians, in the widest acceptance,—		
(a.) The Leetva, in the strict acceptance (Zmood), in the governments of Vilna, Grodno, Kovno, and Courland.....	716,886	
(b.) The Letts, in the governments of Vitebsk, Kovno, Courland, Livonia, Pskoff, and St Petersburg.....	872,107	
10. Vòlokhs (Moldavians) in Bessarabia, and in the governments of Yekaterinoslaff, Podolia, and Kherson.....	498,464	
11. Slavàne races,—		
(a.) Bolgars, in Bessarabia and the governments of Taurida and Kherson.....	77,102	
(b.) Serbs, in Bessarabia and the governments of Yekaterinoslaff and Kherson.....	1,383	
(c.) Poles, in the government of Astrakhan, Bessarabia, Volhynia, Grodno, Yekaterinoslaff, Keeyeff, Kovno, Courland, Livonia, Minsk, Mohileff, Orenburg, Podolia, St Petersburg, Saratoff, Stavropol, Kherson, Esthonia.....	477,535	
12. Gypsies, ² scattered throughout the empire.....	48,247	

¹ Throughout this article, in all Russian words the *z* has the power of the *s* in *azure*. The Poles, who are also Slavonians, but who use the Latin character, adopt this mode of rendering that sound. It is a far more simple way than *zh*, *sh*, or *j*. It is a law in philology that languages proceeding from parent stocks not akin, and with totally dissimilar characters, should have their sounds rendered phonetically when bodily transported into a totally dissimilar language. The learned of the Continent all obey this law. It is the English alone who, from ignorance of the Russ, still keep up the old absurd way of writing Russian names, which thus become unintelligible to the Russians themselves! It is time this were remedied.

² The greater number of these gypsies live in Bessarabia and Kherson. They are enrolled in the towns and villages as peasants. This measure—a wise one—is taken in order to absorb them into the Russian population.

Statistics.

13. Jews,—

(a.) Talmudists (Polish and Turkish), mostly in the governments of Volhynia, Podolia, Minsk, Mohileff, Grodno, Vilna, Veetebesk, Keeyeff, Kherson, Tcherneegoff, Bessarabia, and Courland	1,054,407
(b.) Karaïms, in the governments of Vilna, Volhynia, Kovno, the Taurida, and Kherson	5,725
14. Greeks, in Bessarabia and in the governments of Astrakhan, Yekaterinoslaff, Podolia, Taurida, Kherson, Tcherneegoff.....	46,773
15. Armenians, in Bessarabia and in the governments of Astrakhan, Yekaterinoslaff, St Petersburg, Stavropol, Taurida, Kherson	37,676
16. Germans, settled in various parts of the country, but mostly in the governments of St Petersburg, Moscow, Courland, Esthonia, Livonia, Saratoff, Samara, Taurida, Bessarabia, and Yekaterinoslaff	373,000
17. Swedes, settled mostly in the governments of St Petersburg and Esthonia.....	11,470
Total of foreign races settled in Russia.....	8,493,782

The following Races are further met with in European Russia.

Arnauts (Albanians or Shipetars) in Bessarabia.....	1,328
Bokharians, number not shown	...
Grusinians, in the governments of Astrakhan and Stavropol	1,000
Karakalpaks, in the government of Astrakhan	60
Osseteans, in the government of Stavropol.....	1,650
Persians, Kizilbashes, in the governments of Astrakhan and Samara	641
Turcomans, in the governments of Astrakhan, Stavropol, and Taurida	7,321
Kheevites, in the governments of Astrakhan and Saratoff	215
Circassians, in the Don-Kozzack country, and in the governments of Samara and Simbeersk	175
Indians in the government of Astrakhan	10
(All these figures are returned mostly from the census of 1834.)	
French colonists in Bessarabia in 1850.....	250
French foreigners, about.....	3,000
English " "	3,000

A Statement of Deaths in the year 1856, of Males and Females of the Orthodox Catholic Confession, according to their ages.

Females.	Males.	Age.	Females.	Males.	Age.
492,563	536,320	till 5 years.	20,330	19,847	70-75
53,784	57,158	5-10	14,198	15,106	75-80
22,560	25,604	10-15	7,823	8,543	80-85
22,071	25,632	15-20	4,349	5,068	85-90
23,241	29,178	20-25	1,943	2,218	90-95
27,114	31,086	25-30	871	1,088	95-100
26,519	28,252	30-35	98	123	100-105
29,004	30,900	35-40	34	62	105-110
27,434	28,993	40-45	21	19	110-115
31,045	30,565	45-50	8	22	115-120
30,729	29,245	50-55	2	5	120-125
35,373	33,353	55-60	2	1	125-130
31,536	28,223	60-65	1	2	135-140
28,029	26,099	65-70			

Serfs.

In all European Russia the total amount of the male population in 1857 was 28,613,380 souls, and in this number are included 10,844,902 male serfs. The number of female serfs is supposed to be greater, in consequence of the constant draft entailed by the conscription. They are not taken into count for financial reasons, as they pay no taxes. The serf percentage of the whole population in European Russia is thus 37·90; *i.e.*, out of one hundred souls of the entire population, more than one-third, or about thirty-eight souls, are in a state of serfage. All these serfs belong to 114,967 proprietors, which number amounts to no more than 0·40 per cent., or two-fifths of the whole male population of European Russia. In the year 1856 so many as 6,596,620 souls,—*i.e.*, 60·82 per cent., or three-fifths of the

Both Sexes.

total number of serfs,—were hypothecated to the crown-banks for debts of their holders, amounting to L.62,186,665. In Asiatic Russia, out of a population of 2,818,948 souls, there were 1844 serfs belonging to 153 proprietors, which gives a serf percentage of 0·06 on the whole population. A serf at present pays to his master a poll-tax (*obrok*) of from L.1, 5s. to L.4 yearly, subject to family considerations too long to enumerate; and to the government a capitation-tax of about 6s. yearly; of which part goes to the national treasury, and part to the communal fund, toward salaries for judges, road-repairing, &c. The government peasants, who are considered as free, pay only from L.1, 2s. to L.1, 8s., or L.1, 11s. yearly, including the capitation-tax. There are no poor-rates, but every proprietor is bound to provide for his destitute serfs. The government does the same. The schools for the crown peasants are as follows:—Under the first and second departments of the crown domains, in the settlements of the crown peasants, there are 2511 schools, with 2803 teachers, and attended by 90,178 boys, and 19,486 girls; of which number 488 were Mohammedan schools, with 511 teachers, and attended by 13,588 boys and 6016 girls.

In the number of crown peasants, it is noteworthy that there are 268,473 who live on crown lands, and possess, besides, land of their own in freehold; and that of the above number only 29,101 live on their own freeholds, without taking the benefit of the crown lands.

The serfs in Russia were not originally attached to the soil, or to the persons of their masters. It was when the Ruricks died out, and a boyar, Boris Godoonoff, ascended the throne, that the nobility got the ascendancy, and that the peasants were deprived of the right to remove at will from master to master. By this *ookaz*, dated 21st November 1601, every peasant was thenceforth attached to the soil of that commune in which he might happen to be on St George's Festival; and "Yoorieff Den" has ever since been a day of wail and woe throughout the land. It should therefore be well understood that the people were first enslaved, not by their tsars, but by the nobility, whom they therefore look upon as their despoilers. The tsar is rather looked up to as a father. This circumstance explains many matters in Russia. By *ookaz* of the emperor, promulgated on the 5th December 1857, the serfs are to be finally liberated within twelve years after settling the terms to be resolved on between them and the proprietors. The intervening period is considered needful to prepare the serfs for the coming change in their position. In every government a committee has been appointed, consisting of two deputies from the nobility of every district, and to this number are adjoined two deputies as members for the crown. Their labours, with the opinions thereon of the provincial governors, and of the minister of the interior, are subsequently revised by the Central Committee of Serf Emancipation sitting at St Petersburg. It was originally the emperor's intention to convoke in the capital an assembly of proprietors; but whether from the probability of stormy discussions or dislike of anything resembling a representative system, a commission has been appointed, and now sits at St Petersburg, to collect opinions and to decide on the final plan. The chief difficulty lies in conciliating the conflicting interests of the proprietors and peasants. The former would willingly enough part with their serfs, but they wish to retain the whole of their lands, or to receive for them full compensation, according to their own estimate. The emperor, again, has decreed that the peasants shall be allowed 4 dessiateens (about 11 English acres) of land and a cottage in freehold, and this they are allowed to pay for during the twelve years intervening betwixt the settling of the rules and their final emancipation. The sum proposed is moderate enough (L.16); but this is the real point at issue: The rich landholders, 3917 in number, are on

Statistics.

Statistics.

the whole not so much against the measure, because aware that, although they lose the last remnant of their feudal rights, the ultimate gain to their descendants, through rent-income and tillage of their estates by free labourers, is certain. The Russian noble, however, looks more to the present than to the future, and has little public spirit, as in England. It is the minor landholders, 111,050 in number, who are most dissatisfied, and for the following reasons:—In some trading and manufacturing governments, the central in particular, land is very dear, and the proprietors have positively not enough disposable soil for portioning off to their peasants the number of dessiateens required, which it has been proposed shall be reduced to 3. Land in those parts, and about St Petersburg, Taganrog, &c., is fully worth L.16 the dessiateen; in other parts only from L.4 to L.8. Some proprietors, besides, who possess forty peasants, have but 60 dessiateens of land in all; so that to allow them only 3 dessiateens, the proprietors must purchase 60 dessiateens additional to make up the 120 dessiateens at least required. Other proprietors possess 1000 dessiateens, with 400 peasants, and they would be deprived of the whole of their lands, besides having to purchase 200 or 600 dessiateens more were they to give the 3 or 4 dessiateens demanded. Some, again, who are perfectly landless, possess as many as fifty house-serfs. What are they to do? In Little Russia, and some other parts, land is very cheap, and there the proprietors would be at an advantage; for they could easily afford to pay the peasants as free labourers. As Russia comprises different climates, soils, and peoples, the difficulty of settling rules in all their details becomes manifest; it is therefore believed that the country will be divided into *zones*. It is also noteworthy that in Siberia there are very few serfs, and they are mostly attached to the government foundries; so that this portion of the empire can be first freed. In order to develop national industry, Peter I. bestowed serfs both on nobles and merchants, in various manufacturing governments, on condition that these men should revert to the crown, in case the manufactories were closed. These people, who were called possession-serfs, are landless, and now amount to about 40,000. The Emperor Nicholas did all he could to diminish their number, which was 100,000. The position of this class was dreadful, and they were positively slaves. Fears are entertained that the peasants will desert their villages, and when no longer attached to the glebe, will turn more to trade than follow agricultural pursuits. When roused, these peasants are an intractable class. The great point is, that the matter is too far advanced to be withdrawn; and come of it what may, the reign of Alexander II., who is pledged to the measure, will be immortalized by a glorious act, that can best be contrasted with the barbarity of the one that reduced the peasants, 258 years ago, to their present condition.

Government.

The government of Russia is an absolute hereditary monarchy. The emperor, or White Tsar of his people, rules of divine right, and acknowledges no fixed law but his own will. Round his diadem is wound the pontifical tiara, and he bears the following titles:—By the grace of God, Emperor and Autocrat of all the Russias, of Moscow, Keeyeff, Vladeimir, Novgorod; Tsar of Kazan, Tsar of Astrakhan, Tsar of Poland, Tsar of Siberia, Tsar of the Tauric Chersonesus; Lord of Pleskoff, and Grand Duke of Smolensk, Lithuania, Volhynia, Podolia, and Finland; Duke of Esthonia, Livonia, Courland, and Semigallia; of Samogitia, Bielostock, Karelia, Tver, Yugoria, Perm, Viatka, Bulgaria, and other lands; Lord and Grand Duke of Lower Novgorod, Tcherneegoff, Riazàn, Polòtsk, Rostoff, Yàros-laff, Bieloosèrsk, Oodor, Obdor, Condia, Veetebsk, Mstislaff; Dominator of all the Land of the North; Lord of Iberia, Cartalinia, Georgia, Cabardia, and of the province of Armenia; Hereditary Prince and Sovereign of the

Princes of Circassia and other mountain princes; Successor of Norway; Duke of Schleswig-Holstein, Stormarn, Dithmarsen, and Oldenburg, &c. The dynasty of his house is that of Romanoff the senior, and of Holstein-Gottorp the junior branch. The title of Tsar was first taken 1462–1505 by John III., the breaker of the Tartar yoke, the putter-down of the independent princes, and the conqueror of Novgorod, who married Sophia, niece of the last Greek emperor, Constantine Palæologus. It was he who in consequence quartered the Byzantine arms, the two-headed eagle, with his own of St George the Conqueror, although the tutelar patron of the country is St Nicholas. The Roman and Greek emperors being *Cæsars*, and *Cæsar* having been pronounced by the old Romans *Tsarsar*, by the Greeks *Kaisar* (*Kaïrap*), it is evident how from *Kaisar*, by the ellipsis of a syllable, came *Tsar*, written by the ignorant *Czar*, which gives no idea of the sound, as it is Polish for *Char*. Previously to John III. the title of Tsar was unknown, and the Russian sovereigns were always called Grand Princes, which is the title of the emperor's own children; the other members of the imperial house are styled Imperial Highnesses. Princes, Counts, and Barons are the only titles of nobility; the latter being but seldom bestowed. Formerly the sole title was *boyar*, equivalent to fendal lord. These titles descend to all the children equally, and there is no right of primogeniture; although majorats, or entailed estates, have been created in favour of some families. The orders of knighthood are 7 in number. The highest is the purely military order of St George, with four degrees. The others are both military and civil: St Andrew the First-Called, 1 degree; Vladeimir, 4 degrees; St Alexander Neffski, 1 degree; the White Eagle, 1 degree; St Anne, 4 degrees; St Stanislaus, 3 degrees. There are military decorations, such as occasional medals of honour, and gold swords for courage. When any of the above orders are given to military men, *swords* are added to the insignia. For soldiers there is a particular cross of St George, also with 4 degrees, corresponding to the Victoria medal; and further a medal of St Anne, 1 degree. The officials, including teachers in the government service, are all classed as of certain *tchins* or ranks, of which there are nominally 14, but really only 12; two having fallen into desuetude. These ranks rise in degree as follows:—14th, or lowest class, college registrar; 13th, does not exist; 12th, government secretary; 11th, does not exist; 10th, college secretary; 9th, titular councillor; 8th, college assessor; 7th, court councillor; 6th, college councillor; 5th, state councillor; 4th, actual state councillor; 3^d, privy councillor; 2^d, actual privy councillor; 1st, the chancellor of the empire. The rank of personal nobility is part of the privilege conferred by the lowest degree, upwards to that of actual state councillor, which confers the privilege of hereditary nobility. The highest department of the government is the council of the empire, established in 1810 to render the laws less changeable, and their application more correct. The other main objects are the revision and sanction of the budget. The number of members is not limited, but it generally amounts to 35 or 36. The council is divided into 5 departments:—1. Legislation; 2. War. 3. Church and civil affairs. 4. Internal political economy, or the administration of the public revenue. 5. The affairs of Poland. The emperor himself is the real president; but the council has further a permanent presiding member, selected by the emperor for life. Each department has its own president and state secretary; and the whole together have a common grand secretary of state, who is the principal director of the chancery, and the organ through whom the council makes known its decisions to the monarch. On receiving the emperor's confirmation of the council's decisions, this grand secretary communicates them

Statistics.

Statistics. to the respective authorities upon whom their execution devolves. Neither this secretary of the council, nor the council itself, receives from private persons any petitions, which must be presented to the Emperor's special state secretary for the receipt of petitions, who, after perusal, forwards them to the respective ministers. Without the monarch's sanction the decisions of the council are valueless. The directing senate is divided into 10 departments: 5 in Petersburg, 3 in Moscow, and 2 in Warsaw. It is the supreme civil and criminal tribunal of the empire, a guardian of the law, and a watcher over the inferior tribunals. The minister of justice is the chief *ober-procuror*, procurator or attorney-general of the whole senate; but every department of the senate has its own crown-attorney, dependent on the *ober-procuror*, or minister of justice. No laws can be promulgated without the senate, which prescribes their execution to all ministers and tribunals by separate edicts, or *ookàzes*, printed in the Senate gazette. The holy directing synod has for its object the management of ecclesiastical affairs. The ministries of state, whose members officiate in their several departments independently of each other, form the first instance of administration. Important affairs, purely administrative, are presented by every minister to the committee of ministers, and their collective opinion is then confirmed by the emperor. Each committee has its own state secretary, who bears to it the commands of the sovereign, and communicates them to the individual chiefs of the administration throughout the empire. The presiding member of the council of the empire is also the president of the committee of ministers. The ministries are as follows:—1. Foreign affairs and state archives; 2. War (artillery, engineering, inspection, audit, commissariat, victualling, and the medical department); 3. Marine and the colonies; 4. The Interior (police, municipal revenue and expenditure, interior administration, foreign religions, and medicine); 5. Public instruction; 6. Finances and trade (revenues and expenditure, trade, manufactures, treasury of the empire, customs, and mines); 7. The crown domains (crown-lands, peasants, and their management); 8. Justice; 9. The general direction of land and water communications; 10. Financial control; 11. Ecclesiastical affairs (Russian church); 12. The imperial household and appanages; 13. The post-office. The emperor's chancery, divided into four sections, one of which, the third, comprising the secret police, is another high organ of government; and there is, further, a special minister or state secretary for Poland, and a secretary of state for Finland. The governors and other authorities in the provinces receive their commands through the ministers and their departments. Every government has a civil governor, who is often also military governor.

Ministry of justice. The senate is the third instance, or supreme court of judicature. The nomination to places resting solely with the crown, and all presidents being removable at will, it follows that the courts are nothing but an organ of judicature, entirely at the command of the government; the nobility-assessors not being eligible *of right*, but nominated at the sovereign's will. In the middle courts of second instance, however, the nobility have a privilege of admission, being elected by their own order, and in some cases with merchants for assessors. These courts of second in-

Statistics. stance, which revise the law proceedings of the first instance courts, are the *palàta graždànskago soodà* or civil court, the criminal court, the executive police, the court of conscience, and the commercial court; the last with no deputies from the nobility, but with merchant-assessors only. To the lowest or first instance belong the district court, which investigates, in legal form, all law matters appertaining to it; the *zèmskoy-sood*, or county police court, which is its executive; the nobility tutelage court, all with representatives from the nobility, merchants, burghers, and peasants; the *nadvòrnoy-sood*, or aulic court; the orphan's court; the town magistracies and town-halls, with no representatives from the nobility, but solely from the merchants, burghers, and peasants. There are judges only in the conscience and district courts. Finland and Poland have their independent codes and judicature. The torture is abolished, as are also the knout and slitting of the nostrils. Some criminals are *stamped*, but not branded. The corporal punishment inflicted is the *plet*, or cat-o'-nine-tails; and sometimes, when a criminal is exceptionally punished by military law, running the gauntlet. The nobility, clergy, and merchants are exempted from this punishment. Criminals are further sent to work in the mines of Siberia.¹ The secondary degree is simple banishment to the settlements in Siberia; and the third, infliction of the rod, imprisonment, confinement in penitentiaries and reformatories, public reprimands in court, sometimes entered on the official's commission, and fines.²

All proceedings are carried on in writing, which is the great evil of the system, leading to venality, delay, gorging of the prisons, and vexations innumerable. The administration of justice is indeed the department most requiring reform; for of no country can it be more truly said that there is one law for the poor and another for the rich. But this may be looked upon as a remnant of the old bad order of things which is now being rapidly amended.

The first book of laws was the *Roòsskaia Pràvda*, or Russian jurisprudence, issued by Yaroslaff in 1020, and continued in the thirteenth century. John III. next commenced a book of laws in 1497; and this was again revised by John IV. in 1550. In 1664 the Tsar Alexay Mikhailovitch issued his *Oolozànie*, or general book of laws; and this code formed the foundation of the later jurisprudence, supplemented by *ookàzes*, or edicts, of the successive sovereigns; the number of statutes, up to the time of Alexander I., amounting to 30,920. Many attempts were made regularly to codify the whole; and Peter I., in particular, appointed in 1700 a commission for this purpose. Elizabeth, Catherine, and Alexander I. followed up his plan; but it was Nicholas I. who, after a previous outlay of about L.900,000, partially succeeded in the purpose. Up to 1859, 15 tomes, containing 21 sections, have been published; but the work, although still continued in the second section of the emperor's chancery, is far from concluded, contains numerous errors, and by no means does away with the special edicts of the sovereign, which can at any time upset the written law. The school of jurisprudence was instituted by Nicholas, with a view of bettering matters, by forming legists, and appointing from among them and the law-students of the universities, crown-officials for the senate and law-courts, incorruptible, well-mannered,

Jurisprudence.

¹ No atrocities equalling those of Norfolk or Cayenne are enacted in Siberia, where all the condemned are under the special supervision of the secret police. The town prisons, however, and even the police-stations, are sinks of horror; the condition of prisoners on trial being scarcely better than that of the condemned themselves.

² In 1856 there were (exclusive of Finland and Poland) 283,229 criminal, civil, and police cases; of these, 57,130 were convicted, 53,000 pardoned by manifests, 99,656 acquitted, 1574 sentenced to labour in the mines, 157 sentenced to the settlements in Transcaucasus, 3839 to Siberia. Among the above were 1124 cases of murder, 280 arson, 73 highway robbery, 6049 theft and robbery, 743 burglary, 101 false coining, 126 offences against religion. In Poland many crimes are committed, in Finland few, in Courland but one case occurred. In 1856 acts and obligations to the amount of L.31,353,758 for the sale and transfer of property were registered in the government courts, excepting those of Poland and Finland. In 1849, in 46 governments and 1 province of European Russia there were 1089 cases of murder, 1512 of suicide, 30 infanticide, 3114 child exposure, 804 personal insult, 194 unlawful gratification of the passions, and 690 horse stealing. There were, further, 27,694 vagrants, and 1183 vagrant and thief harbourers.

Statistics. and likely to exercise a beneficial influence on their confraternity. But "a little leaven leaveneth the whole lump;" and no radical good can result until a total sweep is made of the whole corruption, and trial by jury, with public pleading and a free press, introduced—not a licentious, but a public press, for exposing evil, and for giving a voice to the public wants. Trial by jury *did* once exist in the remoter ages of Russian history. The present monarch, Alexander II., who has begun so well, might do still better, would he but extend his admirable reforms to this vital object. When so many princes of the imperial house are appointed to public functions, it is to be hoped that the energies of some will be directed to the sword of justice as well as to the sword of war.

Schools under the Ministry of Justice.

	Teachers.	Scholars.
1 School of jurisprudence.....	43	231
1 Preparatory class to this school.....	20	67
1 Constantine surveyors' school.....	36	250
1 Writers' school, to form scribes for the government offices.....	7	60
1 Surveying topographers' school.....	23	200
Total.....	129	808

Religion.

The established religion of Russia is the Greco-Russian, nationally called the Orthodox Catholic Faith, and is professed by 49,099,717 souls. This church separated from the Roman in 1054, and from the Byzantine patriarchate in 1587. It has now its own independent synod, but it maintains, with the four patriarchates of Constantinople, Jerusalem, Antioch, and Alexandria, the intimate relations of a sister-church, possessing over them, as well as over the whole Slavonic race, a moral supremacy, which, though not despotic like that of the Roman Church, appears likely one day to rival that of the Pope over the Latins. It further maintains at Jerusalem a mission, with a bishop at its head. This religion was introduced into Russia by the Grand Princess Olga and the Grand Prince Vlodeimir in A.D. 955 and 988. Previously to the year 955, Christianity counted in Russia only a few followers at Keeyeff; but the general introduction into Russia of Christianity is reckoned from the year 988. Under Yaroslaff (1019–1054) Russia had her own metropolitan, but until that time the upper hierarchy came from Greece. In 1589 a patriarch was nominated head of the national religious establishment; but under Peter the Great the emperor was declared its spiritual head, the synod taking the place of the patriarchate. With it was vested the management of ecclesiastical affairs. An *ober-procuror* is its secular chief. The synod consists of permanent and temporal assessors, all selected from among the highest ecclesiastical dignitaries. It is generally composed of three metropolitans, several archbishops of the black, and, further, two assessors of the white clergy, the senior priests of the guards, and of the army and fleet. It never consists of less than three bishops. The ecclesiastical hierarchy, recruited mostly from its own ranks and the lower classes, although the upper also occasionally supply members, is divided into two orders,—the black or monastic, and the white or secular clergy. The following is a return of numbers of the black clergy:—4 metropolitans, of St Petersburg, Moscow, Keeyeff, and Lithuania, and 1 exarch of Grusia; 26 archbishops or archiereis; 39 bishops, also styled archiereis; 176 archimandrites or abbots, and 84 hegoumens or priors; 5612 monks; 2339 nuns; 5349 lay brothers and novices; 7091 lay sisters and novices. The black clergy has Basilus the Great for its tutelar saint, and it is entirely provided for by

Statistics. the state. White clergy: 1400 protohiereis or arch-priests; 35,593 popes or priests; 12,804 deacons; and 63,358 sub-deacons, readers, sacristans, and low ecclesiastical servants. The secular clergy receive from L.16 to L.40 yearly salary from the state, with some income in fees and in kind, which altogether places them, as a body, above positive want, but no more. When a clergyman gets too old for service, his successor, should he be his son-in-law, is bound to maintain him. When he dies, a place is first found for his son, and his daughter is married off if possible to the successor. A retiring-fund has been instituted, to afford pensions, but it is as yet too trifling for mention. The fees are prescribed by usage, but the priest can be compelled to perform his functions without remuneration. There are 4 first, 19 second, and 27 third class eparchies or bishoprics; in Grusia, 10. Further, 463 monasteries, of which 44 of the first, 85 of the second, and 160 of the third class; the chief or laurel monasteries are the Keeyeff-Grotto, the Trinity-Sergins, the Alexander-Neffski, and the Potchàieffski. There are 129 nunneries and 36,697 churches, of which 145 are for the *Starover*, or Assimilated faith. Spiritual education is provided for by 4 ecclesiastical academies, at St Petersburg, Moscow, Keeyeff, and Kazàn, with 73 professors and 336 students; each with but 1 faculty for theology, although the Hebrew, the ancient and modern Greek, the Latin, and now even the English, German, and French languages are taught, besides mathematics *in extenso*, and the natural sciences in part. Further, 48 seminaries, with 708 teachers and 13,864 scholars; 183 clerical district schools, with 1054 teachers and 36,359 scholars; and 18 clerical parish schools, with 32 teachers and 1401 scholars: total, 253 schools, with 1867 teachers and 51,960 scholars. These church-schools were once the light of the land. Several schools have been founded for clergymen's daughters, but their number is not returned. The national church property cannot be valued, but its capital is stated at L.1,700,000 sterling, and its annual income suffices to defray all the church expenditure, besides leaving a large surplus, which is credited to the church account. It is chiefly derived from the candle-money collected for the wax tapers burned. The amount of free gifts derived from the church-boxes amply suffices to defray the building and repairing of churches. Each government has its archbishop or bishop, excepting the governments of Petersburg, Moscow, Keeyeff, and Vilna, in each of which there is a metropolitan in lieu of an archbishop; and under these metropolitans, archbishops, and bishops are placed all ecclesiastics and schools, excepting those of the war ministry, which has its own senior priests, standing under the synod and the war minister. The archbishop of every government is the president of the government consistory,—a spiritual college, consisting of five to seven members, according to the extent of the bishopric. It is composed of several archimandrites, protohiereis, and some of the worthiest clergymen. For punishment, monks are removed from a higher to a lower class monastery; the secular clergy are sent for a time to monasteries; and for more serious offences are either degraded by one degree, or are deprived of the *riassa*, their every-day upper vestment, their hair being cut off before final dismissal from the clerical function. Grave crimes come under the cognisance of the criminal law of the country; but the clergy possess a right of having deputies to see that they are treated fairly, and they are not sent to prison without the knowledge of the consistory or synod, where the sentence meets with approval or disapproval. The following distinctions exist for protopopes and popes:—Epigonations,¹ pàltzas,² skull-caps, calottes, the synodal and cabinet *nàpèrstnoy krest*, or

¹ *Epigonation*, a sacerdotal decoration of embroidered stuff, in the shape of a parallelogram, worn on the right hip, below the upper and above the under *reza* or sacerdotal vestment. It denotes the spiritual sword.

² *Pàltza*, a similar distinction, but now ranking higher than the epigonation. It is shorter, square, and richly embroidered.

Statistics. breast-slung cross,¹ and the orders of St Anne, 2d and 3d, and of St Vladeemir, 3d and 4th classes. The same distinctions, excepting the skull-caps and calottes, are given also to the black clergy, from the hieromonach to the archimandrite inclusively; archihiereis and proto-presbyters receive the orders of St Anne, 1st; St Vladeemir, 1st and 2d classes; of St Alexander Neffski; and of St Andrew the First-Called. All the black clergy indiscriminately wear beads.

Church. The Greco-Russian Church guards vigilantly against the introduction of any doctrine open to the slightest suspicion of heresy, and has its own censorship and journals. It is also very observant of hierarchical subordination. Generally, however, the Russian clergy, although jealous of their dignity, have not the spiritual pride or priestcraft of the Roman Catholic order, attributable no doubt in part to the kindly national character, and in part to the humanizing influence of marriage, which prevents the overwhelming concentration of all the human passions into one single channel. The Greco-Russian Church is mostly antagonistic to the Roman Catholic, and differs from it in the following essential particulars:—1. In not recognising the primacy of the Pope. 2. In denying that the Holy Ghost proceeds from the Son (*filioque*). 3. In rejecting a purgatory, predestination (except in the omniscience of the Deity), indulgences, dispensations, and works of supererogation, although admitting the intercession of saints by prayer. 4. It holds the necessity of complete submersion of the whole body at baptism, unless in urgent cases, when even lay-men and women may perform it; but they must immerse the infant with the baptismal words, "In the name of the Father, Son, and Holy Ghost," if the infant can bear the immersion; if not, then sprinkling or ablution is used. Should the priest arrive in time, he reads the supplementary prayers, and performs the mystery of anointing with chrism. 5. Whilst admitting the doctrine of transubstantiation in regard to the eucharist, it affirms that the holy bread (*προσφορα*) must be leavened; the wine and water being placed in the chalice; and it is only at the prayer of transubstantiation that part of the *agnus* is placed in the chalice. The element of wine with water, is alone administered to children up to the age of seven, for fear of the elements being ejected or falling to the ground. 6. Another important distinction, is that marriage is obligatory on the secular clergy, although monogamy is a strict tenet of the church. A priest may continue to serve after his wife dies. 7. No instrumental music is allowed, but vocal music forms a most attractive portion of the service. This church rejects all massive images of the Saviour or saints as idolatrous; but pictures, mosaics, bas-reliefs, and, in short, all that is represented on a flat surface, is not held a violation of the law which says, "Thou shalt not make unto thee any graven image!" Broadly stated, and besides some of the preceding tenets, the Greco-Russian religion differs from the Anglican in so far as the latter church approaches to the Lutheran. The general harmony, however, with the Anglican is greater than with any other church; and several attempts have been made, but not successfully, to unite them, particularly in 1723. Addresses still pass at intervals between the two churches; and independently of the Irvingites, the ritual of Hatherly's new community at Liverpool so strongly resembles the Greek service that it has attracted the notice of the Russian synod. There are

Statistics. four great fasts:—1. Lent, or the great fast, between the carnival and Easter, of seven weeks' duration, and of which the first and last are the most rigidly observed, being more specially devoted to repentance, confession, and preparing for the sacrament; 2. The Petroff, or Peter's fast, before St Peter's day in June of two to five weeks' duration, accordingly as Easter Sunday falls; 3. The Oospènski, or Conception fast, called by the people the Gospòzinki, from the 1st to 15th August. 4. The Philippoff, or St Philip's fast, of six weeks before Christmas. The first fast or Lent is the most rigidly observed. Besides the above, the Wednesday and Friday of every week are fast days, and the common people scrupulously keep them all. Catechising and preaching are practised,—the latter frequently, the former at set intervals. Confirmation is not practised, the chrism used at baptism being held to comprise a mystery, rendering that ceremony supererogatory. The church festivals and saints' days, kept with eastern splendour, are numerous, and consequently form drawbacks to the business of life, although they greatly relieve the labouring classes. The venerative feeling of the people is profound, and they are zealous church-goers, early and late, being due observers besides of all the outward forms of religion, in which the essence is sometimes absorbed. There is, however, much genuine piety to be met with; pilgrimages to monasteries are frequent among all classes; donations, free gifts, offerings, and alms, being liberally bestowed by both rich and poor. There are no entrance-fees, no distinctions for great and little, no pews, no reserved places in Russian churches: the congregation stand: all are equal before God. The Sabbath is not much observed, except as a church-going day. The shops are shut during the hours of worship, but all public places of amusement are afterwards thrown open; visits are made, and business is but little affected by obedience to this salutary ordinance of the Supreme Lawgiver. The church service is performed in the ancient church Slavonic, and the lower classes cannot therefore completely follow it, except as a thing they take for granted, although they comprehend its general signification. The Bible, however, is now being translated into the vernacular Russ. The congregation fervently join in the choral parts, the responses, and the ejaculations. This portion of the service, and the great pomp investing the whole system of worship, together with the procession of banners, pictured saints, and relics, have no doubt been the great means of originally impressing on a rude people the holy awe they entertain for tsar and church; which two, with them, are identical. Church service usually consists of the *vòzglass*, or call to worship; singing of psalms or hymns; the *Ektenia*,² a series of prayers, mostly intoned, for the welfare of the church and her chiefs, for the peace and union of the Christian churches, and for every separate member of the imperial family; the reading of the epistles and evangel; choral and part singing of unexampled harmony; a sermon, always in the common language, explaining the evangel read; prayers, preparing for the communion, and during which the priest prepares himself; the consecration of the elements, and the administration of the sacrament, which the clergyman takes every time, and the congregation at will; then, thanksgiving for the sacrament, and parting benediction; the chanting and incense-burning throughout being frequent. Asperging with holy water is also used.³ The Old Testament is read only during evening

¹ *Napèrstnoy krest*, a gold cross slung over the breast, a mark of distinction common to all the black clergy. The imperial family often give, besides, for distinguished services, so-called *brilliant crosses* (diamond). The other crosses for proficiency in the learned degrees are 2 in number: one, a small square gold cross for the degree of *Magister Scientium*; and the other a more elongated, light-blue, enamelled one, for the degree of Doctor of Divinity. The last reward for a member of the white clergy is a mitre.

² The *Ektenia*: there are several forms of prayer so called. Some portions of this service resemble that of the Irvingites.

³ A foreigner is mostly struck by the constant signing of the cross, the repetition of the *Gòspodi Mmèltoi*, or "Lord be merciful!" the genuflexions, and the semi or entire prostrations.

Statistics. service, which is intended to prepare for the morning or principal service, and it therefore has a prophetic tendency, the psalms and hymns being all appropriate. The morning service represents the fulfilment of these prophecies. Service much of the same kind is often performed—sometimes exorcisms too—at private houses, on special occasions; and the remembrance-service, or *Poméenki*, forty days after a person's death, is a pious custom; as is that of the yearly visitation of family graves, although this often degenerates into revelling. It is another laudable custom of the Russians to remove their hats, in the streets, before all funerals that pass. Every Russian is obliged to take the sacrament at least once a year. The calendar in use is the Julian or Greek, which is twelve days behind the Gregorian or Latin. The antagonism of the two churches is perhaps the chief objection to a reform in this respect. The superstitious belief of the common people in good and bad spirits, in house-spectres, forest and water demons, is fast dying out, although too much credence is still given to omens and witchcraft. All decent creeds are liberally tolerated,—a beautiful contrast to Roman Catholic usage; and no civil disabilities attach to those who profess another faith, except to the most hateful of the sectarians. The chief attributes of pre-eminence assigned to itself by the Russian Church are the ringing of the larger church-bells—the smaller ones being allowed to the foreign denominations,—and, further, the *public* processions. The Roman Catholics are permitted to walk in state round the outside of their churches when walled in, or within them when not. The host must be carried in coaches. Funerals may be publicly followed by the clergy of all persuasions. Collisions with the populace are thus prudently avoided, whilst perfect toleration is granted. In towns and places where the Roman Catholic faith is predominant, greater public display is permitted. There exists, too, a species of church police, in the form of visitation, at times, of foreign churches by a deputed person. The confine where toleration touches on persecution is in the ordinance, that the children of a foreigner, man or woman, married to a Russian, must, unless specially exempted, be brought up in the national religion. Apostacy to any other faith is strictly prohibited; but Mussulmen and Jews, on the contrary, who go over to the Russian Church, are allowed many immunities,—the latter, a consideration in money! The empress, too, and foreign princesses marrying into the imperial family, must likewise embrace the national religion, but they are not re-baptized, being only anointed with the holy chrism. None but Jews, Mohammedans, and those baptized in one person of the Trinity are re-baptized.

Sectarians.

Since the first introduction into Russia of Christianity, many schisms have taken place, such as the Adrianites and the Self-Mutilators; but the chief separations were:—(1.) In 1649, when a considerable number of Greco-Russians went over to the *Unia*, which was formed

Statistics. by orthodox believers abandoning the ritual of the national church, and accepting the dogmas of the Roman Catholic faith. The Uniats, 2,000,000 in number, were again forcibly taken into the bosom of the mother church in 1839. (2.) Under the Tsar Alexay Mikhailovitch (1645 to 1676), when the amendment of the church-books occasioned a new separation. Many who believed not in the right correction of the church books of worship, which had become full of errors, formed a community holding to the ancient order of things, and they were called *Stáro-Obriädtsi* or *Starovèri* (Old Ritualists or Old Believers), because opposed to all innovations, even in non-spiritual matters. Latterly, some of them have consented to accept priests from among the orthodox hierarchy, on condition of their performing church-service according to the ancient ritual. This section is called the *Assimilated Church*, and it counts 145 places of worship. Their church-service is very coarse and unimpressive. Those sectarians who accept no such clergy are called the *Bezpopöfstchina*, or *Popeless*. There are at least 40 different sects, officially stated at about 2,000,000 in number; but the well-informed calculate them as amounting to nearly 8,000,000; and they all conceal their profession as much as possible. The most respectable are the *Staro-Obriädtsi*. The *Dookhobötsi*, or *Soul-Strugglers*, and the *Molokhane* (so called from the locality they inhabit), are schismatics, living, as do the *Mennonites*, mostly in the south of Russia, and their tenets have much in common with those of the Protestant dissenters, particularly of the *Anabaptists*. The other sectarians dwell in the remoter governments and in Siberia. Many of their tenets are horrible; the *Skoptsée*, or *Self-Mutilators*, in particular, who are met with even in St Petersburg, and include some Germans and Fins; but they are rigidly put down, and must eventually finish by becoming absorbed into the national church. Many converts are annually made both from them and other religions,—*Mohammedans*, *Jews*, *Buddhists*, *Lamaïtes*, and *pagans*; the Russian Church prudently confining its charity to its own home-circle of heathen; but there are no sufficient data for specifying the number christianized. This was partly the reason why the Foreign Bible Society-branch, together with free masonry in Russia, was put down by Alexander in 1824. Another reason was jealousy of Protestant interference with the Russian translation of the Bible, which is that of the Septuagint. The Evangelical Church counts many adherents, called *Herrnhuters*—*United Moravian Brethren*,—living mostly in the German colonies on the banks of the Volga, in the town of *Sarepta*, in Southern Russia, and about *Tiflis*. The Jews abound mostly in Poland and in the semi-Polish governments. The *Karaïm Jews*, a peculiar sect, dwell in the Crimea.

The Armenio-Gregorian church in Russia has six cpar-Armenio-chiefs, of which five are under archbishops, and one is ruled by a supreme patriarch. Gregorian Church.

Eparchies.	Churches.		Burial-grounds and Chapels	Total.	White Clergy.		Monasteries.	Monastics.		Number of Parishioners of both Sexes.	Learned Establishments.	
	Cathedral.	Parish.			Officiating Divines.	Church Servants.		Male.	Female.		Seminaries.	District and other Schools.
1. Nakhitchevan and Bessarabia...	4	28	4	36	54	44	3	3	...	23,854	...	9
2. Astrakhan.....	3	14	5	22	81	30	...	1	3	17,511	...	...
3. Erivan.....	1	319	7	327	373	270	13	55	...	108,536	1	2
4. Grusino-Imeritia.....	4	18	277	299	312	332	8	7	14	128,761	1	7
5. Karabagh.....	1	163	4	168	169	86	8	8	7	63,394	...	...
6. Shirvan.....	...	35	3	38	32	32	2	2	...	15,502	...	1
	13	577	300	890	1021	794	34	76	24	357,558	2	19

The present patriarch, Mathcos, is the 141st supreme patriarch of the Haikan people since the time of St Gre-

gory, the Enlightener. He has his throne at Etchmiadzin, in Armenia. Church affairs are administered, under him,

Statistics. by a synod consisting of four archbishops or bishops, and four archimandrites. These members are chosen by the patriarchs, and confirmed by the emperor, who likewise sanctions the nomination of the eparchial archbishops. The synod is further assisted by several consistories and spiritual directories. This church is wholly supported by voluntary contributions, the government adding only a sum of about L.1150 yearly for some particular expenses. The Lazareff Institute of Oriental Languages, at Moscow, provides for the education of twenty youths, who are afterwards either ordained as priests, or appointed

as teachers in the seminaries, or to situations in the synod, consistories, and spiritual directories. The Armenio-Gregorian Church considers itself the most ancient in Christendom. It differs from the Greek—with which, however, it has much similarity—in the doctrine of Jesus Christ's humanity; the Armenio-Gregorians maintaining that his two natures, of divinity and humanity, are blended into one; the Greeks, on the contrary, that they are distinct. The Armenio-Gregorian supreme patriarch, or Katholikos, styles himself in consequence *Αυτοκεφαλῇ*, or *independent head*.

Statistics.

Roman Catholic Church.

Statement of the Roman Catholic Church

Eparchies.	Churches.			Monasteries.		Number of Clergy.				Parishioners of both Sexes.
	Parish.	Filial.	Chapels.	Male.	Female.	White.		Monastic generally.		
1. Mohileff.....	164	14	331	4	3	11	392	106	52	304,354
2. Vilna.....	299	97	361	17	9	11	538	339	213	853,608
3. Telzky	214	112	134	9	4	10	612	160	72	815,881
4. Lutzk.....	165	16	371	9	4	13	241	150	36	251,059
5. Kamenetz	99	2	66	2	1	11	148	24	9	209,550
6. Minsk	81	79	184	6	4	12	182	134	68	188,586
7. Tiraspol.....	88*	20	17	...	...	11	112	...	...	129,749
Total.....	1110	340	1464	47†	25†	79	2225	913	540	2,752,787

* In this number are included 40 parish churches of the Armenian Catholics, and 4 chapels; 54 white parish clergy, and 14,345 parishioners of both sexes.

† Of the total number of these monasteries (72), 49 are on the government civil list, and 23 on the supernumerary list, which implies that they are doomed ultimately to suppression, as has been already the case with many.

Mode of support.

The Roman Catholic clergy are supported from the income of their immovable property and funded capital, which accrued to the government when they were deprived of them in 1841. The reason assigned was, that they were thus only placed on a footing similar to that of the Russian clergy, who are paid by the government, likewise out of the church income. All expenses relating to the church, and amounting to L.110,000, are defrayed by the government out of the above income, the state treasury adding only, of its own, L.6000. Every eparchy has its seminary, and there is one ecclesiastical academy at St Petersburg. There are three tribunals: the eparchial direction, the spiritual college, and the ministry of the interior. This college consists of assessors chosen by every eparchy, and is presided over by the metropolitan. A government procurer, or superior crown-attorney, always attends. This church has its chief seat in Poland and the neighbouring governments. It has two metropolitans: one of Warsaw, for Poland; and one of Mohileff, for the whole empire of Russia. He is the primate, and resides mostly at St Petersburg, which is the seat of the chief ecclesiastical academy.

Lutheran Church.

The consistorial sessions, formed of deputies, take place twice a year, and a government procurer assists at them. As a means of learning the wants of the Lutheran Church, a general synod, consisting of members and deputies of the consistories, is sometimes convened at the pleasure of government. Many evangelical Lutheran churches have large funds, amply sufficient for defraying all their expenses; others, again, receive assistance from government, to the amount of L.9000. All these churches have the undisturbed management of their property. Theological facilities for this confession exist at the universities of Dorpat and Helsingfors. The Bible Society at St Petersburg had distributed 13,000 copies of the Book among members only of the Reformed Church, and had 30,000 more remaining. Its fund amounted to nearly L.2000.

Statement of the Lutheran Church.

Consistorial Districts.	Number of Churches.			Number of Clergy.		Number of Parishioners.
	Parish.	Affiliated.	Chapels.	Upper Hierarchy.	Preachers.	
1. St Petersburg	55	14	50	2	78	224,095
2. Moscow.....	38	50	6	1	34	145,937
3. Livonia.....	108	33	161	1	109	588,654
4. Courland.....	120	64	19	1	115	491,244
5. Esthonia.....	48	26	57	1	44	280,580
6. Oesel.....	14	0	59	1	14	35,406
7. Riga.....	10	7	0	1	15	47,315
8. Revel.....	4	1	1	1	5	16,781
Total.....	397	195	353	9	414	1,830,012

The Reformed denomination counts in all 31 churches and chapels, with 26 officiating clergy. All matters relating to this church, excepting those of the Reformed denomination in the governments of Vilna, Kovno, Grodno, Minsk, and Mohileff, are regulated in separate Reformed church-sessions, held at the Lutheran consistories. The Vilna Evangelico-Reformed synod takes cognisance of all church affairs relating to these last-mentioned governments. There is, also, a spiritual college for this church at Vilna. Of Hebrews, Mohammedans and Pagans, there are as follows:—

Hebrews ¹	1,322,936
Synagogues.....	345
Rabbis, readers, and teachers.....	4,935
Mohammedans.....	1,948,817
Mosques, called metchêds.....	4,718
Muftis, mullahs, and teachers.....	7,924
Pagans ²	374,574
Places of worship.....	490
Priests.....	4,778

The philanthropic institutions of Russia are mostly under Charitable institutions

¹ We believe this number to be more correct than that given in Köppen's returns of the foreign races. It is a year later.

² In this number of pagans are included,—Lamaïtes, 190,390; Places of worship, 386; Priests, 4,410.

Statistics.

the direction of the Philanthropic Society, composed of various classes, and particularly of merchants. Its chief curator is the metropolitan of St Petersburg. Under this society are many establishments for widows, orphans, the deaf and dumb, cripples, &c. There is also a committee of prison inspection. Besides these, and the alms-houses maintained by the towns, there are numerous establishments supported by the government; such as the foundling hospitals, and the Widows' Home at the Smolna convent. Several more are supported by private charity; as the Demidoff Institution, for orphan girls, and Zoddoff's Asylum, for minor orphans. There were also, in 1851, 75 infant asylums in the whole empire, attended by 7980 children of both sexes.

Education.

Public Instruction.—Education was introduced into Russia conjointly with Christianity in the tenth century. The first school for boys was founded by the Grand Prince Vladeimir, Russia's Alfred, about 988; and the first school for girls, under Yaroslaff, 1019 to 1054, by his sister Anne. Public schools were afterwards founded in different parts of Russia during the eleventh century, yet little had been done when the great Peter first flung his mighty intellect into the work before him, and by his rough but useful lessons forced civilization upon his unwilling subjects. This sovereign was indisputably as much the primary teacher of his people as the founder of Russia's present greatness. He began by making education compulsory on the nobility and officials, and each succeeding sovereign after him did more or less in furtherance of his views. The sole honourable record, indeed, of Elizabeth Petrovna's reign is the founding, at Shoovàloff's suggestion, of the Moscow university in 1755, and two years later of the Academy of Fine Arts at St Petersburg, afterwards completed by Catherine II. It was Elizabeth who first showed the first leaning towards Gallic ideas. Catherine II. zealously continued Peter's labour, and was properly the founder of the national schools. Her action is mostly evidenced by the marked introduction, in moral culture, manners, and dress, of an exclusively French system, which continued down to the time of Nicholas. Russia still owes much to Catherine, both in point of learning and refinement of manners; but it is a question whether her system has not been in other respects hurtful by diminishing the national self-respect, and perhaps by corrupting the national morals. Alexander I. greatly contributed to the advancement of learning. He founded the universities of Dorpat, Kharkoff, Kazan, and St Petersburg, as also the Alexander Lyceum, ardently carrying out the work of reform, much on Catherine's plan, with steady perseverance and great success. His system was chiefly marked by the introduction of a soldier-like discipline in the training of youth. This system was yet more rigidly carried out by Nicholas, to whom still belongs the credit of having been the first to re-Russianize his empire. With this view, he gave a more national direction to the course of studies pursued, by making the Russian language, literature, history, geography, statistics, and knowledge of Russia the chief objects of study. He further prohibited the young gentry from being educated abroad, except by special permission, and even laid restraints on their stay in foreign countries, in order to counteract their inoculation of too liberal ideas. He also made it imperative to obtain his sanction for staying abroad, inflicted passport duties so heavy as to be equivalent to a prohibition from travelling, and sharpened the action of a severe censorship. He still vigorously carried out the work of improving the national education, and, like all his predecessors, considerably increased the number of the learned establishments. This sovereign was vastly superior to any of his predecessors after Peter. His personal gifts, mental and physical, were of the highest order; and few men in his position have possessed so much mastery of the mind over the body.

Statistics.

The accession of the present emperor Alexander II. has been marked by an abatement of his father's restrictions, by a comparative liberty of the press, and, strangely enough, by a happy revulsion in favour of English principles, but without any exaggeration of the sentiment. Already the healthful impulse given in particular to literature surpasses expectation, and promises the happiest results, although in so vast an empire education has of course not yet had time to permeate the masses. The Russian system of education is on the whole too much intended for the eye; too hollow; too superficial; embraces too many objects at once; and does not sufficiently provide for the education of the body. The education of females is the one most requiring reform. Girls of all classes are superficially taught all that they least want to know; whilst the real objects for which woman was created are precisely those mostly left out of view. In the female government establishments an undue luxury prevails, that totally unfits the poor girls for the rude families into whose bosoms they return; and worst of all, their long stay in those semi-conventual establishments damps in them the faculty of love, by severing them from the bonds of family affection. As regards the general *direction* given to learning, it was mostly the scholastico-ecclesiastical spirit that prevailed up to the time of the minister Oovarroff, in Nicholas's reign. The system followed in the universities and gymnasia was bad to a degree, having besides the old seminaristic tendency. Oovarroff abolished this, and gave to learning a more German or philologo-philosophical direction, in which it now continues, although Nicholas interrupted it awhile by stopping in 1848 the teaching of many branches of philosophy in the universities, retaining only the lectures on logic and psychology, and confiding them to priests, who still occupy these chairs.

The fine arts came into Russia with Sophia, the Greek spouse of John Vassilievitch III. The learned establishments of Russia, religious, military, naval, civil, and special, are severally placed under particular chiefs at the head of these different departments,—Poland and Finland being separately administered,—and are mostly divided into three classes, which take rank according to the degree of distinction that attaches to them, regard being had to the importance of the schools, and to the social position of the scholars. These classes confer on the pupils various advantages, which are held out as inducements for parents to send their children to them for education, it having been found both impossible and needless to carry out the system of compulsory education first enforced by Peter. The academies of sciences and of fine arts, the liberal, charitable, and many special institutions, are under the immediate protection of the imperial family, who further provide for the instruction of their servants' children, as do also several of the separate ministries. By this special superintendence for each branch of education, the object in view is no doubt best attained; but the fault lies in over-government, and in nothing being left to the generous action of public spirit, which is thus destitute of a high moral tone. Teachers in public schools are very properly subjected to examinations as to their competency, but when once this is certified, they partake of the advantages bestowed on the schools in the shape of pay,—which once was liberal, but is not so now,—a gradually rising rank, and subsequently a pension for their old age. Domestic tutors, private teachers, and governesses, are all alike subjected to tests, varying in proportion to the degree they may wish to take, and are thus all equally under the control of the government. Female teachers in the numerous government establishments for young ladies, have advantages corresponding to those of the men. Generally speaking, the social standing of a teacher is, as it ought to be, highly respectable. Not to detail the minor establishments existing under the different

Statistics. ministries, a minute return of which would be of little interest, we shall hereafter give the most important tables when we touch the several heads to which they respectively relate. The following summary will meanwhile answer all needful purposes:—Æsthetics, and their affiliated branches, are fostered by an Academy of Fine Arts,—the noblest in Europe,—with its splendid sculpture and picture galleries, and its collection of engravings; the Hermitage, with its countless treasures of sculptures, paintings, and coins; the National and the Roomiantsoff museums; the museum of sculpture in the Taurida Palace; the permanent exhibition of works of art near the Exchange; four porcelain, glass, bronze, and tapestry manufactories; four theatres, including a national and an Italian opera, with a ballet, and where French and German pieces are also performed; one summer theatre, and one court-singers' school,—all at St Petersburg, or near it. A marked feature of the time is the introduction of parks and public squares; some of the bridges, too, in the empire, are of unparalleled magnificence; and generally the improvement in architecture is striking to the duller eye. In architecture, it is the Indian, the ancient Russian, the Russo-Byzantine, the renaissance, and mixed styles that mostly prevail. Moscow has but little to boast of in point of art, unless in the quaint architecture of its Kremlin and its countless churches. It possesses a branch-school of the Academy of Fine Arts, and, further, Yablonoſſ's cabinet of art-curiosities, two theatres, and one theatre-school. Near that city are the picture-galleries of Mr Narishkin, Count Strogonoff, Count Bezborodko, and Prince Yoosooſoff. Science is provided for by more numerous establishments: the Academy of Sciences, with its cabinets of natural curiosities and oriental coins, and its costly library; the public library, with 802,717 volumes, 28,536 manuscripts, and 63,503 engravings, independently of the libraries of the universities and ecclesiastical academies; the magnificent astronomical observatory at Pulkova; numerous other observatories at Moscow, Kazan, Nicholaieff, Dorpat, Riga, Mitau, and other places; the physical observatory at St Petersburg; the cabinets of natural curiosities at Moscow, Vilna, Dorpat, Riga, and Mitau; the scientific collection and models of marine apparatus in the Naval College of St Petersburg; Loder's anatomical museum at Moscow; the museum of South Russian antiquities at Odessa and at Kertch; the Geographical and Imperial Mineralogical societies; the botanical garden; the Free Economical and Horticultural societies; the Society for Mutual Instruction; another for the encouragement of artists,—all at St Petersburg; the Society of Friends of Russian Literature, for Russian history and antiquities; the Medico-Physical Society, for the discussion of the natural sciences, and of pharmaceutic knowledge; the Agricultural and Antiquarian societies: the Literary and Lettish societies; one for rural economy; the Livonian societies of Public Instruction and of Agriculture at Riga; the Courland Society for Literature and the Fine Arts at Mitau; the Literary societies of Kalooſa and Zitimir; the Philotechnic and Scientific associations of Kharkoff; the societies of Friends of the Russian Language at Yaroslaff; of Friends of the National Literature and of the Sciences at Kazan; and the Physiological Society at Abo; one of which might have been advantageously replaced by a society for the prevention of cruelty to animals. A society for the acclimation of animals has been recently formed at Moscow, and Mr Lamanski has projected one for the diffusion of useful knowledge.

Among the special institutes, the most noteworthy are the learned section for the oriental languages, under the minister of foreign affairs, instituted to qualify young diplomatists for their vocations; and the Lazareff Institute for the oriental languages at Moscow.

Statistics. *First-class Establishments for the Daughters of the Nobility, Officers, and Officials, under the immediate protection of their Imperial Majesties.*

	Teachers.	Scholars.
1 Smolna rearing establishment.....	83	392
1 School of the Order of St Catherine at St Petersburg.....	56	357
1 School of the Order of St Catherine at Moscow.....	59	288
1 Patriotic Institute.....	36	244
12 Other institutes for noble young ladies at different places.....	356	1589
13 Second-class establishments at different places.....	426	1533
12 Third-class establishments for girls of lower condition at different places.....	207	953

Special Establishments.

1 Nicholas Orphan Institute at St Petersburg...	166	793
1 Nicholas Orphan Institute at Moscow.....	108	725
1 Deaf-and-dumb school at St Petersburg.....	23	65
1 School of midwifery ".....	14	131
1 " " at Moscow.....	16	82
1 Section of the Moscow founding-hospital for infants.....	40	125
Total.....	1590	7277

Five female gymnasia, of which four are at St Petersburg and one at Veeshny-Volotchok,—number of scholars not shown—have been recently instituted, much on the plan of the German daughter-schools.

Male Educational Establishments at St Petersburg.

	Teachers.	Scholars
1 Alexander Lyceum.....	33	126
1 Deaf-and-dumb school.....	13	101
1 Commercial school.....	35	299
2 Hospital-assistants' schools.....	11	85
1 Nicholas Orphans' Institute at Gatchina.....	44	671

At Moscow.

1 Section of the founding hospital for infants..	21	96
1 Commercial school.....	24	121
1 Hospital-assistants' school.....	15	251
1 Mechanics' institute.....	18	290
Masters for instructing in artizanship.....	14	...
Total.....	228	2040

There are also 3 schools—the Maria, Midwives', and St Helen's—under the protection of H.I.H. the Grand Duchess Helen, with 30 teachers and 490 scholars; and 12 private and 3 sectional schools belonging to the Ladies' Patriotic Community, with 32 teachers and 507 scholars.

This ministry, established by Alexander I. in 1802, is Ministry of presided over by a special minister, assisted by a colleague, public in- a superior director of schools, a high committee of censor- struction, ship consisting of three individuals of note, a committee of censorship, and a staff of 46 censors; of whom 8 are at St Petersburg, 5 at Moscow, 6 foreign, 3 at Riga, 3 at Vilna, 2 at Keeyeff, 3 at Odessa, 11 at Warsaw, 2 at Tiflis, 1 at Dorpat, 1 at Revel, and 1 at Kazan. Besides these censors, there are others for the ministry of foreign affairs, the synod, the post-office, the theatre-direction, and one for the ministry of war.¹ The ministry of public instruction is at present divided into 11 learned circles,—of St Petersburg, Moscow, Keeyeff, Kazan, Kharkoff, Odessa, Dorpat, Siberia, the Caucasus, Vilna, and Warsaw,—each under the superintendence of a curator, and each district under a separate inspector of schools. The six universities of St Petersburg, Moscow, Keeyeff, Kazan, Kharkoff, and Dorpat, are under this ministry; that of Helsingfors is under the state-secretary for Finland. The following is a special return of their status:—

¹ This vexatious censorship is beginning to cause a most serious evil or blessing—the printing of Russian books abroad.

Statistics.	Universities.	Facul- ties.	Objects of Study.	Pro- fessors.	Students.	Statistics.
	1. Helsingfors (formerly at Abo), founded in 1640	5	{ a, Theological; b, medical; c, juridical; d, historico-philological; e, physico-mathematical.....	60	600	
	2. Moscow, founded 1755	4	{ a, Historico-philological; b, physico-mathematical; c, juridical; d, medical	117	1725	
	3. Dorpat, 1802	5	{ a, Theological (Protestant); b, juridical; c, historico-philological; d, physico-mathematical; e, medical	84	555	
	4. Kazan, 1804	4	{ a, Historico-philological; b, physico-mathematical; c, juridical; d, medical. The physico-mathematical faculty has two sections—for the mathematical and the natural sciences; the juridical faculty has two sections—for jurisprudence proper and the cameral sciences.....	76	353	
	5. Kharkoff, 1804	4	{ a, Historico-philological; b, physico-mathematical; c, juridical; d, medical. The mathematical faculty is subdivided into the two sections of the natural and the mathematical sciences	79	459	
	6. St Petersburg, 1819	4	{ a, Historico-philological; b, physico-mathematical; c, juridical; d, oriental languages. The physico-mathematical faculty is subdivided into the two sections of the mathematical and the natural sciences; the juridical into the juridical proper and cameral. Cameral science comprises—State institutions, laws of organization and police, finance, rural and political economy, statistics, technology, and international law. The faculty of oriental languages comprises five sections: the Arabic—Persian, Turkish, and Tartar; the Mongolian and Kalmuck Tartar; the Chinese—Mantchoor; the Arabic—Hebrew; and the Armenian—Grusian and Tartar	82	716	
	7. St Vladeimir, at Keeyeff (re-established in 1839).....	4	{ a, Historico-philological; b, physico-mathematical; c, juridical; d, medical. The physico-mathematical faculty has two sections—for the natural and the mathematical sciences	96	906	
	Total.....			594	5314	

By a decree of the emperor, promulgated in January 1859, the upper pedagogical institute, as it now exists, will be suppressed, and replaced by special courses of pedagogy. Similar pedagogical courses are to be established in all university-towns. The other educational establishments are—2 lycea, the Richelieu at Odessa, and the Bezboroko at Nezin; further, 84 gymnasias, each government and every important town having at least 1; 458 district, 1090 parish, 19 primary, 654 private, 2 veterinary, and 107 Hebrew schools. Total under this ministry, exclusive of Poland, 2434 schools, with 7472 teachers, and 104,164 scholars, at an annual outlay to the state of L.475,000.

Educational matters in Poland are under a curator, who reports both to the lieutenant of the kingdom and to the minister of public instruction. The Warsaw learned circle is the only one in the country, and under it formerly stood a university at Vilna; but it was suppressed in 1833 on account of the political troubles, and removed in 1839 to Keeyeff, the Vilna professors being bodily translated thither, and the former university at Keeyeff re-established under the name of St Vladeimir. There exist at present in Poland 1 medico-chirurgical academy, 1 nobility institute, 1 government ladies' boarding-school, 1 school of arts, 6 philological gymnasias, 1 practical gymnasium, 2 practical high schools, 1 school of agriculture and forest economy, 181 private and 9 practical district schools; 17 district, 1 Sunday commercial, 1 primary teachers, 1119 primary, 93 Sunday artizans, 1 rabbinical, and 5 Hebrew schools. Total, 1441 places of education in Poland, with 74,343 scholars, the number of masters not being shown.

Education in Finland is under the secretary for that grand principality. It is provided for by 1 university at Helsingfors, 1 cadet corps at Friedrichshamm, 6 gymnasias, 14 upper elementary, 53 lower, and 25 Sunday-schools; further, 3 navigation, 3 technico-practical, and 3 commercial schools; 1 institute for rural economy, several people's schools, and 6 girls' schools; the total of masters being about 300, and of scholars 9000. Girls are mostly taught at home. No Fin is admitted to the sacrament unless he can read.

In 1849, only 917 books were printed in the whole empire, against 1626 printed in 1857, in the Russian, Polish, Finnish, Lettish, Esthonian, Gruzinian, Armenian, German, French, Italian, and English languages. The number of

journals and periodicals issued in 1859 forms a total of 204. Piracy of literary property is punished by heavy fines, and copyright is inalienable for fifty years. Typography, as an art, although improving, is still in a backward state, and printing is dear. The greatest darkness prevails in the Caucasus and in Siberia; the greatest enlightenment, in the capitals and the Baltic provinces. It was through this German section of the empire, not to speak of the foreigners who co-operated in the work, that the country became permanently civilized.¹ Russia is still the great barrier against Asiatic barbarism, and the great means of Asiatic civilization.

Summary from the Statistical Tables of 1856.

	Schools.	Scholars.	Percentage of Scholars of both Sexes.
In the European governments and provinces.....	7841	432,889	0.75
In the Caucasian Lieutenancy.....	74	5,505	0.19
In the Siberian governments and provinces.....	312	11,608	0.35
In the whole empire.....	8227	450,002	0.70

On an average there fell to every government and province of the empire from 126 to 127 schools, and 6329 scholars; to every school 55 scholars; and in the whole empire 0.70 scholars to every 100 inhabitants of both sexes, —otherwise expressed, 1 scholar to 143 inhabitants.

Army.—The general direction of this branch of the ser-
vice rests of course with the emperor; but the detailed direction is under the management of the Staff-Office, corresponding to the English Horse-Guards. In its organization the staff adheres mostly to the French. The officers of the staff are well versed in foreign languages; still their education calls for some amendment. There are many abuses of management, as well as much peculation, existing in the army generally; although, to the credit of the government be it said, commissions are nominated in regiments and elsewhere to inquire into and uproot abuses. The hospital service, during the recent war, was open to indignant animadversion. Promotion goes by seniority, favour, and for distinguished services; there is no putting of demerit over the head of merit by purchase; and every officer must serve from the rank of under-officer upwards. Young men educated in the military colleges come out as

¹ The discharged soldier in Russia is an important agent in the communication of that floating knowledge which goes so far to instruct a people.

Statistics. officers. The whole army is under a minister of war, assisted by a colleague and a military council. The office of Master of the Ordnance is generally filled by a grand prince. The total amount of the regular forces, reduced as it has been since the war of 1853-55, may be taken at 500,000 men; and the total of the irregular troops, consisting of the Kozzack forces and different militia troops, at 150,000 men. The following is a view of their composition:—

Regular Troops.—The active army consists (1.) of the separate corps of the Guards, comprising the infantry and reserve cavalry corps of the Guards; (2.) of the separate grenadier corps; (3.) of the 1st, 2d, 3d, 4th, 5th, and 6th corps, the three first forming the 1st army, and subordinate to its commander-in-chief; (4.) of the separate reserve cavalry corps; (5.) and of the following separate corps—the Caucasian, Orenburg, and Siberian; (6.) lastly, of the forces stationed in Eastern Siberia and in Finland.

Statement of Army.

Guard Corps.

	Men.
2 Divisions of heavy cavalry ¹	4,000
1 " light ".....	2,000
3 " infantry.....	36,000
9 Batteries of foot artillery.....	...
4 " horse ".....	...

The grenadier corps, and the 6 army corps, are each composed of—

3 Divisions of infantry.....	252,000
1 " light cavalry.....	14,000
1 " foot artillery.....	...

To each infantry corps is attached a division of foot artillery, and each division has 3 brigades, of which 1 brigade, composed of 4 batteries, is attached to each division of infantry.

1 Brigade of horse artillery, composed of 2 batteries.....	4,000
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The separate corps of reserve cavalry consists of 2 divisions of cuirassiers, which form the cadres for war-time; to this reserve cavalry are attached—

6 Horse batteries.....	...
1 Division of horse pioneers.....	250

Separate Caucasian Corps.

4 Divisions (strong ones) of infantry.....	...
13 Battalions of the Caucasian line.....	...
18 " " Grusian line.....	...
6 " " Black Sea line.....	...
Forming a total of 139 battalions, equal to.....	170,000

Grand total.....482,250

The regular troops included in the separate corps of Orenburg, Siberia, and Finland, with the artillerists, &c., will swell this amount to about 500,000 men. The irregular troops cannot be estimated with any degree of exactness on account of their peculiar organization, no permanent contingent being fixed, and the whole male population being in some parts liable to serve when summoned.

The recruiting is effected by alternate levies made in the different governments, and ordered by imperial command, designating the classes and the number of men to be taken from every thousand. Recruits are chosen by the communes or selected by lot, and are received by a commission in the presence of an imperial aide-de-camp. The nobility, officials, clergy, and merchants, are exempted from serving; the recruitment thus falls mostly upon the serfs between the ages of 18 and 35. The term of service is 20 years for the Guards, 22 for the line, and 25 for the train and military servants, although unlimited furloughs are given earlier. Every year after the manœuvres, which take place at different times and places, the minister of

Statistics. war demands of the regimental chiefs what soldiers may be dismissed; but the principles on which furloughs, limited or unlimited, are granted, do not, from their complication, admit of detail. The general rule is, in case of war being expected, to give leave of absence only to such soldiers as are natives of the nearer governments, in order that they may be promptly called in when needed; but if war should not be expected, then the soldiers are dismissed to the remoter governments, though always liable to be summoned to the ranks so long as physical capacity allows. The furloughed soldiers must, on arrival at their homes, report themselves at the dépôt of the nearest regiment, no matter that it is not their own, and every year appear at the nearest place appointed for manœuvres and drill, which never last beyond a few weeks. Little or no pension is given, but the old soldiers are emancipated as serfs, and provided for by being preferentially appointed to situations as doorkeepers, watchmen, overseers, and so forth, in government establishments and public institutions. There are but few hospitals for invalided soldiers; the chief one is at Tchesma, near St Petersburg. The Russian soldier of the Guards is tall and well made; but the line-soldier is often narrow-chested, has not so much strength or stamina, and he is but very indifferently fed in war, which explains why he dies so fast on march and in hospitals. The Russian is hardly beyond compare, and most unquestionably brave; but his bravery is of a stoical kind, totally differing from the fury of the French, and more resembling the intrepidity of the English soldier, which has no equal. His favourite weapon is the bayonet, which, like the Englishman, he takes to naturally, because used from infancy to the hatchet and to chopping. The Russian soldier can be his own cook, tailor, and bootmaker; he is handy to a degree, and enduring to martyrdom; but he wants that high tone of spirit which is imparted only by moral superiority, and this is the reason why his education is now being more attended to; the officers themselves being made, throughout the Guards and army, the schoolmasters of their men, who learn, good-humouredly and successfully, reading, writing, and the rudiments of arithmetic. The men are now also taught gymnastic exercises, besides bayonet and sword-play. Every battalion has a proportionate number of special marksmen with rifles, who are taught musketry-practice. The men are much more liberally treated than before the war of 1853-55, and the drill and exercise system is greatly altered, the automaton system having been found of bad effect, serving only to stupify. The Kozzacks, the artillery, the cavalry, and infantry regiments of the Guards, are composed of fine men. The favourite mode of attack is in column; in Soovoroff's time it used to be in line, like the English. The immense spaces to be traversed, and the distance from depôts, neutralizes one-third of the active force. Railways, however, are altering this state of things.

Scientific Establishments and Schools under the Ministry of War.

	Teachers.	Scholars.
1 Medico-chirurgical academy, placed directly under the medical department of the war ministry.....	35	978
Several surgeon-barbers' schools at the different military hospitals.....	17	1,020
1 Topographers' school.....	13	140
22 Military schools ²	Not shown.	10,000
Total.....	65	12,138

Further, 3 lower artillery schools, distinct from the artillery college, viz., the technical, pyrotechnical, and farriers' schools, with 22 teachers and 166 scholars.

¹ To every division of infantry is attached a battalion of sharpshooters. Each infantry corps has 3 divisions, each division 2 brigades or 4 regiments, and each regiment is composed of 3 battalions. Each battalion has 4 companies of 250 privates. 1 cavalry division has 4 regiments of 4 squadrons each, consisting of 120 privates. A distinction is made in Russ between the words *division* and *divisia*; a division may consist of only 250; but a *divisia* corresponds to the continental division.

² These military schools are a great improvement. They have been lately instituted in lieu of the cantonist schools, in which the

Statistics. Under the section of the Military Learned Establishments, whose chief is independent of the war minister, and reports to the emperor directly:—

Three military academies, viz.:—			Teachers.	Scholars.
1. The Nicholas academy of the staff		22	22	250
2. " upper engineer school		50	50	126
3. The Michael artillery school		32	32	117
1 page corps, or college		41	41	159
1 ensigns' school of the Guards		31	31	206
22 cadet corps, or military colleges, for the	}	723	7440	
Guards and line				
Total		899	8298	

The engineers are perhaps the most learned of all the army. The Guard officers are gentlemanly in tone, and well educated, the artillery and staff particularly. Krupp's steel cannon is used in the Caucasus, and has proved itself a good weapon of war, although a costly one. The percussion-lock has long been adapted throughout the army to a plain ball, with the Minié ball. The artillery is very fine, and the horses are strong; but the powder is bad. This arm manœuvres well, is bold in advance, and fires quickly. The cavalry is admirable, the Kozzacks making excellent light troops, through the hardiness of their horses and their equipment being suited to its purpose. It is the Kozzacks of the Caucasian line and of the Black Sea who are the best and bravest; the other Kozzacks are but indifferent

troops. The arsenals, powder-mills, and great military Statistics manufactories are at St Petersburg, Systerbäck, Toola, and Petrozavodsk. Dark-green is the prevailing colour, often with red facings, but blue and other colours are also affected. One-half of the income of the empire was supposed to be applied to the former war budget, but retrenchments of great magnitude have been made since the last war. The numerical amount of the army is rigidly kept secret, as a supposed means of strength.

Statement of the Russian Fleet.

Navy.

Description of Vessels.	Baltic Fleet.	Black Sea Fleet.	White Sea Fleet.	Caspian Fleet.
Sailing ships of large dimensions	24	Not precisely ascertainable; but may be taken at six corvettes, with a few schooners and steamers.	A few vessels for port purposes and light houses, not for war; many vessels for the Baltic fleet are built here.	Inconsiderable, but proposed to be enlarged. A few schooners and light steamers. This sea is now being surveyed.
Screw steam line-of-battle ships	8			
Screw steam frigates	7			
Steam frigates and paddle-boats	9			
Inferior vessels*	66			
Screw gun-boats	70			
Total of fleet	184			

* Among the inferior vessels are classed the corvettes, clippers, yachts, brigs, and small steamers.

Names and Order of the Vessels.

Screw Steam Line-of-Battle Ships.

(Some new and all sound.)

	Guns.
*Tsesarévitch	135
*Sinope	131
Orël	84
*Retvisan	84
†Gangoot	74
*Völa	74
†Konstantën	74
*Veeborg	74
*The General Admirak	70
Pròkhor (sailing line-of-battle ship), like the Excellent, in England, used for gunnery practice	84

Screw Steam Frigates.

(All new and sound.)

	Guns.
*Svetlàna	60
*Olèg	58
*Ilia Mooròmetz	53
*Gromobòy	50
*Askold	45
*Palkàn	44

Sailing Frigates and Large Vessels.

(Nearly unserviceable.)

	Guns.
Rossia	120
Imperator Peter Pèrvy	110
Imperatrètza Alexandra	84
Poltàva	84
Andrày	84
Vladèmir	84

* New.

	Guns.
Kràsnoy	84
Ne Tron Meniä†	84
Brienne	74
Pàmiat Azòva§	74
Velèkoy Kniaz Meekhàel	74
Fère Champenoise	74
Ezekiel	74
Ingermannland	74
Borodinò	56
Vilaroche	56
Sèezoy Velèkoy	56
Narva	56
Amphétreedä	44
Tsesarévitch Konstanstèn	44
Castor	44

Corvettes.

	Guns.
Kniaz Varshàffsky	30
Olivòotsa	30
Smolènsk	28

Steam Frigates—all paddles.

(Seaworthy and serviceable.)

	Ho-p.
Kamtchátka	550
Gremiàstchy	400
Smiàloy	400
Groziàstchy	400
Olaff	400
Vladèmir (post steamer)	350
Rùrick	300
Otvàznoy	300
Khràbroy	300

† Timbered afresh.

Inferior Vessels.—Corvettes.

(Seaworthy and new.)

	Guns.
Bayàn	16
Vol	11
Medvèd	11
Boyarín	11
Voyevòda	11
Rinda	11
Posàdnick	11
Novèek	11
Greedén	11

Clippers.

	Guns.
Strelòck	6
Plastoon	6
Djèghèet	6
Razbòynik	6
Opritchnik	6
Nayèzdnik	6

20-gun Brigs.

	Guns.
Philòktèt (new)	20
Agamemnon	20
Antenòr (old)	20
Palinoor	20
Oolèss	20
Parèes	20

River Paddle-Boats.

	Guns.
St Petersburg (a post steamer)	
Fontànka	
Làdoga	
Ilmen	
Mèernoy	
Pospèshnoy	

† Don't Touch Me.

	Guns.
Yàstreb	
Vestovòy	
Bèestroy	
Onèga	
Alexandria	
Courier	
Graf Vròntchenko	
Nèffka	
Neva	
Veeborg	
Okhta	
Eèzora	

Gun-Boats.

70 screw (serviceable).
6 yachts.

Schooners.

	Ho-p.
Bàkon (new), Screw	30
Vekhà	30
Veekhr (old), Sailing	14
Doshd	16
Meteor	16
Grad	14
Ràdooga	14
Strelà	14

Transports.

	Guns.
1 screw.	
11 sailing.	
Imperial steam yacht "Standard."	
Grand Duke Constantine's steam yacht, "Strelna."	

Total of Russian fleet, 183

§ Memory of Azoff.

It is asserted that the light craft in the Black Sea are so built as to be easily convertible into vessels of war. There are, further, a few steamers, corvettes, and transports built in the United States for the Amoor service.

As hereby appears, the Baltic fleet is at present the only

important one in the empire, and forms the nucleus of the Russian navy. The life of a Russian-built ship is ten years, and no more. The American-built vessels ordered for Russia, though infinitely dearer, live at least three times that term. The number of men actually serving in the

children of soldiers were forcibly brought up as scribes, and for service in the line, thus forming a positive caste, from which there was no escape. The military schools provide education for the same class without entailing any such bondage. The military colonies have also been done away with, as a mighty failure, candidly avowed, and the colonists are merged into the population.

Statistics. Russian fleet may be computed at about 38,000; but in point of fact the number is next to illimitable, for it can be augmented at will by drafts from the land force. Regard is certainly, in some degree, had to the provinces from which ships' crews are taken, but little positive good, through different causes, is on the whole derived from this measure; the chief reason being, that Nature herself is against Russia's ever being a great naval power, although she may be, and is, a considerable one. So long as her ports freeze up for half the year, so long will Russia possess only a second-rate navy. The fleet itself is now divided into three divisions,—the blue, white, and red. Cronstadt is the permanent harbour. The national navy flag is a blue cross transversing a white field. The marine is presided over by a minister, assisted by a colleague and an admiralty council. This forms the highest administration of the navy. The other departments are,—the general auditoriat, which is the highest naval court; the auditoriat department is its executive branch; the minister's chancery serves to link the administration with the departments, and transmits orders to them; the inspector's department checks accounts, exercises a general supervision over the navy, and is the managing section. The other divisions are,—the medical, building, ship-building, hydrographic, and commissariat departments; a scientific committee; a committee for the steam-engine service; and besides these, at Nicholaiëff, a hydrographic section, but on a small scale. The ship-timber department is under the minister of crown domains. The hospitals are numerous, well provided, and sufficient, were they only well conducted.

Statement of the Naval Schools under the Ministry of Marine.

	Teachers.	Scholars.
1 Naval cadet college.....	92	631
1 Training naval school for seamen, forming a complete ship's crew	15	553
1 Company of commercial navigation at Cronstadt	12	45
1 Pilots' school at Cronstadt.....	32	355
1 Lower engineer and artillery school at St Petersburg	38	265
1 Black Sea pilots' school at Nicholaiëff.....	22	182
1 Black Sea midshipmen's company.....	13	62
1 Nicholaiëff girls' institute	7	100
1 Training naval school for seamen at Nicholaiëff	18	415
	249	2608

There are now no English officers in the Russian fleet: formerly, under Peter, Catherine, and Alexander, they contributed to make the Russian navy what it now is.

This ministry, answering to the English Home Office, is one of the most important branches of state-administration, embracing internal economy and police superintendence, besides the management of the medical department and of matters relating to the foreign religious denominations. It consists of the following departments:—(1.) General matters and the minister's chancery, in which are concentrated all affairs relating to the persons composing this extensive ministry,—i.e., the nomination of governors, town-chiefs, and so forth; to peasants applying for their emancipation, and to the sectarians. (2.) The executive police, charged with the correspondence relating to the repairing of roads, the prisons, alms-houses, the arrangement of corn-magazines in towns and manors, excepting the lands of the crown peasants, the land-rates and their outlay, the recruitment, the town and land-police, the nobility elections, and generally to events occurring in all parts of the empire, excepting Poland and Finland. The economical department has the management of all matters relating to the financial economy of the towns throughout the empire, again excepting Poland and Finland; to the town-halls, the merchant guilds, arti-

zans' companies, and burghers' corporations. This department has also the management of the committees of public supervision and of their funds. It is here necessary to explain that these committees manage the affairs of the charitable institutions, such as alms-houses, hospitals, &c., in every government; and at the same time form financial credit establishments, which receive sums of money on interest, and lend them out again, the profits on which transactions are made over to the charitable institutions. Under the department of foreign religious denominations are placed all their consistories, schools, and other establishments. This ministry has further a council for very important affairs, and a statistical committee. To the latter are entrusted all matters relating to statistical information, and the reports of governors concerning the state of affairs in all parts of the governments confided to their rule.

The highest instance in medical administration is the Medicine. medical council in St Petersburg, under the minister of the interior. The medical service is divided into three parts: (1.) The civil medical service. For this there exist a medical department, and a separate department for supplying all the medical establishments with drugs and other means of treatment. To this department belong a manufactory of surgical instruments, and five warehouses for medicaments in different towns, and with botanical gardens. In every governmental town there is a medical administration, consisting of three members, an inspector, an operator, and an accoucheur; in every smaller town, a district physician; and in most of them a physician for the town hospital. In both capitals spacious hospitals are founded, either at the expense of the crown or of private individuals and societies. (2.) The army medical service has a medico-chirurgical academy, with a scientific committee. Each army—the northern, southern, and the army of the Caucasus—has a general staff-doctor; and each corps, division, brigade, regiment, and battalion, also each military educational establishment, has its physician. (3.) The naval medical service resembles that of the army. There is a department, and a medical inspector for the Black Sea navy; and each naval division, ship, and sea-port hospital has one or more physicians, as required. The crown and appanage peasants, the manufactories and foundries, are all provided with physicians depending on the respective ministries. At each of the universities, with the exception of St Petersburg, there are faculties for medical students, with professors, anatomical cabinets, and clinical institutions. In lieu of the medical faculty there is in St Petersburg a medico-chirurgical academy. Another such academy has recently been established at Warsaw. Both in the universities and academies there are students of pharmacy. The veterinary schools are three in number; and there are schools for hospital-dressers connected with all the larger hospitals. Every one desirous of obtaining a license to practice in medicine or the veterinary art must pass an examination in one of the universities or academies. The lowest degree is that of *lékar* (medical practitioner); then follows that of doctor of medicine; and the highest is that of doctor of medicine and surgery. As for pharmaceuticals, young persons are engaged by private apothecaries as apprentices for a term of four or five years, and they afterwards pass an examination as pharmaceutical assistants, then as provisors. The highest degree is that of magister of pharmacy: the two latter degrees entitle them to keep an apothecary's shop of their own. There are two principal lunatic asylums; one near St Petersburg, with 240, and the other at Moscow, with about the same number of beds. Besides these, in every governmental town there are hospitals under the inspection of the committee of public supervision, with separate rooms for the reception of the insane. The large asylums are well provided with all the means requisite for the successful treatment of patients. Not so the hospitals

Statistics.

Lunatic
asylums.

Ministry
of the In-
terior.

Statistics.

in the provincial towns, which are totally destitute of every needful appliance. Private asylums, under strict government control, have been established at different times in both capitals, but they never succeeded, and have seldom lasted long. The number of persons attacked with mental derangement having increased of late years to an awful extent, especially during and after the war, the attention of the government was directed to this point; and in the winter of 1857-58, a committee, consisting of medical men and some superior civil officers, under the presidency of Dr Marcus, was formed, in order to deliberate upon the measures to be taken for the future. The opinion returned was, that eight central lunatic asylums were indispensable in Russia, besides those already existing in the greater provincial towns; that these asylums should be provided in the best manner, and considered as practical schools for young medical men in order to prepare them for their future calling,—i.e., physicians-in-chief of lunatic asylums, to be subsequently founded in each governmental town. It is not yet known whether government will confirm the measures proposed. In 1856, no fewer than 3616 cases of mental derangement were medically treated throughout the empire, both in the lunatic asylums and other civil hospitals. Of these, 2078 either recovered, or were dismissed as such, 288 died, and 1150 remained. This most happy result must surprise every one who is conversant with such matters; but it may be partly explained by what is designedly said in the report, that a sixth of the cases were such as are called in England brain-fever of drunkenness, or *delirium tremens*; a disease which in Russia is considered as insanity, and the treatment of which is generally successful. Still the veracity of the report is to be doubted.

Schools under the Ministry of the Interior:—

	Teachers.	Scholars.
19 Orphan-houses, with	Not shown.	1754
6 Foundling-hospitals	...	2410
19 Schools for the children of chan- cery servants	...	953
3 Hospital-assistant's schools	...	199
1 School for servants' children	7	42
Total	7	5358

Canals.

The navigable water-ways of communication, uniting the Baltic and White Seas with the Caspian, form the so-called eastern system. Of these water-ways, the most important is the one uniting the Baltic with the Caspian. It consists of three systems: the Veeshni-Voldtski, the Tèekhvín, and the Maria. (1.) The Veeshni-Voldtski system is formed by the Neva, the Ladoga Canal, the Novgorod or Siever's Canal, the Alsta, Lake Alstino, the Veeshni-Voldtski Canal, the Tvertsa, and the Volga. Its length from Petersburg to Ribinsk is 868 miles. (2.) The Tèekhvín system is formed by the Neva, the Ladoga, and Siasski canals, the Siass, the Tèekhvinka, Lake Eglino, the Tèekhvín Canal, the Voltchina, Lake Sòmino, the Sòmino, Lake Vozensk, the Gorioon, Tchagodòstcha, Mòloga, and Volga. Its length is 561 miles. (3.) The Maria system is formed by the Neva, the Ladoga, Siasski, and Sveer Canals, the Sveer, the Omega Canal, the Veetegra, the Maria Canal, the Kovža, the Bieložer Canal, the Sheksna, and the Volga. Its length is 699 miles. The water-way from the White Sea to the Baltic and Caspian is formed by the Northern Dveenà, the Sookhòna, Lake Kòdbensk, the Porogovètsa, the Duke of Wurtemberg Canal, and the Sheksna; whence it branches off on the right to the Neva, and on the left to the Volga. The Moscow Canal has been dug betwixt the upper courses of the Moskvà and Volga.

The water-way from the Baltic to the Black Sea is formed by three systems: the Berèzina, the Ogheen, and the Dniepro-Boog, and is called the western system. (1.) The Berèzina system is formed by the Western

Dveenà, the Oollah, Lake Leppel, the Essa, and Berèshsta, Lake Berèshsta, the Berèzina Canal, Lake Flavio, and the rivers Sergootch, Berèzina, and Dniepr. (2.) The Ogghinsk system is formed by the Niemen, the Shara, the Ogghin Canal, the Yasselda, Priepetz, and Dniepr. (3.) The Dniepro-Boog system is formed by the Vistula, Nareff Boog, Mookharetz, the Dniepro-Boog Canal, the Peena, Priepetz, and Dniepr. The Vistula and Niemen are also united by the Augustovo Canal betwixt the Netta, which falls into the Bobr, an affluent of the Nareff, and the River Gántcha, which runs into the Niemen. There are many smaller canals in Finland and the Baltic provinces.

Statistics.

Railways already Constructed.

	Miles.
From St Petersburg to Pàvlovsk	16
" " Peterhoff	18
" " Pskoff	170
" " Moscow	398
" Warsaw to Tshenstokhoff on the Prussian frontier, and for 25 versts beyond	182
Total	784

Railroads.

Railways in course of Construction, or Projected.

	Miles.
From Pskoff to Warsaw	462
" Dunaburg to Riga	145
" Moscow to Theodosia	990
" Dunaburg to Liebau (uncertain)	198
Total	1795

Telegraphic Lines already completed.

	Miles.
From St Petersburg to Abo	396
" " Cronstadt	20
" " over Kovno to the Prussian frontier	594
" St Petersburg to Polangen, over Narva, Revel, Pernau, Riga, Liebau	663
" St Petersburg over Dovsk and Keeeff to the Austrian frontier	928
" Dovsk to Simpheropol	530
" Riga to Dunaburg	132
" Nicholaïeff to Odessa	132
Total	3395

Telegraphs.

Many more lines are projected.

Schools under the Chief Direction of the Ways of Communication and Public Works.

	Teachers.	Scholars.
1 Institute of the Roads' Engineer Corps	50	270
1 Master-builders' school	32	164
Total	82	434

The national debt of Russia amounted on the 1st January Finance. 1859 to a sum of L.140,000,000, viz:—

(a.) Dutch loan at 5 per cent	L.3,752,375
(b.) Foreign loans, at 5, 4½, and 4 per cent, without a term	53,119,622
(c.) Interior loans, to credit institutions, at 4 per cent.	68,830,000
(d.) Exchequer bills, at 4½ per cent.	14,500,000

Total

L.140,201,997

The 4 per cent. consolidated bill issue, announced on the 23d March 1859, is not a new loan, but only a consolidation of deposits, or substitution of one kind of value for another. A part object is to reform the vicious system which prevails at the banks. The amount, intended to reach 125 millions sterling, can be liquidated at the end of 56 years. Should the present measure succeed, the old order of things may be looked upon as superseded, and special mention of the banking returns is therefore superfluous, because the old system is now antiquated. The curious on this subject, as well as on the paper system of the country, would do best to consult at length Lamanski's very able works on Russian finance.

Statistics.

Statistics.

The national income is presumed to be from 36 to 39 millions sterling. The expenditure amounts to the same sum, and for the last twenty years has generally exceeded it. This order of things gave birth to continual loans of the public banks, and to an unexampled emission of paper money, which amounted on the 1st January 1858 to a sum of more than 115 millions sterling, having been increased during the late war, and up to 1857, by more than 62 millions sterling. Since that year no fresh issues have been made. The amount of bullion formed, at the same period, a sum of 18 millions sterling, both in gold and silver. The exchange of the so-called credit bills, notwithstanding the large amount of bullion, takes place not, or only exceptionally, from a fear on the part of the government that a large portion of it, were the bills payable at call, would be exported.

The chief sources of revenue are:—1. The monopol-right of selling brandy. This right is sold for a term of four years by auction, which takes place at St Petersburg, where the prices for every province are settled separately. This monopol-right has been sold for the next four years, 1859–63, for an annual revenue of 18 millions sterling. 2. The capitation-tax, paid by every person, of all ages, of the male population, and by all classes except the nobility, clergy, and merchants inscribed in guilds, or by special classes. This personal tax is laid on the male population found in life at the period of the census, and its amount is never changed until a new census is taken. Children born after the census pay no taxes. The survivors pay for the dead. The amount of this tax is L.8,000,000. 3. The import duties give a sum of L.4,000,000. 4. Miscellaneous

unfixed taxes, L.3,270,000,—viz., (a.) Patents for trade, L.590,000; passes and road passes, L.310,000; (b.) Stamp-duties, L.1,070,090; (c.) Court and chancery duties, L.680,000; and (d.) Post revenue, L.620,000. 5. The salt taxes, and mineral taxes on gold and other mineral productions, 4½ millions sterling. The civil list, or court expenditure, is supposed to amount to L.1,700,000, towards which the peasants of the appanages and crown domains contribute about L.600,000.

The trading ports on the German coast of the Baltic are St Petersburg, with its port of Cronstadt, Narva, Revel, Arensburg, Pernau, Riga, Windau, and Liebau. Of these ports, the first two are frozen up for six months; but the latter are much longer open to navigation, according to the season, generally for ten months, more or less. On the Finnish coast, Wyburg, Lovisa, Helsingfors, Abo, Nyvstad, New Carleby, and Torneo; on the Arctic Ocean, Kola; on the White Sea, Arkhangel and Onega; Petro Pavlovsk, on the Kamtchatkan Sea; and on the North Pacific, Sitkha, the capital of the possessions of the American Company; on the Sea of Azoff, Taganrog, Mariúpol, Kertch, Berdiansk; on the Black Sea, Odessa, Theodosia; on the Caspian, Astrakhan, Bakoo, Derbent. The port of Nicholaiëff, at the mouth of the Amoor, on the Gulf of Tartary, has just commenced its prospectively splendid career. The chief articles of export are corn and grain, hemp and linseed; also hemp and linseed oils, tallow, hemp, flax, iron, copper, timber, potashes, bristles, furs, hides, and isinglass. There are no free ports at present in Russia except Nicholaiëff, on the Amoor. Odessa was, but is so no more.

A Statement of the Quantities and Value of Merchandise imported into Russia from Countries in Europe, and from America, in the year 1857.

Description.	By the Tariff of 1857.		Description.	By the Tariff of 1857.	
	Quantities.	Value. ¹		Quantities.	Value.
Merchandise imported paying no duty....	...	L.1,538,289	Chemical materials and produce (cwt.)	196,417	L.248,326
Merchandise on which one and the same duty is levied at 20 cop. (=7½d.) per pood (36 lb.)..... (cwt.)	38,374	156,172	Cotton..... "	547,781	1,972,363
Merchandise paying different duties:—			Cotton twist..... "	74,415	754,786
Provisions and victuals (colonial merchandise:—			Raw and spun wool, and fine hair..... (cwt.)	16,756	308,914
Coffee, raw sugar, pepper, &c. (cwt.)	365,576	1,008,093	Raw and spun silk..... "	1,046	143,193
Wines, liquors, porter, beer, mead, &c..... (cwt.)	159,064		Oils. { Olive, hempseed, linseed, &c..... (cwt.)	140,525	451,369
Kirschwasser.....	9,675		Turnip, cocoa, palm oils, &c. (cwt.)	...	...
Champagne and other wines..... } imported in bottles {	736,385	881,668	Tallow, fat, blubber and grease (cwt.)	8,079	23,978
Mead, porter, beer.....	222,153		Chalk..... "	15,243	6,596
Vegetables and fruits..... (cwt.)	149,061		Fuller's thistles, teasel..... "	2,651	12,145
Oranges, lemons, &c..... (No.)	15,629,606	415,500	Other different raw materials, such as gum-arabic, gamboge, ink, soda, arsenic, incense, timber for joiners' and turners' work, &c.	...	181,454
Cherries, pears, apples, &c.... (casks)	...	...	Total.....	...	L.5,497,899
Fish and herrings..... (cwt.)	7,744		Manufactory and other produce:—		
Herrings..... (casks)	147,944	312,010	Gum-elastic and gutta percha (cwt.)	1,307	24,765
Cattle..... (heads)	...	...	Wooden articles, playthings, furniture, &c..... (cwt.)	4,727	32,805
Grain,—wheat, rye, barley, groats, &c. (cwt.)	33,463	62,764	Instruments,—musical, mathematical, astronomical, &c. (cwt.)	407	
Do. do. (qrs.)	1,239		Do. do. (No.)	5,763	50,458
Salt..... (cwt.)	1,447,082	357,317	Leather produce..... (cwt.)	487	37,053
Olive oil..... "	176	607	Metal articles..... "	69,631	362,824
Tobacco..... "	30,842	343,992	Glass and crystals..... "	4,231	
Various provisions and victuals, such as cheese, mustard, vinegar, oysters, mushrooms, treacle, sweetmeats, &c.	...	93,819	Bottles..... (No.)	4,667	57,651
Total.....	...	L.5,170,231	Plate-glass and mirrors..... "	10,561	
Raw materials and other articles for manufacturing and agricultural produce:—			Woven produce of cotton, silk, wool, hemp, &c. (cwt.)	29,458	
Dyestuffs and colours..... (cwt.)	316,466	1,158,765	Coarse linen bags..... (No.)	10,552	1,650,283
Metals..... "	136,654	205,357	Turkish fez caps..... "	5,978	
			Turkish cotton and silk stuffs... (yds.)	106,753	

¹ In translating Russian values into English, the L.1 sterling has been calculated throughout at 6 roubles 40 copecks, its average equivalent; the pood, or standard of weight, at 36—113 lb. avoirdupois; and the arschene, or unit of length, at 2.333 feet. The immense labour which attends the reduction of foreign values into corresponding English might be entirely spared to the compiler of statistics by the adoption of a universal system of decimal measures, weights, and coins.

RUSSIA.

Statistics.	Description.	Quantities.	Value.	Description.	Quantities.	Value.	Statistics.
	Crockery and porcelain articles (cwt.)	8,152	L.47,172	Machines and models	...	...	
	Clocks and clockwork..... (No.)	129	123,235	Other different manufactory produce, such as cosmetics, haberdashery, artificial flowers, glass beads, caps, soap, &c.	...	L.178,111	
	Paper..... (cwt.)	3,402	41,037	Total.....	...	L.2,685,687	
	Cork..... (No.)	1,852	13,458				
	Marble, &c.....	2,105	10,570				
	Hats..... (No.)	3	4,240	Various merchandise:—			
	Do..... (No.)	6,794	32,047	Apothecary's goods, furs, horses, &c.	...	295,262	
	Ready-made clothes and linen	...	19,973	Grand total.....	...	L.13,649,079	
	Equipages and their parts (cwt.)	115					
	Do. do..... (No.)	385					

A Statement of the Quantities and Value of Merchandise Exported from Russia to Countries in Europe, and to America, in the year 1857.

Description.	Quantities.	Value.	Description.	Quantities.	Value.
Provisions and Victuals:—			Oils,—hempseed, linseed, and sunflower..... (cwt.)	118,804	L.222,400
Grain, wheat, rye, barley, groats, &c..... (cwt.)	5,696	L.8,008,796	Raw silk.....	1,689	28,572
Do. do. do. (qrs.)	5,659,510		Raw wool.....	364,614	2,063,650
Butter..... (cwt.)	60,135	188,294	Horses' tails.....	4,512	30,616
Meat.....	16,846	21,906	Horse-manes.....	11,746	31,460
Brandy, wines &c.....	21,932		Bristles.....	26,997	366,814
Do. do. (gallons)	351,325		Isinglass.....	13,078	108,867
Do. do. (bottles)	34,066	59,124	Other different raw materials,—such as drugs, oleine, stearine, colours, hair, lime, &c.....	...	157,927
Porter, beer, and mead..... (casks)	23		Total.....	...	L.14,182,012
Do. do. do. (gallons)	8				
Poultry..... (No.)	22,653	1,911	Manufacturing produce:—		
Caviar..... (cwt.)	26,675	73,134	Cotton, flax, and hemp produce (pieces)	45,712	152,892
Fish.....	...	8,352	Do. do. do. (yards)	3,120,296	
Cheese..... (cwt.)	6,320	6,783	Silk produce.....	...	429
Cattle..... (head)	108,768	197,262	Woollen produce.....	...	3,216
Tobacco, cigars, papiroses, &c.....	...	168,411	Cloth..... (yards)	8,139	1,375
Maccaroni..... (cwt.)	6,277	8,103	Leather produce.....	...	2,273
Anise.....	4,203	5,938	Metal articles.....	...	40,739
Various provisions and victuals,—such as eggs, pepper, fruits, &c....	...	9,256	Ropes..... (cwt.)	160,181	179,610
Total.....	...	L.8,757,270	Ready-made clothes and linen.....	...	7,874
			Candles..... (cwt.)	13,524	66,697
Raw materials for manufacturing, agricultural, and other purposes:—			Other different manufactory produce,—such as instruments, paper, glass-ware, soap, harness, equipages, &c.....	...	21,513
Leather and hides..... (cwt.)	193,249	803,887	Total.....	...	L.476,618
Wax.....	2,169	11,753			
Bones.....	324,553	96,044	Various merchandise:—		
Flax.....	1,789,792	2,594,447	Apothecary's goods, furs, mats, feathers, charcoal, bricks, horses, straw, hay, &c.....	...	555,952
Hemp.....	1,037,945	1,381,250	Grand total.....	...	L.23,971,852
Wooden ware.....	...	932,986			
Metals.....	279,764	473,269			
Potash.....	196,552	285,522			
Pitch..... (casks)	115,945	57,959			
Seeds..... (qrs.)	1,102,966	2,300,581			
Tallow, fat, blubber, and grease, (cwt.)	1,151,425	2,234,008			

Statement of the Quantities and Value of Merchandise Imported into Russia from Countries in Asia in the year 1857.

Description.	Quantities.	Value.	Description.	Quantities.	Value.
Provisions and victuals:—			Cattle.....	...	L.395,875
Tea..... (cwt.)	138,834	L.925,742	Tobacco.....	...	25,251
Sugar (raw).....	25,397	97,593	Other different provisions and victuals,—such as cheese, anchovies, pilchards, nuts, vegetables, cloves, cinnamon, cardamon, sweetmeats, &c.....	...	17,210
Coffee.....	572	2,179	Total.....	...	L.1,640,234
Wines, liquors, champagne, &c. ,	75				
Do. do. do. (bottles)	15,387				
Do. do. do. (gallons)	879	7,350			
Arrack, rum, and brandy..... (cwt.)	450				
Porter, beer, and mead..... (bottles)	14,900				
Fruits, oranges, lemons, cherries, grapes, dry and marinated fruits, &c.....	...	101,791	Raw materials and other things for manufacturing, agricultural, and other purposes:—		
Raw mead.....	...	3,087	Cotton.....	...	130,078
Treacle.....	...	1,795	Cotton twist..... (cwt.)	5,688	31,992
Pepper..... (cwt.)	109	1,796	Raw and spun silk.....	...	79,159
Olive oil.....	...	3,653	Raw and spun wool.....	...	15,426
Butter.....	...	5,086	Madder..... (cwt.)	8,931	17,075
Grain,—wheat, rye, barley, groats, &c.....	...	30,804	Cochineal.....	116	2,276
Salt..... (cwt.)	184,956	8,878	Indigo.....	56	1,935
Salted fish.....	11,705	12,144	Colours.....	...	6,975

Statistics.	Description.	Quantities.	Value.	Description.	Quantities.	Value.	Statistics.
	Precious woods for joiners' and turners' work, &c.....	...	L.2,545	musical strings, wire, files, boxes, steel-pens, needles, knives and forks, &c..... (cwt.)	246	L.3,810	
	Leather made up.....	...	12,902	Clothes.....	...	1,498	
	Tallow.....	...	14,773	Glass, plate-glass, and mirrors (cwt.)	141	1,236	
	Other different raw materials,—such as isinglass, oils, metals, tar, pitch, sal-ammoniac, naphtha, ink, &c.....	...	146,329	Do. do. do. (No.)	15	87,880	
	Total.....	...	L.461,465	Silk produce.....	...	38,109	
	Manufactory and other produce:—			Woollen produce.....	...		
	Cotton produce.....(cwt.)	3,707	401,398	Other different manufactory produce,—such as haberdashery produce, artificial flowers, watches, cambrics, linens, paper, soap, machines, marble produce, &c.....	...	12,976	
	Wooden produce, playthings, furniture, &c.....	...	1,977	Total.....	...	L.564,145	
	Instruments, mathematical, physical, musical, &c.....(cwt.)	4	2,010	Various merchandise,—apothecary goods, books, and pictures, stones, skins and hides, incense, horses, &c.	...	357,154	
	Do. do. do. (No.)	237		Grand total.....	...	L.3,022,998	
	Leather produce,—boots and shoes, gloves, harness, &c.....	...	13,251				
	Metal produce,—figures, bas-reliefs,						

A Statement of the Quantities and Value of Merchandise Exported from Russia to Countries in Asia, in the year 1857.

Description.	Quantities.	Value.	Description.	Quantities.	Value.
Provision and victuals:—			Metals..... (cwt.)	92,155	L.61,762
Grain,—wheat, rye, barley, groats, &c..... (cwt.)	2,447	L.51,982	Horns and hoofs..... " 13	200,480	8,985
Do. do. do. (qrs.)	133,935		Do. do. do. (No.)		
Brandy, wines, &c. (gallons)	5,548	2,794	Wooden ware.....	...	5,032
Do. do. do. (bottles)	8,777		Other different raw materials, such as wax, oils, hemp, tar, pitch, seeds, &c.....	...	3,796
Porter and beer..... " 332	332	2,766	Total.....	...	L.428,784
Tobacco, cigars, papiroses, &c. (cwt.)	3,373		Manufactory and other produce:—		
Do. do. do. (No.)	172,155	14,804	Woven produce of cotton, silk, wool, hemp, &c.....	...	576,740
Sugar..... (cwt.)	2,941		Metal produce.....	...	255,413
Salt..... " 24,484	24,484	1,432	Cloth..... (yards)	671,213	245,940
Caviar..... " 380	380	1,851	Leather produce.....	...	2,188
Fruits and sweetmeats.....	...	1,355	Crockery.....	...	8,949
Cattle..... (head)	16,013	14,352	Paper..... (reams)	38,960	7,308
Meat..... (cwt.)	5,079	869	Wooden produce.....	...	2,667
Various provisions and victuals, such as fish, poultry, eggs, butter, cheese, mushrooms, &c.....	...	3,304	Plate-glass and mirrors.....	...	1,775
Total.....	...	L.95,509	Other different manufacturing produce,—such as boxes, candles, soap, ropes, clothes, &c.....	...	11,830
Raw materials for manufacturing, agricultural, and other purposes:—			Total.....	...	L.1,112,810
Cotton..... (cwt.)	678	1,311	Various merchandise,—apothecary goods, furs, mats, camels, horses, &c.....	...	229,382
Cotton-twist..... " 3,340	3,340	25,681	Grand total.....	...	L.1,866,485
Silk..... " 3,422	3,422	129,452			
Wool and fine hair..... " 5,370	5,370	5,806			
Drugs..... " 27,064	27,064	9,400			
Colours.....	...	15,598			
Leather, hides, yoofts..... (cwt.)	6,162	161,961			
Do. do. do. (No.)	172,518				

A Statement of the Quantities and Value of Merchandise exported from Russia to Finland in the year 1857.

Description.	Quantities.	Value.	Description.	Quantities.	Value.
Provisions and victuals:—			Leather and hides.....(cwt.)	2,100	L.10,598
Grain, wheat, rye, barley, groats, &c. (cwt.)	107	L.496,046	Oils,—hempseed, linseed..... " 3,628	3,628	5,748
Do. do. do. (qrs.)	372,951		Horse-manes..... " 407	407	1,581
Tobacco, cigars, papiroses, &c. (cwt.)	12,568	21,123	Tallow..... " 2,646	2,646	4,420
Do. do. do. (No.)	633,600		Other different articles, such as wooden ware, potash, isinglass, wax, whalebones, colours, &c.....	...	11,856
Meat.....(cwt.)	1,400	2,239	Total.....	...	L.49,910
Meat and treacle..... " 656	656	1,767	Merchandise made up:—		
Vegetables.....	...	2,071	Ropes and cables.....(cwt.)	13,648	20,266
Chicory.....(cwt.)	1,516	1,538	Wooden produce.....	...	4,496
Other different provisions, such as vinegar, fish, cheese, eggs, fruits, sweetmeats, &c.....	...	4,872	Leather produce.....	...	2,445
Total.....	...	L.529,656	Cotton, flax, hemp, and woollen produce.....	...	13,904
Merchandise for manufacturing and handicraft purposes:—			Cloth.....(yards)	27,622	6,256
Metals.....(cwt.)	6,951	7,830	Metal produce.....(cwt.)	5,340	6,673
Drugs..... " 1,757	1,757	2,762	Candles.....	...	15,764
Hemp..... " 2,068	2,068	3,207	Soap.....(cwt.)	2,986	4,507
Cotton..... " 661	661	1,908	Boots and shoes.....	...	5,522
			Caps.....(No.)	17,794	2,637

RUSSIA.

Statistics.

Description.	Quantities.	Value.
Other different articles, such as machines and models, musical instruments, ready-made clothes and linen, paper, equipages, &c.	...	L.7,292
Total.....	...	L.89,762

Description.	Quantities.	Value.
Various merchandise,—furs, apothecary goods, stones, seeds, and plants, &c.	...	L.6,064
Grand total.....	...	L.675,392

Statistics.

A Statement of the Quantities and Value of Merchandise imported into Russia from Finland in the year 1857.

Description.	Quantities.	Value.
Provisions and victuals:—		
Grain, rye, &c.....	...	L.1,221
Potatoes.....(qrs.)	1,957	174
Butter.....(cwt.)	1,359	1,994
Fish.....	1,168	3,845
Smoked, dried, and salted meat.....	...	566
Different provisions.....	...	53
Total.....	...	L.7,853

Description.	Quantities.	Value.
Different articles,—such as leather, bones, wooden ware, &c.....	...	L.404
Total.....	...	L.44,998
Merchandise made up:—		
Cotton, flax, and woollen produce....	...	23,278
Glass.....	...	1,640
Paper.....	...	2,965
Metal produce.....	...	1,264
Machines.....	...	804
Different produce.....	...	96
Total.....	...	L.30,047
Various merchandise, such as furs, books, stones, &c.....	...	5,223
Grand total.....	...	L.88,121

A Statement of the Value of Merchandise imported into, and exported from, Russia, distinguishing the Trade with each Country, in the year 1857.

Countries.	Value of Imports.	Value of Exports.
European and American trade,—		
Sweden.....	L.40,637	L.392,422
Norway.....	215,751	102,429
Prussia.....	4,040,714	2,780,699
Denmark.....	188,687	795,032
The Sound.....	...	106,231
The Hanse towns.....	1,859,212	713,800
Holland.....	1,506,608	1,546,597
Belgium.....	211,841	365,267
Great Britain.....	6,075,648	11,292,877
France.....	1,422,474	2,230,602
Portugal.....	69,622	97,271
Spain.....	311,627	51,735
Sardinia.....	71,427	350,217
Tuscany.....	22,779	244,508
The Papal dominions.....	...	58
The kingdom of Naples.....	607,944	12,250
Austria.....	1,115,344	1,160,810
The Ionian Islands.....	26,041	4,850
Greece.....	39,509	23,757

Countries.	Value of Imports.	Value of Exports.
South America and the West Indies	L.34,387	...
Turkey.....	1,325,460	L.1,307,576
The North American United States..	1,266,847	353,638
Other countries.....	137,367	39,233
Total.....	L.20,589,926	L.23,971,859
Asiatic trade,—		
Asiatic Turkey.....	75,804	191,956
Persia.....	621,540	136,887
The Keergheez steppes.....	562,209	401,067
Kheeva.....	43,578	3,155
Bookharia.....	213,720	84,283
Tashkent.....	118,907	94,601
China.....	1,178,511	954,547
Other countries.....	208,729	...
Total.....	L.3,022,998	L.1,866,495
Grand total.....	L.23,612,924	L.25,838,355

A Statement of the Import and Export of Gold and Silver from and into Russia in the years 1847 and 1857, in Russian and Foreign Coin and Bars, converted into British sterling.

1857.	GOLD.		SILVER.		1847.	GOLD.		SILVER.	
	Bars.	Coin.	Bars.	Coin.		Bars.	Coin.	Bars.	Coin.
IMPORT:—		L.		L.	IMPORT:—		L.		L.
Foreign } 159,032 { 387,226 }					Foreign } 222,000 { 78,372 }				
Russian } { 186,326 }			1,466,845 { 377,441 }		Russian } { 1,161,966 }		6,426,976 { 413,135 }		
EXPORT:—					EXPORT:—				
Foreign } ... { 222,414 }			... { 234,902 }		Foreign } 1,396 { 47,437 }		2,993 { 2,876 }		
Russian } { 3,239,805 }			... { 1,326 }		Russian } { 1,679,395 }		{ 298,995 }		

*Gold and Silver in Coin and Bars.**Imported.*

	1847.	1857.
European trade.....	L.3,226,080	L.1,340,433
Asiatic trade.....	18,911	30,773

Exported.

	1847.	1857.
European trade.....	L.1,533,560	L.2,800,757
Asiatic trade.....	478,357	897,691

Imported through the Custom-house at

St Petersburg, 1858 L.647,743

Exported 3,565,136

The tables of foreign trade show that from 1843 to 1857 the value of importations, as well as of exportations, has constantly augmented, both for Europe and Asia; and that in the European trade, excepting the years 1851, 1854, and 1855, the Russian exports have constantly surpassed the imports.

Statistics.

Trade with Europe.

	Importations.	Exportations.
1843.....	L.9,596,490	L.11,126,482
1844.....	10,111,541	12,580,440
1845.....	10,525,962	12,562,876
1846.....	11,003,024	13,811,401
1847.....	11,313,766	20,955,063
1848.....	11,788,278	11,865,262
1849.....	12,553,850	13,028,281
1850.....	11,735,538	12,989,679
1851.....	13,602,138	13,136,500
1852.....	12,987,245	15,632,929
1853.....	13,941,375	21,469,787
1854.....	8,503,936	8,362,755
1855.....	8,779,576	4,300,708
1856.....	16,405,535	22,933,108
1857.....	20,588,683	23,971,870
Total.....	L.183,436,937	L.218,727,141

In 1857 the amount of confiscated merchandise sold was L.118,183; and as contraband trade could not subsist if more than 20 per cent. of fraudulently-imported merchandise were to be confiscated, it must be supposed that at least L.600,000 worth was introduced into the country. The sole means of preventing contraband trade is to lower the tariff.

Trade with Asia.

	Importations.	Exportations.
1843.....	L.1,819,537	L.1,283,459
1844.....	1,898,175	1,518,072
1845.....	2,166,938	1,585,615
1846.....	2,273,078	1,638,499
1847.....	2,280,221	1,646,517
1848.....	2,108,979	1,350,682
1849.....	2,157,317	1,409,249
1850.....	2,460,067	1,753,586
1851.....	2,458,568	1,740,670
1852.....	2,601,476	1,941,232
1853.....	1,874,791	1,245,086
1854.....	2,437,785	1,548,127
1855.....	2,539,745	1,616,820
1856.....	2,656,592	1,655,294
1857.....	3,022,999	1,866,499
Total.....	L.34,756,268	L.23,799,407

This table shows that, as regards the trade with Asia, the value of the exports has constantly been inferior to that of the imports, and that for these fifteen years the difference amounts to a total of L.10,956,961. This, however, is more than compensated by the larger amount of exportations over importations in the European trade, the former exceeding the latter by L.47,290,240; so that the total difference in favour of Russia is L.36,333,243, on an amount of capital turned over of L.452,739,853, of which sum L.208,213,305 go to the account of importations, and L.244,526,548 of exportations.

Peter would perhaps have done better had he founded his capital at Windau or Liebau, for the sake of more open water; but political considerations no doubt prevented him, as all his designs show foresight enough. Nearly the same result will now be attained by the railroads in course of construction.

The first company in Russia was established in 1790. The number of existing companies now amounts to 90. The original capital of all these companies amounts to about L.69,669,016, in which sum the chief company of Russian railroads figures for L.48,437,500.

The number of Russian merchant-vessels is supposed to be about 2000, including coasters, small craft, and steamers; but there are as yet no reliable returns; and until these be issued by the proper authorities, it would be entirely vain to aim at anything like a correct estimate of the Russian shipping.

Number of Russian and Foreign Vessels entered and cleared at the Northern and Southern Ports of Russia in 1857. Statistics.

Ports.	Entered.			Cleared.		
	Total.	Russian	English.	Total.	Russian	English.
Northern ports....	5459	375	} 1989	5814	380	} 2099
Southern ports....	3379	405		3272	416	
Total.....	8838	780	1989	9086	796	2099

It is now only in consequence of Count Renaud de Chevancy's recent invention of an international marine telegraph, indicated by numbers, that Russian vessels are at last being counted, measured, and formally tabulated. The following returns are authentic:—

Grand Total of the Russian Commercial Fleet at 1st January 1858.

	Sea-Going.		Coasters.		Total.	
	Vessels.	Lasts.	Vessels.	Lasts.	Vessels.	Lasts.
In the Black Sea	25	5,070	160	9,580	185	14,650
„ Sea of Azoff	13	1,330	291	10,670	304	12,000
„ White Sea.....	128	4,781½	212	4,922½	340	9,704
The colonial fleet (vessels of the Russo-American Company) }	13	2,368	...	...	13	2,368
On the German side of the Baltic	107	9,451	150	4,107	257	13,558
	286	23,000½	813	29,279½	1,099	52,280½
¹ Or, 104,560 tons.						

In this total, for want of data, are not included the vessels belonging to the port of St Petersburg, to Finland, and to the Caspian Sea. The total number of registered sailors was only 5000, viz.:—In the Black and Azoff seas, 2300; in the White, 1620; in the employ of the Russo-American Company, about 300; in the Baltic, 1000. This number of sailors is most likely much below the mark. In the Baltic there were 30 foreign masters, mates, and pilots, besides 112 foreign sailors registered; but the legal proportion of foreign to native sailors (1 to 3) is never observed, the law obeyed being solely that of necessity. The causes of the little progress made in ship-holding affairs are insufficient education, vexatious over-government, the stupid passport system, the want of sea-insurance companies, and generally the manifold reasons which impede the development of the foreign trade. Compared with every other branch of national economy, the shipping interest may be said to have progressed in a ratio inverse to them. It will be observed from the above table, that the number of sea-going vessels is exceeded by the number of coasters in the proportion of nearly three to one; while the tonnage or lastage of the two are pretty nearly equal. But one can scarcely venture with safety upon any remarks regarding the state of the Russian shipping, while the exact returns remain undeclared for St Petersburg, Finland, and the Caspian Sea.

The following return of figures will best show the state of the manufactures, internal trade, and productiveness of the empire. Productive Industry.

Amount of Produce for 1856, in the Manufactories and Foundries of the Russian Empire.

In the European government and lands.....	L.34,715,716
In the lieutenancy of the Caucasus.....	86,059
In the governments and provinces of Siberia	250,249

Total.....L.35,052,024

Statistics.

Statement of the Quantity of Metals, Coals, Vitriol, Saltpetre, and Salt, obtained from the Government and Private Foundries in Russia during the year 1857.

Statistics.

Foundries and Mines.	Gold.			Platina.			Silver.			Copper.	Lead.	Cast Iron.	Iron.	Steel.	Different Metallic Produce.	Anchors.	Scythens.
	Lb.	Oz.	Dwt.	Lb.	Oz.	Dwt.	Lb.	Oz.	Dwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Pieces.
Government foundries ...	5,779	9	2	15	4	11	16	10	18	19,038	...	352,043	243,887	14,300	4,987	4943	3,936
Private foundries	65,450	9	12	328	10	2	412	...	...	98,788	4992	3,853,256	3,291,655	24,823	812,248	2101	35,780
Total.....	71,230	6	14	344	2	13	428	10	18	117,826	4992	4,205,299	3,535,542	39,123	817,235	7044	39,716

The government mines produced coals..... 131,057 cwt.
The private mines produced vitriol and saltpetre 12,302 "

Common Salt.

Government salt-mines 6,986,217 cwt.
Private salt-mines 2,377,439 "

Total..... 9,363,656 "

The trading community consisted in 1857 of:—

Merchants of the 1st guild..... 963
" 2d " 2,067
" 3d " 49,372
Foreign guests..... 34

Number of peasants with trading certificates:—

1st class 4
2d " 34
3d " 2409
4th " 4203

The amount of capital declared was, in 1856—

Of the 1st guild L.18,000,000
2d " 18,180,000
3d " 47,820,000

Total..... L.84,000,000

Russian American Company.—In 1857 its trading operations stood as follows:—

Income from the sale of furs and teas L.60,912
" colonial produce and other articles, 55,676

Total..... L.116,588

Expenses of management L.28,189
For insurance of goods, carriage of furs and teas, duties, &c..... 65,140

Total..... L.93,329

A dividend was paid of 18 roubles per share.

Paid into the reserve capital..... L.2105
Paid into the poor fund..... 105

A Statement of the Total Quantities of Gold, Platina, and Silver extracted from the Government and Private Mines in Russia during the year 1855:—

Foundries and Mines.	In the Year 1855.								
	Gold.			Platina.			Silver.		
	Lb.	Oz.	Dwt.	Lb.	Oz.	Lb.	Oz.	Dwt.	
<i>Government Mines:—</i>									
1. Yekatherinburg	1,364	9	16	...	...	...	...	...	
2. Bogoslovsk.....	1,805	9	15	...	...	...	...	...	
3. Goroblagodatsk.....	324	6	2	...	...	...	...	...	
4. Zlatoustovsk	2,155	3	18	...	...	...	...	...	
5. Alaghheersk	...	...	...	...	...	618	1	8	
6. Altai	...	...	...	...	...	...	...	...	
7. Nertchinsk.....	...	...	...	...	...	...	...	...	
Total	5,650	5	11	...	...	618	1	8	
<i>Private Mines.....</i>	59,533	9	16	42	6	...	...	...	
Grand total.....	65,184	3	7	42	6	618	1	8	

A Statement of the Total Quantities of Gold, Platina, and Silver extracted from the Government and Private Mines in Russia during the years 1856 and 1857:—

Foundries and Mines.	In the Year 1856.							
	Gold.			Platina.			Silver.	
	Lb.	Oz.	Dwt.	Lb.	Oz.	Dwt.	Lb.	Oz.
<i>Government Mines:—</i>								
1. Yekatherinburg.....	1,465	3	2	...	...	...	...	...
2. Bogoslovsk	1,769	4	18	...	...	...	...	...
3. Goroblagodatsk	390	2	16	...	...	...	...	...
4. Zlatoustovsk	2,191	3	12	...	...	...	...	...
5. Alaghheersk	...	...	...	...	...	...	228	11
6. Altai	3,505	1	12	...	...	...	46,763	4
7. Nertchinsk.....	2,878	6	4	...	...	...	1,356	11
Total.....	12,199	9	4	...	...	...	48,349	2
<i>Private Mines.....</i>	60,267	1	11	62	11	2	...	...
Grand total.....	72,466	10	15	62	11	2	48,349	2

Foundries and Mines.	In the Year 1857.								
	Gold.			Platina.			Silver.		
	Lb.	Oz.	Dwt.	Lb.	Oz.	Dwt.	Lb.	Oz.	Dwt.
<i>Government Mines:—</i>									
1. Yekatherinburg.....	1,493	7	19	...	...	...	...	...	...
2. Bogoslovsk.....	1,954	8	8	...	...	...	...	...	...
3. Goroblagodatsk	272	3	...	7	7	8	...	...	...
4. Zlatoustovsk.....	2,087	1	6	...	...	...	...	...	...
5. Alaghheersk	...	...	...	...	...	...	...	...	...
6. Altai	...	...	...	...	...	...	...	...	...
7. Nertchinsk	...	...	...	...	...	...	7	7	5
Total	5,807	8	13	7	7	8	7	7	5
<i>Private Mines.....</i>	65,450	4	6	323	7	9	412	1	2
Grand total.....	71,258	...	19	336	2	17	419	8	7

The value of cotton-twist produced in 1858 was at least L.10,937,500, and it continues to increase rapidly. At present there are 480 mills, with 1,500,000 spindles. The linen manufactures, however, are rather declining. The woollen productions are estimated at L.7,031,250, and there are 640 cloth manufactories. The flax and hemp produce amounts to L.9,375,000, with 290 manufactories. Silk produce, L.937,500 (this return is obviously exaggerated); manufactories, 250. Tanneries and leather manufactories, 2060; produce, L.1,562,500. Paper manufactories, 180; produce, L.781,255. Distilleries, 800; brandy produce, 46,800,000 gallons; value, L.2,560,000. Licensed public-houses, 1899. At present, in consequence of the temperance movement, mostly beer and mead are drank there.

It should be observed that, not as in France, where from vanity the manufacturers exaggerate the amount of their produce, the Russians generally return figures below the actual amount, perhaps from a fear of additional imposts.

Trade returns at Neezne-Novgorod fair:—In 1857, of L.13,435,050 value brought, there was sold L.12,247,100; in 1858, of L.44,838,180 brought, was sold L.13,719,190.

Fair of Irbit (in Western Siberia):—Value of merchandise sold in 1859:—

Statistics.	Russian.....	L.3,663,700
	European and colonial produce.....	2,478,400
	Chinese.....	465,100
	Bokhara.....	50,000
	Horses.....	3,400
	Total.....	L.6,660,600

In the government of Keeyeff a common plant, called the *Asclepias syriaca*, is being cultivated for the cotton-like tissue it produces.

Tcheffkin's work (written in 1851) gives the following statistics of the mining produce:—The whole quantity of pure gold won from sands and mines since the middle of the last century up to 1850, was 869,630 lb. troy. It is in the Asiatic governments of Perm, Orenburg, Tomsk, Yeniseysk, Irkootsk, and the Keergheez lands, that the gold is mostly found. In the government of Orenburg at present, in 1859, so many as 10,000 workmen are employed in this branch of industry, and the yearly produce for private account is 4370 lb. troy of the metal.

Lead and Silver Ore.—The lead produced barely suffices for the extraction of the silver required; in aid of which purpose 402 tons of foreign lead was not long ago sent up on trial to the Altai foundries, at a cost-price of L.15, 10s., and a further charge for carriage of L.10, 8s. per ton. Improvements are taking place in the working of these mines, and the veins of silver-lead ore lately discovered promise well for the future. The ore at Nertchinsk contained 9·7 oz. of silver, and about 168 lb. of lead in the ton.

Up to 1850 the whole quantity of pure silver won from the mines in Russia, chiefly in the Altai and Nertchinsk foundries, was 4,704,418 lb. troy.

Between 1826 and 1850, in the course of 24 years, the value of the gold and silver won was.....	L.41,478,750
Imported from abroad in bars and foreign coins.....	7,072,800
Exported.....	27,229,690
Deducting this export there remained, won and imported.....	61,635,640
Of which were delivered to the Mint.....	59,104,400
Coined.....	L.48,258,400
Cast into medals.....	240,300
Re-delivered in bars.....	6,097,300
	54,596,000

The difference between the in- and out-going amounts is accounted for by the circumstance of the Mint retaining a considerable portion of the metal which it receives, either for re-coinage or for delivery in the next year.

The whole amount of Russian bullion up to 1850 may be taken at:—

In gold.....	L.26,625,000
In silver.....	20,781,000
Total.....	L.47,406,000

And adding hereto the amount coined in 1850, at the average rate of the five years preceding, say L.3,281,000, the sum total of Russian gold and silver bullion may be taken, up to the beginning of 1851, at L.50,687,000.

Of this amount more than fifteen millions are deposited in the expedition of credit-bills (bank-notes or assignats), the current paper-money, and more than L.34,375,000 must be in circulation. Considering the national custom of hoarding and burying money, particularly bullion, this amount, although large, is not perhaps sufficient.

Between 1826 and 1850 the amount of foreign bullion imported was.....	L.16,196,250
Exported.....	3,999,060
Balance.....	L.12,197,190

This remarkably larger import of foreign bullion, compared to the export, is the more noteworthy that it did not decrease during 1843 and 1848, when the demand abroad for Russian gold and silver was so unusual as to cause the

government partially to prohibit the export, which was again permitted only in November 1849. A large portion of the foreign bullion, however, is converted into bars for purposes of trade, re-coined into Russian money, or used in articles of jewellery; so that the amount remaining in circulation can hardly be taken at more than one-fourth of the above quantity,—i.e., L.3,000,000. Including this latter sum, the whole mass of gold and silver coin at present circulating in Russia may be estimated at L.53,687,000.

Platina.—Since the time of its discovery in 1824 up to 1858,—89,563 lb. troy had been won, at the rate of 3·7 lb. avoid. from every ton of sand. The disuse of this metal as money has induced the owners of platina-yielding deposits to abandon the search, although much more might yet be obtained.

Copper.—The average of the ten years between 1841 and 1851 showed that about 14,872 cwt. of copper are yearly smelted in all Russia.

Lake-Salt.—The same decennial period showed a yearly return of 6,601,000 cwt. of lake-salt.

Coal.—The quantity yearly won was only 1,017,520 cwt., chiefly in the south of Russia, and in the land of the Don Kozzacks. Numerous veins have been discovered in Central Russia, the Caucasus, and Siberia. The import of English coal was 4,830,000 cwt. This mineral will soon be produced in larger quantities.

It is conjointly with coal that the production of other metals, excepting gold, takes place; and as the coal branch of industry has not yet attained to so much as the first stage of its proper development, the other metals are in a similar backward state. Russia produces gold, silver, copper, iron, lake-salt, and, in a small quantity, platina, lead, coal, and anthracite. In the Nertchinsk district there are indeed mines of tin, cinnabar, and zinc; but they are not worked on account of their distance and poorness. To speak now of iron, as of that metal on which the successful cultivation of the chief branches of industry is to such an extent founded, that the quantity of iron won and consumed might be taken as the best gauge of a country's industrious development:—

By the decennial average of 1840–50, the government foundries produce annually of	Cwt.	644,000
cast-iron about.....		
And the private foundries.....		3,570,336

Total.....4,214,336

Of which latter quantity, 2,973,140 cwt. were forged into iron. Of late years this branch of industry is increasing; the difference between 1832 and 1849 being 30 per cent. The demand for iron in the interior is so great that, notwithstanding the increased import from Poland and Finland, as well as the sensible falling off in the exportation abroad of Russian iron, prices have still risen.

In 1838 the average wholesale price of bar-iron throughout the empire was.....	Per cwt.	15s. 2d.
Retail.....		16s. 0d.
And in 1843 wholesale.....		15s. 6d.
„ „ retail.....		16s. 4d.

Consequently in five years the average price had increased by 4d. The price for sorted iron was yet higher; and subsequently to 1843 prices had gone on rising; as, for instance, in Moscow, for 1846 and 1847, iron cost 14s. 2d. per cwt., but in 1848 and 1849 it cost 17s. 8d.; at Taganrog the proportion was 11s. 6d. to 13s.; and in Odessa 15s. to 15s. 6d. The average price of bar-iron in 1851 was in Prussia 12s. 4d., in France 10s. 6d., in Belgium 9s. 6d., and in England 5s. 2d. per cwt.; Welsh iron costing there only 4s. 4d. per cwt. Experience shows, as well in Russia as abroad, that no marked increase in the production of cheap iron can take place until coal is called in to aid this branch of industry. The difference in cheapness between the cost of iron produced by the agency of pit and charcoal

Statistics. was in France alone 30 per cent. In Russia this want of charcoal fuel is becoming more and more sensibly felt; and the foundries in the governments of Toola and Tamboff have already been closed on account of the thinning of the woods; but Providence seems likely to help the country in this respect, as coal veins will soon be largely worked in the government of Yekaterinoslaff, on the Sea of Azoff. The Ooral foundries possess the finest ore, particularly magnetic; yet notwithstanding its adaptation to steel and wire, the importation from abroad increases; as does also that of machinery, which in 1841 was for L.35,780, in 1846 for L.201,720, and in 1849 for L.293,590.

List of Manufactories in Russia, with Value of Annual Produce, according to latest returns:—

	No.	Amount.
Sugar and treacle refineries.....	443	L.4,010,263
Beer and mead breweries, also honey-melting establishments.....	153	223,807
Glue and starch manufactories.....	118	72,466
Varnish.....	9	9,384
Sealing-wax.....	10	12,662
Tar, pitch, and turpentine.....	225	32,997
Oil-crushing.....	290	47,733
Chemical.....	113	537,786
White-lead and dye.....	365	2,982,875
Salt-making.....	13	45,525
Potash.....	164	79,339
Saltpetre.....	182	124,017
Soap-boiling.....	316	293,197
Tallow-melting and candle.....	1147	2,486,106
Stearine.....	19	491,386
Wax-crushing and wax-candle.....	170	228,457
Potteries, brick and lime.....	1335	243,527
China and delft-ware.....	32	97,305
Glass and crystal.....	170	538,152
Whitesmith's workshops, needle and pin manufactories.....	93	178,725
Musical instrument.....	15	35,894
Equipage.....	56	108,352
Wood-sawing.....	86	153,897
Furniture and wooden utensils.....	95	72,728
Furrieries.....	84	65,929
Hair, bristle, and tortoise-shell.....	35	145,920
Animal and vegetable preparations for food; such as meat, fish, macaroni, chocolate, mustard, &c. }	452	69,598

Many other trading establishments relating to *crafts and artizanship*, not being manufactories, are under the minister of the interior.

Statement of Schools under the Ministry of Finance.

	Teachers.	Scholars.
1 Mining institute.....	37	242
1 „ technical school.....	36	21
1 Assaying school at St Petersburg.....	8	14
7 District foundry schools.....	41	361
44 Lower foundry schools for the Mint and Mining Institute.....	131	3957
1 Technological Institute.....	36	257
With a Sunday drawing-school.....	3	72
1 Drawing-school at St Petersburg, for visitors, with a Sunday do.....	11	646
1 Female division of the same.....	7	215
3 Drawing-schools at Moscow.....	24	667
Sundry primary schools for manufactory children.....	4	143
Sundry private manufactory schools.....	8	335
1 Practical commercial academy at Moscow.....	30	174
1 School of commercial navigation at Kherson.....	9	48
1 School of commercial navigation at Riga.....	1	10
Public courses for the masters of merchant vessels:—		
1 At Arkhangel.....	1	12
1 At Remi, in Finland.....	1	9
Total.....	388	7183

Husbandry is still in a very backward state. Rotation of crops is the system mostly followed, but ignorantly, and

not by any means so profitably as might be the case. As Statistics. many crops are taken out of the soil as it will yield, and then it lies fallow for a year or two. The Russians say Agriculture. that this state of things is best suited to the ignorance of the peasants, who have no instructors, and to the great quantity of land allowed them to till. The model farms established in most of the governments are slowly doing a small amount of good. In a few of these agricultural schools, steam apparatus have been tried; but the application of steam to husbandry is known only by hearsay. That agriculture might be rendered a very profitable branch of industry, is evident from the results obtained by the German colonists, who thrive prodigiously; and by the Quakers who have cultivated land in the neighbourhood of St Petersburg. All have succeeded eminently in their undertakings.

According to calculations carefully collated in 1849 by the agricultural department, the quantity of winter and spring corn produced in Russia amounted to 168,000,000 qrs. There were 189,000,000 acres of arable land; 63,750,000 acres were used for winter and 63,750,000 acres for spring corn. The medium return of corn throughout the empire was four-fold, or about 10 bushels to the acre. The return of crop-produce may be calculated as follows:—Rye, 83,000,000 qrs.; wheat, 23,000,000 qrs.; oats, 42,000,000 qrs.; barley, pease, chives, buck-wheat, and maize, 31,000,000; potatoes, 14,000,000 qrs.; linseed, 1,500,000 qrs.; flax, 432,000,000 lbs. avoird.; hemp, 288,000,000 lbs.; sugar beet-root, 11,000,000 cwt.; tobacco, 354,200 cwt.; silk, 9660 cwt.

Table showing the Quantities of Horses, Horned Cattle, Sheep, and other Animals in Russia in the year 1856.

Horses and Horned Cattle.	In the European Governments and Lands.	In the Caucasian Lieutenancy.	In the Siberian Provinces.	Total.
Horses.....	15,065,750	469,522	3,036,011	18,571,283
Horned cattle.....	21,732,787	2,024,022	2,463,013	26,219,822
Stags.....	139,760	...	292,582	432,342
Camels.....	31,023	24,885	3,929	59,837
Asses, mules, &c.....	2,026	24,322	...	26,348
* Sheep.....	41,484,938	4,425,443	6,250,651	52,161,032
Swine.....	8,808,435	428,375	516,990	9,753,800
Goats.....	1,364,962	108,662	220,505	1,694,129
Grand total.....	88,629,681	7,505,231	12,783,681	108,918,593

* Of this number about 8,000,000 were of the so-called fine-fleeced sort.

The Russian is charitable, kindly of nature, and hospitable. Respectful, obliging, and content with little, he is honest enough in the country, but in town he sadly alters, losing most of his good, and acquiring none but bad qualities. He possesses the imitative faculty in an extreme degree, but not the inventive. An early riser, he can work well when put to it, and has but few wants. He is better than his master the noble. The dark side of the picture is, that he will lie remorselessly; is sly, false, and insincere; lazy when possible; fond of drink; and he rather enjoys uncleanness, although his hot bath once a week is an example well worthy of being followed, because greatly contributing to his extreme longevity. Civilized, the Russian becomes a great thief. The temperance movement that has lately taken place in the semi-Polish and central governments is very remarkable, and is spreading widely. It originated with the Polish clergy (to their honour be it spoken), and was favoured by the badness of the brandy. Tall of stature and straight-limbed, the Russian is tolerably strong, robust, hardy, and not much subject to disease, through his out-of-door life during the greatest part of the year, and the continual exercise which

Statistics. the vastness of all things Russian,—embracing as well every object as every degree of distance,—forces him, against his will, to take. He is mostly fair of complexion, hairy, and bearded, pug-nosed, and rather small-eyed; but his good-humoured bearing and healthy look lend him a degree of handsomeness. The women are, alas, inferior to the men, being far from pretty; and even the beauty of youth fades with them much earlier than they could wish. The female population is likewise weakly, and much earlier broken down, through excessive labour in the fields, which, though a shame to the men, is a forced consequence of the impressment called conscription. Some few governments, however, are noted for their healthy, pretty-faced girls. Many men and women of huge proportions are to be met with; but there is more fat than muscle about them. Several of the strongest men of modern times were, however, Russians,—Orloffsky and Lookeën. The Russian man is the best specimen of the Slavonian race; the woman, not. The Russian has more real patriotism, too, than the vapouring Pole, who will sacrifice his country to his personal loves and hatreds; the Polish women, however, are superior to the Russian.¹

Dress and food.

A red or blue linen shirt, linen drawers, boots worn over very wide trousers, often mat or bast sandals, a cloth kaftan bound by a sash, the national sheep-skin *tooloop* or body-coat, with various descriptions of head-coverings, form the simple dress of the men. The hair is cut round. The women wear boddices, coloured jackets called *sarafans* or *katsavaykas*, and *kokòshniks* for the head. This national dress is exceedingly becoming, and is very properly used at court. The *kokòshnik*, set with brilliants, is a magnificent head-dress, and the other parts of the costume admit of much elegance of display. Girls wear *kossàs* or plaited tails to their heads. Married women tie up their hair, which is mostly coarse, in gaudy-coloured handkerchiefs. In one word, the national garb is pretty, useful, and has a peculiar type. The food is simple. It chiefly consists of rye bread called *black*, always soup, curds, much milk, seldom meat, many vegetables, different farinaceous dishes, sundry *peeròs* or pasties, jams, preserves, and marmalades. The *kvas*, a sour small beer, unhopped, is a horrible drink; but the *bràga* and the *mors* (cranberry juice sweetened—the mead of the country), the *donskoy*, and various home-made wines, are delicious beverages. Tea and coffee are becoming more and more used. The former is said to be better than in England, through its being transported over land; but it is more likely that it is a different sort. The white-flour bread is excellent; the meat and mutton small, but sweet. The cabbage-soup, called *stchee*, the Little Russian *borstch*, the *porosionok*, or pickled sucking-pig,—all used with sour or clotted cream; the *koolibiak*, an egg and fish or meat pie; the *rastiagài*, a little meat pasty; the *pelmennì*, a small chopped-meat pudding-tart, eaten warm; and the *caviar*, are well worthy of adoption into the English kitchen.

Amusements.

The Russian is fond of dancing and music, and sings at his work the plaintive ditties of his country, in a high, falsetto key, accompanied by indescribable quavers. The women's shrill skirl is extremely unpleasant; but both sexes are mirthful, and much given to amusements, which are innocent enough, consisting of eating nuts and gingerbread of holidays, and at their carnival shows, the *Verbi*, or Feast of Palms, and the Easter festival; of gliding down ice-hills in sledges; and swinging. The *khoroòdis* are women's dances, accompanied by singing. A characteristic dance is the *kazatchòck*. Strangely enough, skating is next to unknown. The indigenous musical instruments are the *balalaika*, a sort of guitar, and the *goosli*, a sort of spinnet, now falling into disuse. Public amusements in the capi-

Statistics. tals are too dear and rare. The upper classes follow the usual European fashion. They love display; are graceful, polished, and urbane; but supple and false, not scrupulous in keeping his word, and with no manly love of exercise, the Russian nobleman is frequently one thing in public and another in private life. When the Russian noble is at the same time a gentleman, he is unsurpassed. Card-playing is the great social vice; but excessive drinking is now next to unknown. Higglings and dishonesty in trade are common in buying and selling. All classes take pride in rich furs and fine horses. Sledge-racing supplies the place of our English horse-racing, which, however, has lately been encouraged. High and low have a singular love of proverbial sayings, and all take a personal pride in the outward magnificence of the court.

Language. The Russian language, one of the most beautiful existing, is a dialect of the Slavonian, the common tongue of a large family of nations descended from the Scythians, but whose earlier origin is unascertained. If the language of a people were to be taken as an index of its destiny, a still brighter career than that already run might be augured of the country under review. In point of copiousness, flexibility, harmony, and grace, the Russian language has but few superiors, and not many equals. From the separateness of its roots, it is, however, but little assimilative; which must prevent its ever becoming so universal as English. Many of the modern roots are Sanscrit, Greek, Latin, and German. When the church-books of worship were translated, in the tenth century, into Slavonian-Russ, Greek forms, both alphabetical and of construction, were introduced, and thus was created a written church-dialect existing up to the present time, side by side with the vernacular, which it has greatly affected. The spoken language meanwhile incorporated many words from the Polish and other Slavonian dialects, the Tartar, and Mongolian; but Peter's reform of the alphabet, adoption of technical terms, and introduction into printed use of the vernacular, in lieu of the church-language, contributed the most to give the Russ that form which later culture has refined, and which it at present wears. The want of an article renders extreme precision less attainable than in those languages which possess one, otherwise than through the general sense of a phrase; but this is tolerably balanced by an avoidance of constantly-recurring particles, the great defect of the English and other languages. Adjectives, nouns, and pronouns are richly declinable in their various genders, persons, and numbers; and verbs, besides denoting in their inflections the numbers, persons, and genders, have further so-called *modes*, which clearly determine the frequent and unfrequent, the precise and unprecise modes of every action. A flexibility of construction, perhaps unsurpassed, is thus obtained; for, transpose the words as one may, sense can always be made of them. The prepositional verbs, mostly with prefixes, are a mine of wealth for the determination of action; but an insufficiency of this part of speech consists in its having but one compound tense, with *shall*, and, strictly speaking, only one past tense; through which defect a past action cannot be defined with such precision as in French. In consequence of the verb showing the gender, the personal pronouns may be dispensed with or used, at will. The great richness of the language consists, besides its inflectiveness and the copiousness of its roots, in the number of the derivatives; nouns, adjectives, and verbs, mutually giving and receiving, and all possessing this attribute to an inconceivable degree. The written character is a very neat one; and the printed has much resemblance to the Greek, some also to the Latin.

¹ It was a just retribution of Providence that visited the iniquitous tyranny in old times of Poland over Russia with eventual subjugation to the latter, not that the punishment should be eternal. It testifies, besides, historically and undeniably, to the existence of a moral principle as positively pervading the unseen as the seen world of the senses.

Statistics.

The alphabet is as nearly phonetic as can be desired, and has the advantage of expressing complex consonantal sounds, such as *ts* in *tsar*, *tch* in *child*, *sh* in *shall*, *stch* in *question*, *kh* in *ladakh*; each in one character. The Celtic guttural *kh*, the Greek χ , is the only consonantal sound in which the Russian language has the advantage, of the English; but it has not the English nasal *ng*, the *th*, the *j* as in *join*, nor the *w* as in *will*. All the vowels are neither long nor short, but properly between the two; neither have the Russians the long diph- or triph-thongal sounds of the English, as in *meed*, *mound*, and *queen*. The *a* sound in *fat* and *fall*, and the short *i* and *u*, as in *bit* and *but*, are totally wanting; whence follows that the English has several more sounds than the Russian. A set-off against this is the more frequent occurrence of liquids and of united *vowel-syllables*; the *a-yah*, *e-yah*, *e-ay-yah*, *e-a-u*, lending extreme harmony to the music of the rhythm. A harsh semi-vowel, which the English have not, is the quick contraction of the *oo-ee* into one sound. The most favoured letters are *p* and *r*; the ugly *s* is not so much used as in German or English; the vowels most affected are *a*, as in *far*; *yah*, and *e*. The diminutive, augmentative, and deprecativ terminations are next in expression, strength, and grace only to the Italian. Another distinctive feature of the language is, that through the peculiar inflectiveness of its nature, the purely Russian race, from the White Sea to the Black, from Poland to the farthest confines of Siberia, speak with a grammatical correctness perfectly delightful to ears that care for such niceties. There are of course vulgarisms, and here and there some slight shades of difference in the pronunciation; but they are inconsiderable indeed, when contrasted with the barbarous idioms met with in all the countries of Europe. The Little Russian is certainly a marked deviation from the rule, but this is not the pure Russian race. Russ is spoken most elegantly in Moscow and Petersburg. The points of beauty in this language are so striking that much might be taken from it as first principles for a universal language, were any such possible; and an unbeliever in the great advantages derivable from these varied inflections would best be convinced by contrasting the cumbrous phraseology of an English law document with that of a Russian one. There is little intonation of whole phrases—raising or sinking of the voice—compared to English, the most intoned of living languages, and which is a remedy for its large number of monosyllabic words. Russian words, on the contrary, are egregiously long, in proportion to the graduated short words; a result of which is, that one page of Russian print, despite the saving of particles and repetitions incident to the varied inflections of the Russ, would make on an average no more than three-fourths of an English page. There are, however, much fewer ellipses in Russ than in English, the most elliptical language spoken; and this is partly another cause of English concision. For poetry, the language is beauty itself, being hard and soft in due proportion; and it admits of all rhythmical measures, besides affording every imaginable facility for rhyme. And it was for nasal French that the upper class of Russians could abandon their own far more beautiful tongue! What can not fashion in its folly do?

Mythology.

The Russian mythology is common to that of the whole Slavonian race. Their thunder god Peroon answers to the Greek Zeus, or the German Wodan. His statue stood, in times of old, in the yard of Vlodeemir's court at Keeyeff, and was of wood, with a silver head and gold moustache. The annalist Nestor (1060) makes mention of the gods Kors, Dàshbog, the god of fruitfulness (*boy* signifies *god*), Shreebog, called also Samergl, and Mòkosh. The name of Vòloss, denoting hairiness, occurs in the Grand-Prince Oleg's conversations with the Greeks, as the protector of

Statistics. herds, and it was by his and Peroon's name that the Russians confirmed their sayings by oath. The goddess of love, friendship, and unity, was Tada; lovers and the newly-married sacrificed to her, praising her name in songs. Her sons Lelia and Palelia were also honoured as the gods of love and marriage. Kupàlo was the name of the god of harvests, and sacrifices were made to him before harvest, on the 23d of June; this festival was called the Kupalaítza. Young people decked themselves with flowers, lit fires in the evening, danced round them, and sang in honour of the god. The memory of this feast may still be traced in the fires lit to this day on St John's Eve. In the government of Arkhangel, many of the peasants still heat their baths on the 23d of June, strew their floors with *kupalinka* (*Ranunculus acris*), and then bathe. The root of the word implies bathing. Deèvo was the name of the Evil One. The 24th of December was holy to the god of peace, Kolèda; the rejoicings of Christmas Eve, consulting the future, and the custom called Koledovànie, now existing in Little Russia, are living remnants of this festival. Forest-demons, house-spectres, and good spirits were also supposed to exist. The Roossàlka, a naiad, though no more seen, is still believed in; and the ancient Russians further venerated trees, particularly hollow ones, and bound linen cloths round their branches. They had temples and priests; they burned their dead, and held feasts in their honour.

Literature.

Briefly outlined, Russian literature has undergone three marked changes: 1. The literature developed under Greek influence by the introduction of Christianity, 988–1689; 2. That first improved by Peter the Great on the general European model, from 1689–1801; 3. And the more polished, lasting from Alexander I. till the present time. The first period is long as regards duration, but poor as regards matter. Tales and songs, mostly oral; chronicles, and spiritual books describing the miraculous doings of the saints, reviling the Latins, or disputing about the sectarian heresies, were its chief products. The subsequent invasion of the Tartars, 1238–1480, not only checked the advance of civilization, but threw it back by many centuries; and during this period the learned sought refuge in the cloisters. The incorporation with Russia, in the sixteenth century, of the grand principality of Lithuania, naturally operated on the letters, such as they were, of the country, by introducing the more advanced literature of Poland. John IV. established the first printing-office at Moscow in 1564. Dramatic art dawned late. It was in the seventeenth century that the students of the Keeyeff academy began to perform religious mysteries in Polish and Slavonian; and under the tsar Alexay Mikhàilovitch, 1645–1676, the boyar Matvàyeff invited German actors to Moscow, where they performed pieces, with music and singing. Throughout this period, but no later, the whole literature of the country was in the hands of the clergy, who were thus the centre of the refinement that existed. The second period is marked by Russia arousing from her intellectual stupor. Peter had appeared; and from this time the country enters within the pale of European civilization. He invited learned foreigners to his dominions; sent young Russians to Germany and Holland for the acquirement of useful learning; and such was the impulse he gave, that in a few years Russia made more progress in civilization than in many preceding centuries. Relations had indeed been maintained with Europe under John III., but their influence had been unfelt. It was under Peter, too, that the first newspaper—*The St Petersburg Gazette*—was issued, in 1703. It contains matter very interesting for the present age. Peter's own time was not marked by any distinguished writers; but most of the successive sovereigns only executed what he had originally conceived and planned. Lomonossoff, the son of an Arkhangel fisherman, a learned prosaist, although an indifferent poet, under Elizabeth Petrovna, was the earliest

Statistics. classical writer of his country, and the great practical reformer of her letters. He first introduced *measure*, in lieu of the pre-existing Polish *quantity*. Kantemir, Soomardkoff, Kniaznèen, and Kheraskoff are names of secondary note, intervening between this time and Catherine's more glorious epoch. Derzàvin, the first great poet of his country, and who flourished in her reign, stands higher than all before and after him until the appearance of Pooshkin and Lermontoff. His *Ode to God* has been translated into English by Bowring, whose *Anthology*, containing specimens of the Russian poets, is deserving of commendatory notice. Von Wisin, the successor of Kantemir as a satirist, still retains possession of the stage. His comedy of the *Spoiled Minor* would alone throw more light on the manners and customs of his country than many books of history. This second period, although unmarked by many gifted writers, was still rich in translations from the ancients, French literature, and works of science, which circumstance had a vast influence upon the mental refinement of the people. There even existed under Catherine II. a department for translations. In this respect the country owes much to Novikoff, who, under Catherine II., founded the Literary Society of Moscow, the precursor of the Academy of Sciences, and devoted his whole life and fortune to this object. The earliest illustration of the third period is Karamzin, who, as a prosaist, first broke through the rules of ancient classicism, and introduced the romantic school. He is best known as the historian of his country, although his fame as such now suffers diminution; but his style is still deservedly celebrated for its purity, and he has been followed by Oostriàloff and Soloviddoff. In universal history, Grandoffski and Koodriàvtseff are the best representatives of Ranke's school. Dmeetrieff is a fable-writer of merit; but Kreelbfff's fables, for point, satire, raciness of style, and adaptation to life in his country, are equal to those of any age or land. The best tragic dramatist is Ozeroff, but he is pompous, and writes too much in the French style. Greeboyeddoff's comedy of *Sorrow Comes of Sense*, a social satire on Moscow society, may be classed with Beaumarchais' *Marriage of Figaro*, or Sheridan's *School for Scandal*. Gogol's *Revisor* is a satire of like eminence, on the corruption of his time. The only other dramatists of distinction are Pooshkin, and Ostròvski, a contemporary author. The Russian drama was originally formed on the declamatory French model; but Shakspeare has long beaten French tragedy off the stage. For vaudevilles the French style still prevails, because the best. Independently of the earliest national poetry, of which numerous collections have been made, and not to dwell here on the claims, as poets, of Bogdanòvitch, Khèmnitzer, Bàtiushkoff, Kozlòff, Countess Rostoptchin, and others, all of more or less distinction, the names of Pooshkin and Lermontoff speak for themselves as the greatest. Pooshkin, in particular, is the poet of his country, from his identification with the national mode of feeling. His prose is a model of polite style. The living poets of mark are Maikoff, Tiutcheff, Nekrassoff, and Stcherbina. It is remarked of Russian poetry, two-thirds of which is imitative, that, with much melody of versification, it has but little substance. More tender than impassioned, more graceful than energetic, the unseen spirit of song rather glides over the surface of feeling than issues from poetry's true home, the well of passion, lying deep within the heart. Russia is a land of song, and numerous collections therefore exist of national, Little Russian, Finnish, Lettish, and other songs, well meriting attention. The first novel was written by Kheraskoff, under Catherine II., not that it was a good one; but of the later novelists and belletrists, the oldest are Lazèchnikoff and Zagòskin; then follows the inimitable Gogol; and afterwards come Peèsemiski and Gontcharòff. Pooshkin, Kookolnik, Count Sòlohub, Greegoròvitch, Count

Tolstoi, and Toorghènieff, the last and best, are delightful story-tellers. Translation, which now supplies the place of civilizers from abroad, is cultivated in every branch to an immense extent. A remarkable production in this art was Gnèditch's translation of the *Iliad*, which, though heavy, is still correct. It was from 1820 to 1840 that translations began chiefly to be made from the German. Zookòffski, in particular, gave the impulse to translations from that language and from English. The most distinguished in this department, not to speak of purely scientific works, are Bàtinskoff and Zookòffski. The other names are Kozlòff, Huber, Vròntchenko, Kronberg, and Min. Ketcher is a very accurate translator. Most of Shakspeare's plays, and indeed many of the best English productions in verse, including several of Byron's poems, have been beautifully done into Russ; besides numerous translations from the ancient and living languages. In philology, the chief names are Booslàieff, Sjogrén, Castrén, Schiffner, Wiedemann, Bòthlingk, Dorn, Pavski, Vostòkoff, Gretsch, Kasembeg, and Davidoff. Statistics, including finance and political economy, have lately made immense progress. We need only allude to Arsènieff, Köppen, Tengoborski, Nebolsin, and Lamànski. In medical surgery, Peerogòff is known to all Europe. Philosophy is yet a barren field, and many departments of letters are still unrepresented; but in the higher walks of science it is sufficient to cite Pallas, Frehn, W. Struve, Bär, Ostrogradski, Kupffer, Jacobi, Pander, Abich, and Vesseloffski. The fine arts have had, and still have, distinguished disciples in Kokòrin, Marthus, Count Theodore Tolstoi, Baron Klodt, Bruloff, Bruni, Basen, and Evànoff. Bortnianski's church music is abstract beauty tangibly revealed to the senses. As travellers and navigators, we have Golovnin, Kotzebue, Krusenstern, Bellingshausen, Lütke, Wrangel, Tchikatchòff, Yermòloff, Demidoff, Middendorff, and Kovalèffski. The church literature is perhaps the most popular and widely diffused. Platòn, Innocent, and Philarèt are the most eminent sermonists. Prokopòvitch, Yavòrski, Philarèt of Moscow, Philarèt of Kharkoff, and Macarius, are eminent as theologians. Periodical literature has made immense strides, and at present absorbs nearly all the intellect of the country. Belinski, as a critic, exercised over it a lasting influence. Herzen's *Kòlokol*, or *Bell*, and his *Northern Star*, both published in London, form a remarkable feature in the journalism of the day. An encyclopædical lexicon is being published by Kraièffski; and a movement has been made towards furthering the introduction of the decimal system. Generally, it may be truly said that purely intellectual civilization has lately advanced with the step of a giant. That Russian literature has not yet contributed its full quota to the great hive of human learning should be mainly ascribed to over-government, to its being yet in the youth of its existence, and still in a condition which compels it to borrow much. When civilization shall have taken firm root in all classes, then Russia will no doubt enlarge her pretensions; but the time is coming, and the minds to do the work are ripening.

Asiatic Russia.

Russia in Asia comprehends the whole northern portion of that continent extending from Lat. 38. 25. to 78. 26. N., and from Long. 37. 14. to 190. 22. E. from Greenwich. It is bounded on the west by European Russia and the Black Sea, on the south by Asiatic Turkey, Persia, the Caspian and Aral Seas, the territories of the Turkomans and Keergheez, and by China; on the east by the Pacific Ocean and Behring's Straits. The Frozen Ocean extends along the whole of its northern limits. Its greatest extent from west to east is about 4142, and its greatest breadth from north to south 2622 English miles. This vast dominion

Asiatic
Russia.

Asiatic
Russia.
General
aspect.

is larger than the whole of Europe. Siberia, which occupies the whole north of Asia, from the Ooral Mountains to the Great Ocean, has a general inclination towards the Northern Arctic Sea. It presents an immense plain, bounded on the south by ranges of mountains. In the northern part this plain gradually inclines into a low flat. Siberia is divided by the Yenisey into two regions, the western and eastern. Western Siberia is one entire level, unbroken by any hills whatever. The north-western region is covered by forests; the other part consists of steppes. 1. The Barabinskaiä steppe, between the rivers Irtysh and Ob, has large birch groves, and is suited to agricultural pursuits. 2. The Ishim, to the south of Omsk, along the rivers Irtysh and Ishim, consists of sands and salt-marshes. 3. The Kheergheez steppes, extending from the left of the River Ooral to the Caspian and Aral seas, form a wilderness whose eastern and north-eastern parts alone are intersected by hills, forming a continuation of the centre chain of the southern Ooral. The soil consists of clay and sand, but in the south-west it is overspread with salt-marshes and bogs. 4. The Abakan steppes lie along the River Abakan, which falls into the Yenisey. Their soil is so fertile that it requires no manure. 5. The Sagai, lying between the left bank of the Abakan and Lake Teletski, and extending in the north to the River Tchoolim, serve as excellent pasture-grounds for the countless herds possessed by the natives. Eastern Siberia affords a much more diversified aspect. The plains are here intersected by numerous offshoots of the high Altai and Sagan mountains, as well as by the Yablonnoy and Stanovoy ranges. The northern Siberian flat, from the Northern Arctic Circle to the Polar Ocean, and from the Ooral Mountains to Behring's Straits, may be divided into three portions. The first, from the Oorals to the Yenisey, does not rise above the level of the sea; the second, from the Yenisey to the Lena, is a little above that level; and along it, from south to north, extends the Poostinnoy range of hills, which, terminating in Cape Severo-Vostotchnoi, serves as the dividing water-shed of the Yenisey and Lena. The third portion, from the Lena to Behring's Straits, is considerably higher than the water-level; and more eastwards it is intersected by branches of the Stanovoy Mountains, which never reach above 3000 feet. The whole of this flat has a dreary character, and the magnificent forests which cover the whole south of Siberia become gradually thinner. At 70 N. Lat. all vegetation ceases, and nature seems as if deprived of life. The soil of this northern Siberian flat is one continued moss-grown toundra.

Mountains. The Siberian mountains extend from the River Irtysh at first eastwards to the upper sources of the Aldan, which falls into the Lena, and hence through Kamtchatka towards the north-east. They terminate in two branches, of which one extremity is called Tchoukotskoi Noss, and the other Cape Lopatka. That part of the Siberian mountains which passes from west to east consists of the Altai, Sayan, and Daoorian chains. The Altai sweeps along the southern confines of the governments of Tobolsk and Tomsk, and, by means of the Yablonnoy and Stanovoy ridges, unites in the north-east with the Okhotsk Mountains. This Altai range is 450 miles long and 230 miles broad, having numerous offshoots. Its general height is 7000 feet; but the pinnacle of one, called the Belokha, attains the height of 12,000 feet. The snow-line is from 6000 to 6500 feet above the horizon of the water. The Altai serves as the dividing-line from which flow the rivers of that region, on one side into the Arctic Ocean, and on the other into the streams of the Keergheez, Turkestan, and Zoonghòï steppes. The Sayan mountains extend betwixt the Yenisey and Baikal, a distance of 1260 versts. The Daoorian extend from the Sayan mountains,

touch the Yablonnoy range, and run into the Chinese dominions.

Asiatic
Russia.

The rivers of Asiatic Russia that discharge themselves into the Arctic Sea are amongst the most considerable of the ancient world. The most remarkable of these are,—1st, The Ob, whose course is 2170 miles in length, during which it receives the great rivers Tom, Tcholeem, Ket, Vakh, the Irtysh, Sosva, and all their tributary streams. 2d, The Yenisey, which has a course of 2000 miles, with fewer sinuosities than are usually observed in other great rivers. It is formed by the confluence of the Great Ket and Angarà, which latter is the greater river of the two. The upper Toongoozka or Angarà rises in the government of Irkootsk, joins the Eeleem, and flows for 1000 miles. The right affluents are the Middle and Lower Toongoozkas, and the left are the Abakan and Toorookhan. 3d, The Lena, one of the largest of the Russian-Asiatic rivers. It rises in the Baikal Mountains, in the government of Irkootsk; is from half a mile to 2 miles broad, at Irkootsk about 6 miles; and falls into the ocean in Lat. 70. 40., and Long. 164. 26., after a course of 2666 miles. The Lena is navigable at Verkholensk, 200 miles from its source, until it receives the Aldan. Its tributaries on the right are the Veteem, Olekma, and Aldan; on the left the Velui. Besides the Ob, Yenisey, and Lena, whose lower courses water the northern flat of Siberia, along the toondras flow the following considerable rivers:—The Taz, Khatanga, Anabara, Olenek, Yan, Indighirka, and Kolecma. The rivers flowing from the eastern declivity of the Stanovoy hills into the great ocean and sea of Okhotsk are mostly unimportant and rapid, because this range is steep, rocky, and often closely approaches the shores. The chief are the Anadir, Kamtchatka, and Avatcha, remarkable as forming the bay of Avatcha, surrounded on all sides by mountains, and 9 miles in diameter; Port Peter and Paul, the Penzeena, Gizeeghina, Okhòta, and Amoor.

The Amoor is formed by the confluence of the Argoon Amoor and Sheelka, in the south-east angle of the Trans-Baikal River. region, at a point called the Oost-Strelka. The Trans-Baikal region spoken of borders on Chinese Daooria, of which latter a vast portion has been silently incorporated with Russia, and called Russian Daooria. From the Strelka mouth to the last Russian station on the Tartar Gulf, called the Petroffskoië Winter Quarters, the entire length of the Amoor is 1880 miles. The chief tributaries of this river are the Zayàh, Newman, Amgoon, Soongari-Oollah, and the Oossoori,—all mighty streams. The Soongari-Oollah, called in Chinese Khoon-Taon-Tsian, unites with the Amoor 950 miles below the Strelka mouth. The Soongari runs through Chinese Mantchooria, and the Amoor may rather be said to fall into it. In many places from a mile to a mile and a half broad, the Amoor is navigable throughout its whole course, the depth being considerable, often averaging ten fathoms; and there are few rapids or shallows to impede navigation. It must, however, be observed, that the last exploring expedition took place in May, when the waters were at their highest. The current generally runs at the rate of 2½ miles an hour. No forts are as yet laid down along the river's course, and it is only near the mouth of the Amoor that there are fortifications; but they have not yet had time to become important. The left river-bank is being permanently colonized. The sole considerable position at present held by the Russians on the right bank is the Mareeinski station, near Lake Keezi. Sakhalen-Oollah-Khoton is the only large town on the Mantchoorian or right bank of the Amoor. On the left bank there is not a single town. Toongooz tribes inhabit the whole of this region, which is extremely fertile, the soil and climate being both excellent.¹

¹ The rapid extension of the Russian empire at present taking place in this region, and the political results that are likely to ensue

Asiatic
Russia.

Lake Keezi, at the Mareeinski station, on the right bank of the Amoor, is 26 miles long, of varying breadth, and in parts tolerably deep. It naturally forms a convenient harbour, and the idea has therefore been entertained of establishing a way of communication, either by canal or rail, across the hilly ridge—only 13 miles in breadth—which separates Lake Keezi from De Castries' Gulf in the Sea of Okhotsk. When one takes into account that the Mareeinski station is 290 miles higher up the river than its mouth, the utility of the plan becomes obvious. A railway from the Amoor, to be connected with the internal lines of road, has been more than once projected; but either the demands made for a cession of bordering crown-lands were so unreasonably exorbitant, or the offers made so unsupported by sufficient guarantees, that the plan has been rejected. The railroad will yet be effected, though on another basis, and then the results will be of high interest to England. The chief considerations which suggest themselves are,—1st, That Russia has now managed to acquire a vast portion of Chinese territory, with a valuable harbourage and sea-board, on the North Pacific; 2d, That a vast amount of trade in Central Asia is being opened out to her merchants: and, 3d, That she is hereby obtaining a direct water communication with India, which is thus in process of becoming more and more closely hugged by Russia both by land and sea. Two rivers, of great interest to England, remain yet to be noticed: the Oxus, or Amoo-Daria, which rises in the western extremity of Lake Sir-i-Kol, Lat. 37. 27., and chron. Long. 69. east of Greenwich, in the table-land of Pamir in Central Asia; and the Jaxartes, or Sir-Daria, which rises in China, and passes through Kokan, Turkestan, and Tashkent. Both fall into the Aral Lake, the Amoo-Daria, after an approximative course of 800, and the Sir-Daria of about 520 miles.

Lakes.

The lakes in Russian Asia are very numerous, and some of them so extensive as to form inland seas. One of the largest is the Baikal or Holy Lake, between Lat. 52. and 55., and Long. 104. 26. and 109. 56., extending over 11,180 square miles. Its water is clear and bright, and the depth varies from 18 to 500 feet. The River Angara, which runs into the Yenisey, issues hence. It contains a great number of rocky islands. The other is the Aral Lake, or Blue Sea, situated on a parallel with the northern part of the Caspian. It is 250 miles long by 150 miles broad. The lakes next in extent are the Tchani and the Piasensköe, both in the government of Tomsk; but there are one or more lakes in every province. A large number of steamers already ply on these inland seas and rivers of Asiatic Russia.

Climate
and pro-
ductions.

From the Oral Mountains to the Yenisey the climate differs little from that of European Russia, but beyond that river the difference is marked. The general severity, however, of the climate in Russia—apparently so inimical to health and comfort—is considered by the inhabitants as one of their greatest blessings. The vast expanse of frozen snow that environs them both shortens distances and facilitates travelling. Ice-cellars also form a positive necessary of life, for by their means provisions, which could not otherwise be kept from putrefaction, are preserved during summer. The fine fresh air engendered by a bracing

Asiatic
Russia.

frost is likewise most conducive to health. The intense cold, however, that prevails in Siberia beyond the Yenisey, like every extreme, is an evil, and forms one of the great obstructions to travelling, as does also the plague of mosquitoes in summer. The natural wealth of the country consists at present in its minerals, timber, furs, produce of the chase, fisheries, and cattle. The southern territory, which is often covered with luxuriant pastures, might be made to yield very rich crops, if the inhabitants would but change their taste for nomadic life, and till the ground. For some time past, indeed, the Kheergheez have shown indications of commencing agricultural pursuits; yet notwithstanding the general neglect of tillage, the produce is in some parts extremely plentiful, and crops are raised even without the aid of manure. The rearing of sheep for wool is a branch of industry lately much increased in Siberia, and the Kheergheez steppes supply countless droves of cattle for the Russian market. Pasturage, indeed, and agriculture will ultimately form the chief riches of the land, because inexhaustible. The mineral productions are gold, silver, lead, platina, copper, dendritic and stalactitic copper or malachite, iron, coal, anthracite, tin, cinnabar, and zinc; bismuth, arsenic, sulphur, alum, sal-ammoniac, nitre, naphtha, and natron, are met with in abundance; and a few precious stones are also found. Near the River Argoon are found the common topaz, the hyacinth, the Siberian emerald, the beryl, onyx, and beautiful red and green jaspers. Near Yekaterinburg are the gem-mines of Moorsinsk, where are found the beryl and chrysolite. Near Lake Baikal red garnets are very common; and *lapis lazuli*, as well as the baikalite of Kcervan, are also met with. The Altai Mountains furnish the opal.

The mineral springs of Russia are found principally in the Asiatic part, especially in Kamtchatka. The only European mineral waters that merit particular notice are the hot spring near Selo-Klintchy in Perm; a chalybeate spring in the village of Singovo, Olonetz; an assemblage of springs strongly impregnated with iron near Sarepta, on the Volga; the Sergius sulphur waters in the government of Orenburg; several naphtha springs in the Taurida; and at Piatigorsk, on the Terek in the Caucasus, warm springs, that serve as baths. Similar baths exist in the province of Nertchinsk, and springs impregnated with naphtha and petroleum are also found near Lake Baikal. Chalybeate waters likewise are met with among the iron mines near Yekaterinburg, and a few in the province of Daouria. The principal hot baths of Asiatic Russia are in Kamtchatka. Those near Natchikhin, containing vitriolic and nitrous salts, fall in a rapid cascade, about 300 feet below which they are collected into a basin 6 or 7 feet broad, and 18 inches deep.

The territory which stretches along the southern Asiatic Frontiers, border alone deserves particular mention, as the most favoured district of Siberia. This vast space is chiefly inhabited by Kozzacks, whose number has been lately much augmented, under a system perfected between the years 1852–59 by Count Mooravieff-Amoorski. There are three descriptions of Kozzacks—the inhabitants of towns, foot regiments, and horse Kozzacks, who form the chief military

therefrom, warrant us in here giving a short account of the Amoor acquisition. It was in 1845 that Academician Middendorff, appreciating the necessity of an outlet for Siberia into the North Pacific, crossed the frontier despite Chinese prohibition, and found during his four months' travels in this quarter, that the Russian government erroneously considered the Stanovoi mountains as their boundary by the treaty of Nertchinsk, the Chinese themselves having erected boundary-posts much more southerly, among the left affluents of the Amoor; and that thus an immense extent of territory would accrue to Russia, besides the desired outlet into the Pacific. About the same time Captain Nevelskoi, after sailing round South America, entered unbidden the mouth of the Amoor, being the first European navigator who had ever done so, and proved that Sakhalin was not a peninsula, but an island. Delighted with the discovery communicated to him by Academician Middendorff, Nicholas immediately acted upon it. Captain Achte was despatched to execute the idea, and political circumstances being favourable, the result has at length been the acquisition by Russia of the whole left bank of the Amoor, its right and left banks from the Oosoori downwards, the dependent sea-board on the Gulf of Tartary, its outlet into the Pacific, its prospectively boundless trade, the whole island of Sakhalin, and nearly one million square miles of territory. Russia now wants only an outlet into the North Atlantic by the acquisition of a seaport in Swedish Finmark.

Asiatic
Russia.

arm of the country. In their capacity of soldiers, they mount guard in turn at the different posts assigned them; and their leisure time is employed in the rearing of cattle, gardening, hunting, and fishing. The territory they occupy is for the most part very fertile, especially between the forty-ninth and fifty-first degrees of latitude, where the soil spontaneously produces fruit trees, melons, tobacco, &c.; whilst in the most easterly part the picturesque and fruitful valleys of the Altai, rich in every description of odoriferous flowers, enable the inhabitants to rear innumerable swarms of bees, which furnish the greater part of Siberian honey. Several manufactories, especially of leather, have been established in the towns. The progress of trade will doubtless hereafter enhance the value of the natural productions of these regions, amongst which must be reckoned the lakes of salt water so numerous in the steppes. Important as they are in relation to commerce, these lakes likewise present to the naturalist a series of interesting phenomena. Their waters hold so great a quantity of salt in solution that the action of the summer heat is of itself sufficient to convert it into crystals, which, carried towards the banks, form there immense shoals of salt. Magazines have been formed upon the borders of Lake Koriak, and the salt therein preserved generally amounts to many thousands of tons. But however rich this lake may be, it is less so than three others, the Karoshak, the Kolkaman, and the Djémanton, situated in the steppes on the right bank of the Irtysh. Each of these basins is from 12 to 15 miles in circumference, and the action of the solar rays produces in them during the summer season crystals of salt so numerous that, by mutual contact, they at length form solid arches, which, like winter ice, cover the surface of the lakes. These masses are frequently nine inches thick. The action of the air whitens the upper layers; the lower ones preserve a bluish tint, which in some places assumes a beautiful violet hue; and the solidity of these crystal fields is such that horses, camels, and chariots pass over them with the greatest safety.

Mines.

The mines of Russian Asia are by far more productive than those of any other portion of the empire, as from them is extracted the whole of the gold, silver, platina, and lead, nine-tenths of the copper, and eleven-twelfths of the iron which is brought into use. These mines are mostly situated in the Ooral and Altai mountain ranges. It is in those parts which face Siberia—that is, the eastern slope of the Ooral, and the northern declivities of the Altai, with its secondary branches—that are found the veins of precious metal. The best account of these mines is that contained in Tcheffkin's able work on the subject, published in 1851, and to which we call particular attention, as well worthy of translation. The original discovery of gold—and that, too, in its native state of veins—occurred in 1743, near Yekaterinburg; but the subsequent discovery, in 1814, of auriferous sand-fields afforded a much cheaper means of obtaining this metal, and caused the working of gold-mines to be nearly abandoned. The Berezoïff mine gold, containing $1\frac{1}{2}$ oz. troy to 100 cwt. of ore, cost, for working expenses alone, 18s. an oz.; whereas the sand-gold of the same mining district, containing only $\frac{1}{4}$ oz. in 100 cwt. of sand, cost but 10s.; so that, supposing the yield to be equal, the extraction of sand-gold would be ten times cheaper than that of ore-gold. The working of auriferous sand-fields was first introduced by the Ooral government mining foundries; but in 1819 it passed into the possession of private foundries. In 1829 private companies began to work these fields in Western, and about 1838 in Eastern Siberia. An extension of the gold produce in Russia is scarcely to be expected. For several years no new discoveries of importance have been made, excepting only in the Nertchinsk foundry district, where, indeed, such promising deposits have been found among the affluents of the

Sheelka that the yield of this district, which amounted from 1846 till 1849, to about 8 cwt. a year, rose in 1850 to 24 cwt. The love of exploration, however, has subsided; the former deposits are becoming exhausted; the yield of the auriferous sands is perceptibly diminishing; and the gain of the private Siberian companies, particularly of Eastern Siberia, has sensibly decreased. The average yield of the sands washed in the Oorals, which, from 1814 to 1839, was 12 dw. of gold to 100 cwt. of sand, fell in 1846 to less than 5 dw.; and there are whole districts where the yield of the sands has fallen to below 4 dw. In the Verkh-Issetski foundries of Mr Yakovlieff, for many years, about 50 cwt. of ore are won, at a yield of only 2 dw. With regard to diamonds, only small stones are found. These regions, as yet but little known, are now explored with systematic regularity. The two chains, the Ooral and the Altai, are divided into several mining districts. In each of them, the officers to whom is confided the direction of the works send out every summer detachments of discovery, whose duty it is to examine in detail the mountains assigned to them; and the point at which the expedition stopped the preceding year is generally that of departure for the next year's expedition.

Asiatic Russia, independently of Transcaucasia, has recently been distributed into the following divisions:—
Western Siberia, comprising the governments of Tobolsk and Tomsk, and the provinces of Semipalatinsk and Omsk; Eastern Siberia, comprising the governments of Yakootsk, Yenisey, and Irkootsk, and the Transbaikal and Kamtchatka provinces. It is further intended to divide the Amoor region into two new provinces.

The population of this territory amounts to 5,361,234 inhabitants, and consists of Slavonians, called Siberiaks, settlers from the interior of Russia; Siberian Kozzacks, Finnish races, Samoyeds, Ostiaks, Toongooz, Yakoots, Booriats, Gheeliaks, Mongols, Tartars, and Keergheez. It is rapidly increasing; and here, as in the Caucasus, it was religious questions, much more than political causes, which contributed most to the colonization of the country. In 1765 alone, 40,000 sectarians, called Polish settlers, were exiled to Siberia from Starodoob and other towns in the government of Tcherneegoff; and fully two-thirds of the Ooral Kozzacks are also sectarians, whose superstitions are extremely absurd, and often noxious. In ten years, from 1832–42, seventy thousand peasants, male and female, were sent to Siberia for bad conduct by their proprietors, the town corporations, and rural communes. Except for crimes, however, none can be sent without their families. The Swedish officers who fell into the hands of Peter the Great, and a regular succession of recruits furnished by the empire itself, formed another part of the population. The lowest class of exiles are condemned to the mines; a class whose offences are of a milder character, are distributed amongst the distilleries; a third class receive grants of lands, for which a trifle is paid to government. The individuals comprising this section are formed into settlements, under the superintendence of a strict police. Siberia has its schools, gymnasias, and other institutions of the kind, which have lately been much increased. Irkootsk is the centre of the greatest civilization, and it possesses a section of the Russian Geographical Society, very important for statistics. The Keergheez steppes are supposed to contain about 750,000 inhabitants, divided into the Great, Middle, and Little Ordes.

The manufactures are few, and unimportant, with the exception of spirits and leather, which are made to a considerable extent in various parts. There are several establishments for soap-boiling, the melting of tallow, and making of stearine candles. Cotton and wool are manufactured in some parts into coarse stuffs. The chief trading towns are Irkootsk, Kiakhta, Krasnoyarsk, Omsk, Tomsk, and

Manufac-
tures and
commerce.

Asiatic
Russia.

Divisions.

Population.

Asiatic
Russia.

Tobolsk. Irkootsk, the principal city of Eastern, and Omsk, of Western Siberia, being the seats of the respective governors, are of course emporiums for the sale of European commodities, which are also largely dealt in at the fairs of Irbit and Tiumen. This latter place is rapidly rising in importance. Independently of the sale of colonial and other goods, the produce of European Russia, such as corn, meal, and iron, tools and utensils, are exchanged for the skins, cattle, caviar, fish (salted and fresh), and game, brought to them from the interior by the Ostiaks or Tartars. Every year the merchants of Tobolsk, Tiumen, and other towns send boats laden with flour up the Irtysh and Ob to Berezhoff and other small towns situated farther to the north, and these boats return freighted with fish. It is, however, on the Caspian that the most productive fisheries are established. One alone is farmed for L.34,375 yearly, and there are several others; but, like its waters, the productiveness of this sea is declining. Measures have been proposed to remedy this evil by piscicultural enactments. The Oural river yields also great quantities of *belooga*, or large sturgeon, which furnishes the delicate Russian caviar. The agents of the merchants, established in the small towns upon the banks of the Ob, purchase also of the Ostiaks valuable furs, which, together with soap, tallow, and leather, they afterwards export, partly to the fair of Neezni-Novgorod, and partly to the Keergheez of the steppes, who pay them in horses, cattle, and cotton stuffs, purchased by themselves of the Bookharians; the remaining produce of the government of Tobolsk is exported by the way of Kiakhtha into China, whence are brought in exchange silks and tea. Kiakhtha is the sole point of commercial intercourse between the two great empires of Russia and China. Almost all the principal tea-dealers in Russia have agents at that place, whilst the Chinese traffickers consist chiefly of temporary visitors without their families. The Russians there receive the staples of China, for which they give in return the productions of their own country. The nature and extent of the commerce of Kiakhtha will be seen from the following statement:—

Exportation of Russian Merchandise to China.

Description.	In 1835. Roubles.	In 1857. Roubles.
Skins to the amount of.....	636,964	...
Leather.....	212,137	324,850
Linen.....	58,033	...
Cottons.....	266,321	1,393,592
Cloths.....	641,897	1,429,445
Furs.....	...	1,247,350
Gold and silver articles.....	...	1,236,642
Corn, iron, steel, copper, glass, and other articles.....	413,185	...
Flax, hemp, silk, and woollen produce; hoofs and horns, metal articles, &c.....	...	477,225
Transit merchandise.....	155,923	...
Total.....	2,384,460	6,109,104
Or sterling.....	L.372,337	L.954,547

Importation of Chinese Merchandise into Russia.

Description.	In 1835. Roubles.	In 1857. Roubles.
Tea.....	1,974,042	5,892,261
Sugar.....	...	73,782
Silks.....	59,599	13,146
Cottons.....	35,064	26,769
Drugs, &c.....	53,398	...
Wool.....	...	623
Other different articles, such as fruits, grain, colours, furs, raw silk, &c.....	...	1,535,891
Total.....	2,122,103	7,542,472
Or sterling.....	L.331,578	L.1,178,511

Asiatic
Russia.

There is a school at Kiakhtha for teaching the Chinese language. The trade with China is a great source of wealth to Siberia, as will also be that carried on by the Amoor; for now that Siberia has an outlet on the navigable Pacific, it will flourish like California.

Another great commercial line is that which branches from Irkootsk, down the Lena, into the heart of the frozen regions and the shores of the Arctic Ocean. Yakootsk, situated about 800 miles down the Lena, is the emporium where the furs and other products of these desolate regions are collected. They are brought from the remotest extremities of the land which borders on Behring's Straits, and from the American territory. A considerable proportion consists of the tribute which is paid to government, and the wandering traders exchange tobacco, spirits, cutlery, beads, and toys for the remainder. The wild animals of this country are the polar bear, wolf, lynx, Arctic fox, wild boar, beaver, sable, ermine, squirrel, sea-lion, walrus, seal, otter, and sea-cat. Stray tigers and panthers have likewise been met with.

A geographical and statistical account of the Caucasus at large having been already given in the general description of Russia, we need only add the following complementary remarks. That part which extends from the southern governments of European Russia up to the central mountain range of the Caucasus belongs to Europe, and is called Ciscaucasia; the part beyond belongs to Asia, and is called Transcaucasia. The latter is divided into the following governments:—1. Tiflis; 2. Derbend; 3. Tchekmakha; 4. Erivan; 5. Kutais,—each with a chief town of the same name. Tiflis is the capital. These governments comprise the former provinces of Gruzia, Armenia, Imeritia, Daghestan, and some other lesser ones. Small as this territory is, compared with the vast extent of Russia, it is of no trifling importance to her in a commercial, financial, and political point of view. Its geographical position appears to us the happiest possible for a power prosecuting gigantic schemes of commercial intercourse and of territorial aggrandizement. Climate, soil, natural capabilities, situation, and political relations, all prove that, whatever it has cost Russia to acquire and maintain her Transcaucasian dominions, their value, which as yet is developed only to a small extent, justifies her policy. A history of the Caucasus, with a full account of its productions, by Colonel Uslar, being about to appear under the auspices of the Russian government, we would rather call attention to this fresh source of trustworthy information than give returns which are both incomplete and antiquated. The following general account we know to be true:—

The cultivation of the mulberry tree is now very much improving, and as much as 9660 cwt. of raw silk were forwarded in 1858 to Moscow alone for manufacture there.

The natural capabilities of the country afford a possibility of immensely increasing the production of this valuable commodity. It has lately been very much developed. The quality is still rather inferior; and although cotton is produced in some of the other southern or Asiatic possessions, it will be long ere Russia becomes independent of the United States for this article, more particularly since her own internal demands are extensively increasing.

The wine is indigenous to these regions, and presents a great variety of kinds. The vineyards are numerous and rich, the country being well adapted for the cultivation of the plant. All the wine and brandy produced are entirely absorbed by the internal consumption, which is incredible. Among the natural products likely to become important articles of trade, but which are at present nearly all consumed at home, are rice, saffron, madder, and cochineal. The Armenian or southern parts of the Transcaucasian provinces, produce a kind of cochineal which is said to yield a dye equal to that of Mexico. The mountain off-

Transcau-
casia.

Silk.

Cotton.

Wine.

Asiatic
Russia.

Live stock.

shoots of the Kazbeck and Elbrooz are rich in silver-lead ore, which has been found in fifty different places. Parts of this country also produce coal.

Extensive herds might be reared in these provinces, which afford great facilities for their maintenance. Great numbers of cattle and sheep are indeed raised, but the wool of the one is bad and the breed of the other inferior. Merino sheep have been successfully introduced into this quarter. There is a fine race of horses, and an abundance of camels, asses, mules, and swine. The natural capabilities of these provinces are very great, affording facilities for the production of the most valuable commodities, exclusively furnished by southern climates. These have only been developed to a partial extent; but the government displays so much laudable zeal in encouraging such branches of industry as are best suited to the various divisions of the empire that, after a certain time, she will be nearly independent of what are called colonial goods,—silk, cotton, and the like.

This is not the place to enter into the important question relative to the political influence which Russia is likely to exercise over the East by thus firmly establishing her dominion beyond the Caucasus; but her far-sighted policy has two main objects, which will be promoted by rendering the Caucasian isthmus a commercial country, securely incorporated with the rest of the empire. These are the creation of a manufacturing industry that will in time render her independent of other countries, particularly of England, and the establishment of her power in Asia, whence great advantages are not unreasonably expected. Now these provinces will at once supply the raw material necessary for manufactures, and at the same time open out a market for them in the East. It is true that the Caucasian mountains almost totally sever this limb from the great body of the empire, the passes of Mozdak being difficult of access, and the country infested with predatory hordes. But there are other and more eligible means of communication,—viz., the Caspian on the east, and the Black Sea on the west. Over the former Russia now reigns paramount, no other vessels of war but her own being allowed to navigate there. In this vast reservoir the Volga, which is the great artery of Russia, pours its waters, collected during a navigable course of 2055 miles through some of the most fertile regions of the empire, and including in its tributaries those most distinguished for manufacturing industry, which is the main object. This noble stream communicating with the Baltic, there is an easy transport of goods insured from the remotest governments of the empire to the Caspian, and thence to the Transcaucasian territory. There is also on the other side a communication by the Black Sea, but it does not present so many advantages as that by the Caspian.

Islands of
Russia.

In the Baltic Sea are,—1. The Aland Islands, more than 100 in number, forming a group at the entrance of the Bothnian Gulf. They are almost all rocky; and the largest are Aland, Lemland, Eckerö, Fegle, and Brende. 2. Hochland, nearly in the middle of the Finnish Gulf, is a high granite cliff. 3. Kotlin, on which is situated the fortress of Cronstadt, one of the strongest in Europe. 4. Oesel. 5. Dago. 6. Worms. 7. Mon, on the western coast of Esthonia. 8. Runo, in the Gulf of Riga. Besides these, on the northern coast of Finland, lie a countless number of rocky islets called *scheeren*, often affording very picturesque scenery. In the Caspian Sea the islands are generally rocky. The most remarkable on the western coast are the 'Tiulën or Seals' Island, and the 'Zeeloy, on which the vine is cultivated. In the White Sea is the Solovetsky group, abounding with Muscovy glass or mica (*vitrum ruthenicum*.)

The islands in the Northern Ocean are,—1. Kolgoiëff, opposite Tcheshk Bay, visited by the inhabitants of the go-

vernment of Arkhangel for its great quantity of geese and eider-down. 2. Novaiä Zenliä, consisting of two large islands, separated by the Matotchkin Strait, and of several smaller ones. In June the Russian hunters resort hither for chasing the morse, sea-hares, and seals. 3. Waigats, at the north-eastern point of European Russia. 4. The Spitzbergen Archipelago. 5. The Lena Archipelago, situated at the mouth of the Lena, and the principal of which are New Siberia, Thaddeus, Kotëlni, and Liäkhoff. 6. To the north of the Koleema lies the Bears' group. These islands are covered with snow during nearly the whole year. Their surface is generally rocky, and on some of them there are marks of volcanoes. They are chiefly remarkable for the teeth of the mammoth, rhinoceros, buffalo, and other animals found upon and beneath the surface of the ground. It was the search for ivory which originally induced the Russians to visit these regions, and their first exploring expedition was despatched in 1820. These islands are not inhabited, though traces of human beings have been discovered by the Russians engaged in the fisheries. Several kinds of shrubs are found, but no trees, although the shores are covered with drift wood. The southernmost point of these islands is in Lat. 69. 5., and they extend to Lat. 76. 20. Their longitude is between 154. and 183. 50. E. of Greenwich.

These consist of the N.W. coast of America, extending on the south of Behring's Straits to 127. 30. W. Long. from London, with a narrow stripe of coast reaching as far south as 55. 30. of N. Lat. Further, of the islands lying to the south and east of Kamtchatka, enumerated as follows:—1. The Kurile group, twenty-two in number, and of which nineteen belong to Russia. They are all volcanic, and the few inhabitants are of Japanese origin. 2. The Commander's Group, comprising Behring's and Copper islands, on the latter of which Behring himself was buried. 3. The Aleutian Islands, divided into four groups,—the Bleežni or Near, the Rat, the Andreanoff, and the Fox groups. The largest of the Aleutian Islands is Oonalashka, 100 miles by 35. The volcano of Agazedan, on Onimak, is 9000 feet above the water-level. 4. The Shoomagin; and 5. The Eudoxian, both to the south of the peninsula of Aliaska. 6. Kadyak, to the east of Aliaska. 7. Sitkha and the adjacent islands, lying on the extreme southern confine of the Russian coast. 8. The Prebeeloff, to the north of the Aleutian. 9. St Matthew's Island; and 10. St Lawrence's, both to the north of Prebeeloff's group. 11. Gvozdieff, or St Diomed's Island, in Behring's Straits. Every one of these islands is either a distinct mountain or the continuation of a chain. On the American continent the whole interior of the stripe extending from the southern border to Mount St Elias, is one continued mass of mountains, which sensibly declines as it approaches the Polar Sea and Eastern Ocean. The eastern parts of these possessions are covered with marshes and forests. The soil is mostly stony and the climate cold, though not so much so as in Kamtchatka. It is even warmer than the province of Yakootsk in Northern Asia. Thick fogs brood over these inhospitable shores; and the produce of the chase or fishing forms the sole source of riches to the natives. The population, on the 1st January 1858, in the American colonies of New Arkhangel, Kadyak, Oonalashka, Akhtinsk, the Kurile Islands, and Kenaish Bay, amounted only to 5322 males and 4743 females, making a total of 10,065 souls; of which number 746 were Russians, 688 being males and 1838 Creoles, of whom 910 were males.

There were further in America 9 orthodox Greek churches and 35 chapels, besides 1 church at Ayan in Asia, altogether with 12,000 parishioners, of whom 9050 natives, called Koloshes, Kadyaks, Oonalashkins or Aleuts, Akhtins, Kenaitses, Tchoogatches, Alegmutes, and Koikh-paktses, besides some Esquimaux. Five Creoles were or-

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dained clergymen. Not one crime had been committed during the last forty years. Many religious books had also been translated into the native tongues. The Spiritual Seminary of New Arkhangel had been transported to Yakootsk in Asia, and several schools existed at some of the colonial churches. A general colonial school was also about being established at the chief town, New Arkhangel, on the Island of Sitkha.

This, the progress of a country which, at the accession of Peter the Great in 1689, only 170 years ago, contained but 5,636,000 square miles, with 10 millions of inhabitants, and a revenue of L.403,125.

(Chief sources of reference applied to in the compilation of this article:—The Statistical Tables of 1858; the Statistical, Geographical, Military, and Naval *Sborniks*, or Gatherers of 1857 and 1859; Orsenieff's *Statistical Outlines of Russia*; Köppen's *Ethnographical Chart and Ninth Revision*; the Russian and Caucasian Calendars of 1859; the, Government Chart of the Empire, besides sundry others; Kooznetsoff's *Geography*; *Views of Foreign and Internal Trade*; Tengoborski's *Productive Strength*; Lamanski's various works on Russian Finance; Nebolsin's

Internal Trade, and Thörner's continuation of this work; Ruthersford Aksakoff's *Fairs of Russia*; Troinitzki's pamphlet on the Serfs, and Statistical Chart; Oostrialoff's *History*; *Dissertations on the Eastern Catholic Church*, by Palmer; *Unterscheidungslehren der Christlichen Bekenntnisse*, by Graul; Hanusch, *Slavonian Mythology*; Ritter's *Asien*; *L'Asie Centrale*, par A. de Humboldt. The rest is completed from the writer's own personal knowledge. The best foreign writers on Russia are Schnitzler and Haxthausen, although their works contain numerous errors, and are becoming antiquated; the best national writers are Tengoborski and Tcheffkin. The works edited by Demidoff are also noteworthy; but Russia is still much in want of an able expositor in several points of view, as the country is much misrepresented. We are much beholden to Professor Oosoff, Colonel Uslar, and Councillor Tetera; besides being particularly indebted for unwearied attentions to Baron von Behr, Academicians Vesseloffski and Kupffer, State-Councillors Lamanski, Khvostoff, Gaieffski, and last, though not least, to the Rev. E. E. Law, D.D., and R. Winkler, M.D., both of St Petersburg.) (J. H. B.—P.)

RUSTCHUK, a town of European Turkey, in Bulgaria, on the right bank of the Danube, here about 2 miles broad, opposite Giurgevo, and 55 miles below Nicopolis. It stands on a series of low hills, among extensive orchards, from the midst of whose foliage it rises conspicuous with its white chimneys and minarets. Extensive fortifications surround the town, and a citadel commands the passage of the river. The buildings are generally mean-looking, but there are several mosques, Greek and Armenian churches, synagogues, bazaars, and baths. Rustchuk is the seat of a Greek archbishop and of a Turkish pasha. There are some manufactures of woollen and cotton cloth, silk, leather, linen, and tobacco: while an active trade is carried on with Constantinople and Wallachia. For river navigation there is a harbour under the walls of the citadel. A battle was fought here between the Turks and the Russians in 1811, after which the town was taken by the latter. Rustchuk is inhabited by Turks, Wallachians, Greeks, and Jews. Pop. 30,000.

RUTH, THE BOOK OF, is inserted in the Scripture canon, according to the English arrangement, between the book of Judges and the books of Samuel, as a sequel to the former and an introduction to the latter. Among the ancient Jews it was added to the book of Judges, because they supposed that the transactions which it relates happened in the time of the judges of Israel (Ruth i. 1). Several of the ancient fathers, moreover, make but one book of Judges and Ruth. But the modern Jews commonly place in their Bibles, after the Pentateuch, the five Megilloth—1. The Song of Solomon; 2. Ruth; 3. The Lamentations of Jeremiah; 4. Ecclesiastes; 5. Esther. Sometimes Ruth is placed the first of these, sometimes the second, and sometimes the fifth. The true date and authorship of the book are alike unknown, though the current of authority is in favour of Samuel as the writer. That it was written at a time considerably remote from the events it records, would appear from the passage in ch. iv. 7, which explains a custom referred to as having been "the manner in former time in Israel, concerning redeeming and concerning changing" (comp. Deut. xxv. 9). That it was written also at least as late as the establishment of David's house upon the throne, appears from the concluding verse—"And Obed begat Jesse, and Jesse begat David." The expression, moreover (ch. i. 1), "when the judges ruled," marking the period of the occurrence of the events, indicates, no doubt, that in the writer's days kings had already begun to reign. The canonical authority of

Ruth has never been questioned, a sufficient confirmation of it being found in the fact that Ruth the Moabitess comes into the genealogy of the Saviour, as distinctly given by the evangelist (Matt. i. 6). The principal difficulty in regard to the book arises, however, from this very genealogy, in which it is stated that Boaz, who was the husband of Ruth, and the great-grandfather of David, was the son of Salmon by Rachab. Now, if by Rachab we suppose to be meant, as is usually understood, Rahab the harlot, who protected the spies, it is not easy to conceive that only three persons—Boaz, Obed, and Jesse, should have intervened between her and David, a period of nearly 400 years. But the solution of Usher is not improbable, that the ancestors of David, as persons of pre-eminent piety, were favoured with extraordinary longevity. Or it may be that the sacred writers have mentioned in the genealogy only such names as were distinguished and known among the Jews.

The leading scope of the book has been variously understood by different commentators. Umbreit ("Ueber Geist und Zweck des Buches Ruths," in *Theol. Stud. und Krit.* for 1834, p. 308) thinks it was written with the specific moral design of showing how even a stranger, and that of the hated Moabitish stock, might be sufficiently noble to become the mother of the great king David, because she placed her reliance on the God of Israel. Bertholdt regards the history as a pure fiction, designed to recommend the duty of a man to marry his kinswoman; while Eichhorn conceives that it was composed mainly in honour of the House of David, though it does not conceal the poverty of the family. The more probable design we think to be to pre-intimate, by the recorded adoption of a Gentile woman into the family from which Christ was to derive his origin, the final reception of the Gentile nations into the true church, as fellow-heirs of the salvation of the gospel.

RUTHERFORD, SAMUEL, a divine celebrated for his piety and learning, was born about 1600 at the village of Nisbet in Roxburghshire, and was educated for the church at the university of Edinburgh. Being appointed in 1627 to the parish of Anwoth in Kirkcudbrightshire, he addressed himself to his work with a holy zeal. He rose in the morning at three o'clock to meditate and pray. The care of his poor, ignorant flock occupied his every thought. Many of them by name were made the subject of his frequent wrestlings with God. Even his very dreams were disturbed with anxiety on their account. Nor after he had been deposed and banished from his office in 1636, for

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preaching against the Articles of Perth, did he forget his charge. No sooner was Episcopacy overthrown in 1638 than he hastened home from Aberdeen to Anwoth. After his settlement in 1639 as professor of divinity in St Mary's College, St Andrews, Rutherford began to take a prominent part in the politics of the church. He was sent up to London in 1643 as one of the commissioners from Scotland to the Westminster Assembly. Remaining there at his post for four years, he did great service to the cause of his party. He exerted himself to get his peculiar views embodied in the *Shorter Catechism* which was then drawn up. So great also were his efforts in favour of Presbyterianism that Milton attacked him by name in the poem entitled *On the New Forcers of Conscience under the Long Parliament*. At the same time, his pen was busily employed in the same cause. He published *The Due Right of Presbytery*, 1644; *Lex Rex*, 1644; *The Trial and Triumph of Faith*, 1645; and *The Divine Right of Church Government*, 1646. The last days of Samuel Rutherford were assailed by the persecution which followed the Restoration in 1660. His *Lex Rex* was burnt in front of his own windows. All his offices were taken from him. He himself would also have been arraigned before the Parliament had he not been summoned away before a superior judicatory on the 20th March 1661. (See *The Letters of the Rev. Samuel Rutherford, accompanied with a Sketch of his Life*, by the Rev. A. A. Bonar, Edinburgh, 1848.)

RUTHERGLEN, or RUGLEN, a parliamentary, municipal, and royal burgh of Scotland, county of Lanark, on the left bank of the Clyde, 2 miles S.E. of Glasgow. It has one main street of considerable breadth, extending from E. to W., and many smaller streets and lanes diverging from it. There are no public buildings of any importance except the town-hall, parish church, chapel of ease, Free and United Presbyterian churches. The parish church is ancient, and it is said to have been here that the treaty was made in 1297 between Edward I. of England and Sir John Menteath, by which the latter agreed to betray Wallace to the English. The castle that formerly stood at Rutherglen was demolished by the Regent Murray. The town contains a court-house, prison, and several schools. The inhabitants are very generally employed in hand-loom weaving. There are chemical works, print and dye works here; and in the vicinity several coal mines. Formerly the town was of considerable importance, and had a large trade on the Clyde; but this has been absorbed by Glasgow, with the suburbs of which Rutherglen is connected by an old narrow bridge. Several annual fairs are held. The burgh was first chartered by David I. in 1126, and is governed by a provost, two bailies, and eighteen councillors. It unites with Kilmarnock, Dumbarton, Port-Glasgow, and Renfrew in returning a member to Parliament; and the constituency is 194. The value of real property, 1858-9, was L.23,304; and the corporation revenue, 1857-8, L.1633. Pop. (1851), 7104.

RUTHIN, a market-town, parliamentary and municipal borough of Wales, in the county and 8 miles S.E. of Denbigh, 195 N.W. by W. of London. It stands on the sides and top of a hill on the left bank of the Clwyd. The ancient castle, which was founded by Edward I., was taken after a siege of two months by the parliamentary forces in 1646, and afterwards dismantled. Recently a castellated mansion-house has been erected on the site. In the market-place of the town stands the town-hall, a substantial building of the seventeenth century. Ruthin has also a handsome court-house, a grammar and other schools, and a jail. The church is ancient, and has a much-admired oak roof. The other places of worship belong to Baptists, Independents, and Methodists. The inhabitants are chiefly employed in farming. Markets are held twice a week, and there are several annual fairs. The borough is governed

by a mayor, three other aldermen, and twelve councillors; and it unites with Denbigh, Holt, and Wrexham in returning a member to Parliament. Pop. (1851), 3373.

RUTILIUS LUPUS, a Roman rhetorician of the time of Cicero, has left behind him a treatise *De Figuris Sententiarum et Elocutionis*. This treatise was merely an abridgment from the work of a contemporary, Gorgias of Athens. The one book of which it originally consisted was divided into two by some of its subsequent editors. Its chief value in the present day is derived from its numerous quotations from the works of Greek authors now lost. The *editio princeps* of Rutilius was printed by Zoppinus at Venice, 8vo, 1519. The best edition is that of Ruhnken, 8vo, Leyden, 1768.

RUTILIUS NUMATIUS, *Claudius*, a Latin poet of the fifth century, was a native of Gaul, and, sojourning in Rome for some time, held the high office of *præfectus urbi*. His style was formed after the best models in the language, and his spirit was truly poetical. The subject of his verse was his return by sea from Italy to his native country. He described the scenery which he saw as he coasted along the shores, and the people whom he met in the towns at which he touched. Among other subjects, he attacked the monks, and lamented the ravages committed by the barbarians of the north. This poem of Rutilius has come down to us in an imperfect state, under the title of *Itinerarium* or *De Reditu*. The *editio princeps* was printed at Bologna, 4to, 1520. The best edition is that of Zumpt, Berlin, 1840.

RUTLANDSHIRE, an inland county of England, the smallest in size of the whole, bounded on the N.E. by Lincolnshire, S.E. by Northamptonshire, W. and N.W. by Leicestershire: length, from N.E. to S.W., about 20 miles; greatest breadth, 16; area, 150 square miles, or 95,805 acres. It is divided into five hundreds, and contains two market-towns, Uppingham and Oakham, and fifty-seven parishes, besides two extra parochial districts.

It gives only one title at present, that of duke, to the family of Manners; two former peerages, that of Ferrars of Okeham, and Noel of Exton, being extinct. Only two members are returned to the House of Commons from the county, and none from either of the towns. In judicial affairs it is on the midland circuit of the judges; and in ecclesiastical matters it has formed, since the year 1541, a portion of the bishopric of Peterborough.

The appearance of this small county is pleasing to the traveller. It is much diversified by ranges of moderate hills running from east to west, in some parts well wooded. Between these ranges of hills, the valleys, of about half a mile in breadth, are luxuriant and verdant. The principal vale, called Catmoss, is in the centre of the county, having to the north a tract of table-land overlooking the well-wooded plains of Leicester, Lincoln, and Nottinghamshire. The rivers of Rutlandshire all discharge their waters into the estuary called the Wash. The largest of them is the Welland, which flows in a N.E. direction along the border of the county, separating it from that of Northampton. The Chater, the Wash, the Eye, and the Wreak are all affluents of the Welland, flowing from W. to E., through various valleys in Rutlandshire. The geological formations of the county belong to the lower part of the oolite series of deposits. Limestone is the prevailing rock in the table-land that occupies the northern and also in the south-eastern part of the county. The south-western portion is mostly occupied by the reddish sands that separate the oolitic formation from the lias that underlies it. There are good stone quarries at Ketton, on the south-east border of the county.

The soil on the eastern and south-eastern parts is chiefly shallow, resting upon a basis of limestone, composed of clays and loams. The other parts consist principally of a

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tenacious but fertile loam; but the vale of Catmoss enjoys a most fertile soil of good clay, or red loam, or a grateful mixture of both these earths. A peculiarity of the soil is a redness, which generally prevails, and which tinges all the waters of the country. A great part of the area, especially in the west, is laid out in pasture; the eastern portion is mostly occupied by farms; and hardly any part is waste.

The woods of this county were far more extensive in former ages than they are at present, but they are still estimated to cover nearly 3000 acres. The climate is generally accounted peculiarly soft and healthy; and the elevation is of that medium kind which equally exempts it from the pernicious effects of moist exhalations and cold mountain fogs.

The agriculture, though it has partaken of some modern improvements, is not upon the whole conducted in the best manner. Large crops of wheat and barley are reared; but it is chiefly for its pastures that Rutlandshire is remarkable. The cattle are for the most part shorthorns; but other breeds are also to be met with. The cows are remarkable for the richness of their milk, though they yield but a small quantity. The rich cheese commonly known as Stilton is chiefly made in the dairies of this county. Most of the sheep are of the Leicester breed. Hogs of the Berkshire and the Suffolk breeds are raised; and many strong dray horses are sent from Rutlandshire to London. The farms have for the most part an extent of 15 acres and upwards, and the farm-houses are good old-fashioned buildings.

Rutlandshire is neither a manufacturing nor a mineral district, but depends exclusively on its agriculture. It is traversed by numerous roads, by a canal from Melton Mowbray to Oakham, and by lines of railway connecting Peterborough with Leicester and Rugby. The principal seats of noblemen and gentlemen in the county are Exton Park, belonging to the Earl of Gainsborough; Normanton Hall, to Baron Aveland; Cottesmere, to the Earl of Lonsdale; Glaiston, to the Earl of Harborough; and Burley, to G. Finch, Esq. The last-mentioned place belonged at one time to the Duke of Buckingham, who entertained here on several occasions James I. and Charles I. It was afterwards purchased by the Earl of Nottingham, who erected the present splendid mansion. There are few remains of antiquity in the county; and these are mostly to be found in the churches, some of which are of Norman architecture, and beautifully ornamented. According to the census of 1851, the county contained in all 91 places of worship, with 17,399 sittings. Of the former, 53 belonged to the Church of England, 18 to Wesleyan Methodists, 12 to Baptists of various denominations, 6 to Independents, and 1 each to Quakers and Mormons. According to the same returns, Rutlandshire contained 39 public day schools and 74 private ones,—in all, 113; attended by 3405 children. Of the public schools, 2 were workhouse schools, supported by taxation, 15 were supported by endowments, and 22 by the Church of England. There were also 58 Sunday schools, with 3038 scholars. The only literary institution is the Rutland Farmers' and Graziers' Club, which has 40 members, and a library of 80 volumes. By the returns of 1801, the inhabitants were 16,300; in 1811 the numbers were 16,380; in 1821 they were 18,487; in 1831 the numbers were 19,385; in 1841, 21,302; and in 1851 22,983.

RUTNAGHERRY, a collectorate of British India, in the presidency of Bombay, stretches along the shore of the Indian ocean, bounded on the N. by the collectorate of Tannah, E. by those of Sattara and Kolapore, S. by Sawunt Warree and the Portuguese territory of Goa, and W. by the sea. It lies between N. Lat. 15. 44. and 18. 6., E. Long. 73. 6. and 73. 58: length, from N. to S., 167 miles; greatest breadth, 40; area, 3964 square miles.

The surface is in general very rugged, being occupied in many parts with mountains and jungle, and intersected with torrents, which rush down from the western ghauts to the sea. Only a small part of the soil is arable, but the facilities for water communication with the coast, where a ready market is found for agricultural produce, induce the peasant to make the most of his available ground. But this region is almost entirely cut off from the Deccan by the mountains, through which there are only a few passes, while communication is greatly impeded by the want of good roads and bridges. Rice and grain are the principal crops raised in the district; no great success has attended the efforts made to introduce more valuable kinds of produce. Pop. 665,238.

RUTULI (Ρούτινλοι), a people of ancient Italy, who settled at an early period in a portion of Latium adjoining the sea-coast, their capital city being Ardea, have acquired considerable celebrity from the prominent part which their king, Turnus, played in the settlement of Æneas, as poetically told by Virgil. An old tradition representing Ardea as founded by a colony from Argos has led Niebuhr to conjecture the Pelasgic origin of the Rutuli. (Nieb. vols. i. and ii.) Schwegler again considers them as Etruscans (*Röm. Gesch.*, vol. i.); but the whole subject is so bound up with poetical invention, that it is almost impossible to extract the smallest grain of truth from it.

RUYSCH, FREDERIC, one of the most eminent anatomists of which Holland can boast, was born at the Hague in 1638. After making great progress at home, he repaired to Leyden, and there prosecuted the study of anatomy and botany. He next studied at Franeker, where he obtained the degree of Doctor of Physic. He then returned to the Hague, and, marrying in 1661, dedicated his whole time to the study of his profession. In 1665 he published a treatise entitled *Dilucidatio Valvularum de variis Lymphaticis et Lacteis*, which raised his reputation so high that he was chosen professor of anatomy at Amsterdam. This honour he accepted with the more pleasure, because his situation at Amsterdam would have given him easy access to every requisite help for cultivating anatomy and natural history. After he settled in Amsterdam he was perpetually engaged in dissecting, and in examining with the most inquisitive eye the various parts of the human body. He improved the science of anatomy by new discoveries; and, in particular, he found out a way to preserve dead bodies many years from putrefaction. His anatomical collection was curious and valuable. He had a series of fetuses of all sizes, from the length of the little finger to that of a newborn infant. He had also bodies of full-grown persons of all ages, and a vast number of animals of almost every species on the globe, besides a great many other natural curiosities. Peter the Great of Russia, in his tour through Holland in the year 1698, visited Ruysch, and was so charmed with his conversation that he passed whole days with him; and when the hour of departure came, he left him with regret. He set so high a value on Ruysch's cabinet of curiosities that when he returned to Holland in 1717 he purchased it for 30,000 florins, and sent it to St Petersburg. In 1685 he was made professor of medicine, an office which he discharged with great ability. In 1728 he got his thigh-bone broken by a fall in his chamber. Ruysch is said to have been of so healthy a constitution that, though he lived to the age of ninety-three, yet during that long period he did not labour above a month under the infirmities of disease. From the time he broke his thigh he was disabled from walking without a support; yet he retained his vigour both of body and mind without any sensible alteration, until in 1731 his strength at once deserted him. He died on the 22d of February of the same year. His anatomical works are printed in 4 vols. 4to. His second collection in natural history and

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anatomy was sold at his death to the King of Poland for 20,000 florins.

The style of his writings is simple and concise, but sometimes inaccurate. Instruction, and not ostentation, seems to be his only aim. In anatomy he undoubtedly made many discoveries; but from not being sufficiently conversant with the writings of other anatomists, he published as discoveries what had been known before. The Academy of Sciences at Paris in 1727 elected him an honorary member, in place of Sir Isaac Newton, who had lately deceased. He was also a member of the Royal Society of London.

RUYSDAEL, or RUISDAEL, JACOB, the prince of Dutch landscape-painters, was born at Haerlem in 1630, and is said to have studied under Berchem. Settling in his native country, he commenced to paint landscapes with unsurpassed success. His eye sought for subjects under every aspect of nature. He selected a wide sweep of meadow-land, a wooded hamlet, or a frozen canal with unfailing artistic skill. His lively fancy imparted to the scene its appropriate poetic feeling, and his hand copied the whole with exquisite fidelity. But it was especially in the wild and the magnificent that Ruysdael was at home. His ardent imagination loved to exercise itself in imitating the lawless strength of nature. Tempestuous seas and rude forest landscapes came out upon the canvas with all the striking effect of reality. Ruysdael died at Haerlem in 1681. Specimens of the works of this great painter are found in most of the principal collections in Europe. There is a landscape in Worcester College, Oxford, a church interior in Lord Bute's collection, and two landscapes in the National Gallery of Scotland. His masterpiece, a "Stag-Hunt," is in the Dresden gallery. The figures in his pictures are painted by Philip Wouwerman, Adrian Vandewelde, or Berchem. Jacob Ruysdael's elder brother Solomon was also a landscape-painter.

RUYTER, MICHEL ADRIAN, a distinguished naval officer, was born at Flushing, a town of Zealand, in the year 1607. He entered on a seafaring life when he was only eleven years old, and was first a cabin-boy. Whilst he advanced successively to the rank of mate, master, and captain, he acquitted himself with ability and honour in all these employments. He repulsed the Irish, who attempted to take Dublin out of the hands of the English; he made eight voyages to the West Indies, and ten to Brazil; he was promoted to the rank of rear-admiral, and sent to assist the Portuguese against the Spaniards. When the enemy came in sight he advanced boldly to meet them, and gave such unquestionable proofs of valour as drew from the Portuguese monarch the warmest applause. His gallantry was still more conspicuous before Salée, a town of Barbary. With a single vessel he sailed through the roads of that place, in defiance of five Algerine corsairs who came to attack him.

In 1653 a squadron of seventy vessels was despatched against the English, under the command of Admiral Van Tromp. Ruyter, who accompanied the admiral in this expedition, seconded him with great skill and bravery in the three battles which the English so gloriously won. He was afterwards stationed in the Mediterranean, where he captured several Turkish vessels. In 1659 he received a commission to join the King of Denmark in his war with the Swedes. As a reward of his services, the King of Denmark ennobled him and gave him a pension. In 1661 he grounded a vessel belonging to Tunis, released forty Christian slaves, made a treaty with the Tunisians, and reduced the Algerine corsairs to submission. His country, as a testimony of her gratitude for such illustrious services, raised him to the rank of vice-admiral and commander-in-chief. To the latter dignity, the highest that could be conferred upon him, he was well entitled by the signal victory which he obtained over the combined fleets of France and

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Rye.

Spain. This battle was fought in 1672, about the time of the conquest of Holland. The battle was prosecuted between the English and Dutch with the obstinate bravery of nations which were accustomed to dispute the empire of the ocean. Ruyter having made himself master of the sea, conducted a fleet of Indiamen safely into the Texel; thus defending and enriching his country, whilst it had become the prey of hostile invaders. The next year he had three engagements with the fleets of France and England, in which, if possible, his bravery was still more distinguished than ever. But he did not long enjoy the triumphs which he had so honourably won. In an engagement with the French fleet off the coast of Sicily he was defeated, and received a mortal wound, which in a few days put an end to his life. His corpse was carried to Amsterdam, and a magnificent monument to his memory was there erected by the command of the States-General. The Spanish Council had bestowed on him the title of Duke, and transmitted a patent investing him with that dignity; but he died before it arrived. When Louis XIV. was congratulated upon De Ruyter's death, he replied, "Every one must be sorry at the death of so great a man." (See the *Life of M. A. Ruyter*, by G. Brandt, Amsterdam, 1690.)

RYDE, a market-town of England, Hampshire, on a hill on the N.E. coast of the Isle of Wight, 7 miles N.E. by E. of Newport, and 75 S.W. by S. of London. It is a modern place, and has broad, straight, and well-paved streets. The houses, which are considerably varied in their appearance, and generally surrounded with gardens, rise tier above tier from the sea-shore, and have, when seen from Portsmouth, a striking and picturesque aspect. One of the finest public buildings is that which includes the market-house and town-hall, a Doric structure, 198 feet by 56. There are numerous places of worship in the town, of which 3 belong to the Church of England, and are under the parish church of Newchurch, 7 miles distant. The others belong to Independents, Baptists, Methodists, and Roman Catholics. Ryde has also several schools, a literary and scientific institution, and a dispensary. One of the most elegant buildings is that of the Royal Victoria Yacht Club, recently erected. There are also a theatre, baths, public libraries, and reading-rooms, assembly-rooms, and a fine arcade. The pier, which has been recently built at considerable expense, is 1740 feet in length, and forms a favourite promenade. Ryde is a much-frequented resort for visitors during the summer months, and the accommodation it affords to strangers has been recently much increased. Steamers ply regularly between this and Portsmouth. The neighbourhood is very beautiful, and contains many fine mansions. There are at Ryde building-yards for boats and yachts; and the town exports, among other articles, corn, flour, calves, sheep, and lambs. Vessels bound for the East and West Indies often touch here for provisions. Pop. (1851) 7147.

RYE. See AGRICULTURE.

RYE, a market-town, municipal and parliamentary borough of England, one of the cinque ports, in the county of Sussex, on the right bank of the Rother, at its mouth, 38 miles E.N.E. of Lewes, and 63 S.E. of London. It is built on the northern and eastern slopes of a hill, and has some regular streets lined with old, substantial, and not very uniform houses. The houses are for the most part built of brick, as also is the town-hall, a neat edifice, raised on arches, beneath which is a market-place. The parish church is a large building in the form of a cross, with a central tower. It is partly in the Norman and partly in the early English style. There are also places of worship belonging to Methodists, Independents, and Baptists. The educational establishments comprise two endowed schools, a free grammar school, and national schools. The town has also alms-houses and other charitable institutions. Rye

Rymer. has always depended very much for its prosperity on the harbour. This was at one time very good; but the gradual deposition of sand in the mouth of the Rother, where the harbour is, went on to such an extent that in the sixteenth century it was nearly choked up. In 1750 an attempt was made to form by a canal a new mouth to the river; but this proved unsuccessful, and was abandoned in 1778. The old harbour was then improved by a wooden pier at one side and embankments at the other, which narrowed and deepened the channel; but even with this improvement it can only admit of vessels of 200 tons burden. The entrance, too, is difficult, and the harbour is dry at low water. The number of sailing-vessels registered at the port, 31st December 1857, was 120, tonnage 7218; of steamers 1, tonnage 21. In the year ending on that day the number of sailing-vessels that entered was 484, tonnage 40,349; those that cleared 133, tonnage 9024. The principal articles of export are wool, oak timber, bark, and hops. Coal, corn, and Dutch produce are imported. The fisheries are somewhat productive. In the town are ship-building yards, and in the vicinity lime-kilns. The borough is governed by a mayor, three other aldermen, and twelve councillors. It returns a member to the House of Commons. Rye is a very ancient place, and is supposed to be the *Novus Portus* of the Romans. In the reign of Stephen a castle, which still remains, and is now used as a jail, was erected here; and by order of Edward III. the town was walled on all sides, except where steep cliffs defended it towards the sea. One of the gates of this period still remains. Pop. of the borough (1851) 8541.

RYMER, THOMAS, the author of that well-known and important work the *Fœdera*, was born in Yorkshire in 1638 or 1639, and was educated at the grammar-school of Northallerton. He was admitted a scholar at Sydney Sussex College, Cambridge; then became a member of Gray's Inn in 1666; and at length was appointed historiographer to King William, in place of Shadwell, in 1692. He wrote a *View of the Tragedies of the Last Age*, and a tragedy named *Edgar, or the English Monarch*. For a critic he was certainly not well qualified, for he wanted candour; nor is his judgment much to be relied on who could condemn Shakspeare with such rigid severity in his *Short View of Tragedy*, 1693. His tragedy will show that his talents for poetry were by no means equal to those whose poems he has publicly censured. In 1694 appeared his translation of Rapin's *Reflections on Aristotle's Treatise of Poesie*. But though he has no title to the appellation of poet or critic, as an antiquarian and historian his memory will long be preserved. His *Fœdera*, which is a collection of all public documents of the kings of England with foreign princes, is esteemed one of our most authentic and valuable records, and is oftener referred to by the best English historians than any other book in the language. It was published at London in the beginning of the eighteenth century, in 17 vols. folio. Three volumes more were added by Sanderson after Rymer's death. The whole were reprinted at the Hague in 10 vols., 1739. They

were abridged by Rapin in French, and inserted in Le Clerc's *Bibliothèque*, a translation of which was made by Stephen Whatley, and printed in 4 vols. 8vo, 1731. Rymer died on the 14th of December 1713, and was buried in the parish church of St Clement Danes. Some specimens of his poetry are preserved in the first volume of Nichol's *Select Collection of Miscellaneous Poems*, 1780.

RYOTS, the name given to the cultivators of the soil in Hindustan. (See HINDUSTAN.)

RYSBRACK, RYSBRAECK, or RYSBRECHTS, PETER, a Flemish painter, was born at Antwerp in 1657, and received his rudimentary instruction in the studio of Francis Milé, whom he afterwards accompanied to Paris. He made a special study of the works of Gaspar Poussin, and received flattering encouragement to remain in Paris. He returned, however, to his native country, and exercised his talents in Antwerp with great reputation. Rysbrack possessed great harmony in the distribution of his colours, had a broad and free touch, and great facility of execution, but there was a monotony and want of variety about his pictures, which placed him on a much lower level than the master whom he imitated. He died about 1716.

RYSBRACK, *Michael*, a distinguished Flemish sculptor, was born at Antwerp according to the testimony of Charles Rogers, who knew him well, on the 24th of June 1693. His father, Peter Rysbrack, the painter, already noticed, placed him early with Michael Vander Vorst, with whom he remained till 1712. He came to London in 1720, and was for a time obscurely engaged in executing monumental works for Gibbs, who industriously farmed out these ornamental works to the lowest bidder. Having rid himself of Gibbs, he soon brought himself into notice, so that there was no piece of monumental art executed in England of any importance that did not pass through his hands. He gave a great impulse to sculpture in England, and so great was his reputation, that men used to recount in remote districts of the country, as the greatest event of their lives, their having had the honour of visiting the workshop of Rysbrack of Vere Street, London. Form and character were his exclusive study; and he had very slender regard for his illustrious countrymen, Rubens and Rembrandt. For many years he may be said to have had the sculpture of Britain at his feet, but on the appearance of Scheemacker and Roubiliac, he had to recognize two successful rivals. During his career he executed busts of Pope, Ben Jonson, Butler, Milton, Cromwell, Sir Hans Sloane, Locke, and many others, besides erecting numerous monuments in Westminster Abbey and elsewhere. He died January 8, 1770. (See SCULPTURE.)

RZESZÓW, a town of the Austrian empire, capital of a circle in Galicia, in a deep valley, 94 miles W. by N. of Lemberg. It has a large castle, a school, linen factories, and some trade in linen. About half of the inhabitants are Jews; and many are employed in making jewellery of a sort of false gold, with or without precious stones. This is sold not only at home, but in other countries, especially in Wallachia. Pop. 6700.

Ryots
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Rzeszow.

S.

S
||
Saadi.

S, the nineteenth letter and chief sibilant of the English alphabet. The sound of it is formed by forcing the breath through a narrow passage between the palate and the tongue elevated near it, together with a motion of the lower jaw and teeth, towards the upper jaw. Its sound, however, varies, being strong in some words, as *this*, *thus*, and soft in words which have a final *e*, as *muse*, *wise* (pronounced *z*). It is generally doubled at the end of words, by which they become hard and harsh, as in *kiss*, *loss*. In some words it is silent, as *isle*, *island*, *viscount*. It is subject to numerous interchanges, which are observable in most languages. The following are the best known:—S interchanges with *d*, *th*, *t*, *z*, *sh*, *c*, *g*, *h*, *ks*, with *g*, *n*, and *r*. The letter S is frequently dropped, of which we have numerous examples in the history of the French language.

In abbreviation, S. stands for *societas* or *socius*; as R.S.S. for *regiæ societatis socius*, fellow of the royal society. In medicinal prescriptions, S.A. signifies *secundum artem*, according to the rules of art. And in the notes of the ancients, S. stands for *Sextus*; S.P. for *Spurius*; S.C. for *senatus consultum*; S.P.Q.R. for *senatus populusque Romanus*; S.S.S. for *stratum superstratum*, one layer above another alternately; S.V.B.E.E.Q.V. for *si vales bene est, ego quoque valeo*, a form used in Cicero's time in the beginning of letters. (See ABBREVIATIONS.) Used as a numeral, S. anciently denoted seven; in the Italian music, S. signifies *solo*; and in books of navigation, S. stands for south, S.E. for south-east, S.W. for south-west, S.S.E. for south-south-east, S.S.W. for south-south-west.

SAAD-ED-DEEN, MOHAMMED EFFENDI, a celebrated Turkish historian, was born in the early part of the sixteenth century, and was educated among the pages of the imperial palace. The influence of his father and his own acquirements raised him to a high position in the world. Several emperors in succession patronized him. Selim II. made him preceptor to his son the heir-apparent. Monrad III. appointed him military judge, and instituted for him the new office of imperial historiographer. Still more marked were the favours of Mohammed III. He kept him in his presence as his confidential councillor, raised him to the dignity of mufti, and continued to cherish him till death carried him off in 1599. The great work of Saad-Ed-Deen treats of the history of the Ottonian empire from its foundation by Ottoman to the death of Selim I. in 1520. Speaking of it, Sir William Jones says that, "for the beauty of its composition and the richness of its matter, it may be compared with the finest historical pieces in the languages of Europe." It is still in manuscript.

SAADI, surnamed MOSLII EDDIN, one of the most celebrated of the Persian poets, was born at Shiraz about 1175, and after receiving his education at the college of Bagdad, became a dervish. In the early part of his life he was known as a great traveller. His frame was strong and vigorous, and his temperament healthy and sunny. The free air and the light of many-coloured life were pleasant to his soul. He was ever on foot venturing into all sorts of countries, associating with all sorts of people, and meeting with all sorts of adventures. He cracked his jokes in India, fought against the infidels in Asia Minor, and was for some time a prisoner in the hands of the Crusaders at Tripoli. At the end of thirty years, however, Saadi settled down. Building a hermitage near the walls of Shiraz, he secluded himself from the world. His time was chiefly engrossed in digesting his large experience of men and manners, and in embodying it in his poetry and prose works. Many persons of rank broke in upon his retire-

ment and heaped his board with gifts, but they could not affect his spirit of austerity. He appropriated part of their bounty for his own simple wants, and bestowed the rest upon the poor. Thus did the peaceful years pass by until his death, which occurred in 1291, at the advanced age of 116. Saadi's collected works were printed in the original in 2 vols., Calcutta, 1791. They consist of the *Gulistan*, *Bostan*, odes, elegies, fragments, quatrains, and essays of various kinds. By far the best known is the *Gulistan* and *Bostan*. The former is a composition of eight chapters of prose, with occasional intermixtures of verse, either from the author's own pen, or from that of some of his predecessors. The chapters treat of the morals of kings, the morals of dervishes, the excellency of contentment, the advantages of taciturnity, on love and youth, on imbecility and old age, on the effects of education, and rules for the conduct of life. They consist for the most part of unconnected moral stories, unlike in their mutual relation to other oriental collections, such as the Arabian Nights, or the Fables of Pilpay or Bidpai, whose consecution is ordinarily that of subordination to the more general story. All the connection manifest in these Persian tales is that of their allusion to a common subject. There have been numerous versions of this book. It has been translated into French by Du Ryer, 1634; by another Du Ryer in 1789; and by Semelet, Paris, 1834; a spirited German translation by Olearius, 1654; another more recent one by K. H. Graf, 1846; into Dutch, 1654; into English by Gladwin, 1808; by Ross for the Asiatic Society, and by Eastwick in prose and verse, who edited the original two years before, Hertford, 1852. The *Gulistan* is considered the best text-book for students learning Persian. There is a good life of Saadi given by Harrington, in his edition of his works (1791), translated from the Persian of Dowlet Shah.

SAALE, a river of Germany, rises on the northern slope of the Fichtelgebirge, in the N.E. of Bavaria, and flows in an irregular course, generally northwards, through the Saxon duchies. It waters the states of Reuss, Schwartzburg, Rudolstadt, Saxe-Meiningen, Saxe-Altenburg, and Saxe-Weimar, and enters the Prussian province of Saxony. Finally, after traversing the duchy of Anhalt-Bernburg, it falls into the Elbe 6 miles below Calbe. Its whole length is 200 miles; and it is navigable for large vessels as far up as Halle. The principal other towns on its banks are Hof, Saalfeld, Jena, Merseburg, and Bernburg. It receives from the right the Elster and other smaller streams, and from the left the Ilm, Unstrut, and others.

SAALFELD, a town of Saxe-Meiningen, on the left bank of the Saale, in the midst of the Thuringian forest, 41 miles E. of Meiningen. It is an old town, surrounded by walls, and containing many venerable buildings. Among these are the Gothic town-hall, and the church of St John, built in 1212, remarkable for its fine painted glass, and for a colossal wooden statue of the saint. There is a ducal palace in the town now used as a mint, and another in the suburbs with extensive gardens. Near the walls stand the remains of an old fort, said to have been built by Charlemagne to resist the incursions of the Slavonic tribes. Pop. 4550.

SAARBRÜCK, or SARREBRÜCK, a town of Prussia, near the frontiers of France, in the province of the Rhine, government and 40 miles S.S.E. of Treves. It stands on the left bank of the Saar, and is connected by a stone bridge with the suburb of St John on the opposite side. There was formerly a palace here, belonging to the princes of Nassau-Saarbrücken, but it was destroyed by the

Saale
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Saarbrück.

Saarlouis French in 1793. Saarbrück contains a gymnasium, manufactures of tobacco, woollen stuffs, hardware, &c., and has a considerable trade. In the vicinity there are rich coal mines. Among these is one very remarkable, as it has been burning in the interior for 180 years, and on its surface, even in the severest winter, no snow lies. Pop. 9514.

SAARLOUIS, or SARRELOUIS, the frontier fortress of Prussia towards France, on the left bank of the Saar, in the province of the Rhine, government and 43 miles S. of Trèves. It occupies a peninsula formed by the river, and is strongly fortified; the works were constructed by Vauban in 1681, in the course of one year. There are a Protestant and a Roman Catholic church, a synagogue, hospital, school, barracks, &c. Linen cloth, leather, hardware, and fire-arms are made here; and there is some river navigation. Saarlouis is the birth-place of Marshal Ney, and the house where he was born is marked by a marble tablet. The name of the town, then in the possession of France, was changed to Sarrelibre at the time of the first revolution. It was ceded to Prussia in 1815. Pop. 6340.

SAATZ (Bohem. *Zatecz*, Lat. *Zatecium*), a town of Bohemia, capital of a circle of the same name, on the Eger, here crossed by a suspension-bridge, 40 miles W.N.W. of Prague. It is an ancient, ill-built, and wretched-looking place, containing numerous churches (the principal one a large clumsy building), two convents, schools, a town-hall, and a court-house. There are breweries and manufactories of nails in the town. The hops grown in the vicinity are much esteemed, being considered the best in Bohemia. There is some trade in that article and in corn. Pop. 5554.

SAAVEDRA FAXARDO, DIEGO DE, a Spanish statesman and littérateur, was born of a noble family in the kingdom of Murcia in 1584. After being secretary to Cardinal Borgia, he became ambassador to Rome, and was employed for thirty-four years in numerous negotiations in Italy, Germany, and Switzerland. After being nominated to the supreme council of the Indies in 1646, he subsequently retired to a convent of the Augustinians, where he died in 1648. His works have been collected and published at Antwerp in folio, 1677-78. His most popular production was his *Literary Republic*.

SABARA, a town of Brazil, in the province of Minas Geraes, on the right bank of the Rio das Velhas, 50 miles N.N.W. of Duro Preto. It is a long, dull town, with broad, well-paved streets, lined with handsome houses built generally of earth and roofed with tiles. The public buildings are a court-house, several churches, an hospital, and two schools. In the neighbourhood are some gold-mines; but, notwithstanding, the trade of Sabara is not very great. Pop. about 5000.

SABATIER, ANDRÉ HYACINTHE, a French littérateur, was born at Cavaillon in 1726. He became tutor to the son of the Prince of Soubise, and, after the suppression of the Jesuits, filled the chair of rhetoric at the college of Tournon. He quitted this place after a time and went to Paris, where he obtained a pension from the king. In 1789, he allowed himself to be carried away with the opinions of the day, and he accepted the chair of belles-lettres at the central college of Var. He was subsequently nominated to the central school of Carpentras; but being unable to hold this situation from the violence of the revolution, he retired with his family to Avignon, where he died on the 14th August 1806, aged eighty years.

Sabatier wrote a great number of *Odes* and *Epîtres*, which had some success during their day, but which, it is to be feared, are now mostly forgotten. He addressed also numerous *Discours* to the French people, characterized by judicious observations and useful precepts, but which are now permitted to enjoy the dignified retirement of the

Odes. The most complete edition of his *Œuvres* is that of Avignon, 2 vols. 1779. In the first volume, which is chiefly composed of verse, we may mention an *Épître à l'abbé Poulle sur la méthode de diviser les discours*, and *L'Enthousiasme*, an ode, of which many of the strophes would not be considered unworthy of J. B. Rousseau. The second volume is composed of academical discourses.

SABBATH, in the Hebrew language, signifies *rest*. The seventh day was denominated the *Sabbath*, or *day of rest*, because in it God rested from all his works which he had created. From that time the seventh day seems to have been set apart for religious services; and, in consequence of a particular injunction, it was afterwards observed by the Hebrews as a holiday. They were commanded to set it apart for sacred purposes in honour of the creation, and likewise in memorial of their own redemption from Egyptian bondage.

The importance of the institution may be gathered from the different laws respecting it. When the ten commandments were published from Mount Sinai in tremendous pomp, the law of the Sabbath held a place in what is commonly called the first table; and by subsequent statutes the violation of it was to be punished with death. Six days were allowed for the use and service of man; but the seventh day God reserved to himself, and appointed it to be observed as a stated time for holy offices, and to be spent in the duties of piety and devotion. On this day the ministers of the temple entered upon their week; and those who had attended on the temple service the preceding week went out at the same time. New loaves of shew-bread were placed upon the golden table, and the old ones were taken away. Two lambs were offered for a burnt-offering, together with a certain proportion of fine flour, mingled with oil, for a bread offering, and wine for a libation. The Sabbath, like all other festivals, was celebrated from evening to evening. It began at six in the evening on Friday, and ended at the same time the next day.

Concerning the time at which the Sabbath was first instituted, different opinions have been held. Some have maintained, that the sanctification of the seventh day, mentioned in Genesis ii., is only there spoken of as *δια προlepsιν*, or by anticipation; and is to be understood of the Sabbath afterwards enjoined the children of Israel at the commencement of the Mosaic dispensation. But without entering into a particular examination of all the arguments produced in support of this opinion, a few observations, it is presumed, will be sufficient to show that it rests upon no solid foundation.

It cannot easily be supposed that the inspired penman would have mentioned the sanctification of the seventh day amongst the primeval transactions, if such sanctification had not taken place until 2500 years afterwards. Writers, ambitious of that artificial elegance which the rules of criticism have established, often bring together in their narrative events which were themselves far distant, for the sake of giving form to their discourse; but Moses appears to have despised all such flimsy refinements, and to have constructed his narrative in conformity to the series of events.

From the accounts we have of the religious service practised in the patriarchal age, it appears that, immediately after the fall, when Adam was restored to favour through a Mediator, a stated form of public worship was instituted, which man was required to observe, in testimony, not only of his dependence on the Creator, but also of his faith and hope in the promise made to our first parents, and seen by them afar off. Of an institution, then, so grand and important, no circumstance would be omitted that is necessary to preserve it, or that contributes to render the observance of it regular and solemn.

That determined times are necessary for the due celebra-

Sabbath.

Importance of the institution, and early ceremonies.

Time of its institution.

Religious service in the patriarchal age.

Sabbath.
Necessity
of stated
days for
the per-
formance.

tion of divine service, cannot be denied. Such is the constitution of man, that he must have particular times set apart for particular services. He is doomed to toil and labour, to earn his bread with the sweat of his brow; and is capable of performing religious duties only in such a manner as is consistent with his situation in the world. If stated times for religious solemnities had not been enjoined, the consequence would have been, that such solemnities would have been altogether neglected; for experience shows, that if mankind were left at liberty when and how often they should perform religious offices, these offices would not be performed at all. It is the observation of holy times that preserves the practice of holy services; and without the frequent and regular returns of hallowed days, man would quickly forget the duty which he owes to God, and in a short time no vestige of religion would be found in the world.

Objections
to the early
institution of the
Sabbath
considered.

Among the ordinances which God vouchsafed his ancient people, we find that the pious observation of holidays was particularly insisted upon; and the Sabbath was enjoined to be kept holy, in the most solemn manner, and under the severest penalties. Can it then be supposed that He would suffer mankind, from the creation of the world to the era of Moses, to remain without an institution so expedient in itself, and as well fitted to answer the end proposed by it under the one dispensation, as ever it could be under the other? No. We have every imaginable reason to conclude, that when religious services were enjoined, religious times were appointed also; for the one necessarily implies the other.

It is not an objection to the early institution of the Sabbath that there is no mention of it in the patriarchal age. It would have swelled the Bible to a most enormous size had the sacred historian given a particular account of all the transactions of those times; and, besides, it would have answered no end. When Moses wrote the book of Genesis, it was unnecessary to relate minutely transactions and institutions already well known by tradition. Accordingly we see that his narrative is everywhere very concise, and calculated only to preserve the memory of the most important facts. However, if we take a view of the church-service of the patriarchal age, we shall find that what is called the legal dispensation, at least the liturgic part of it, was no new system, but a collection of institutions observed from the beginning, and republished in form by Moses. The Scriptures inform us that Cain and Abel offered sacrifices; and the account which is given of the acceptance of the one, and the rejection of the other, evidently shows that stated laws respecting the service had then taken place. "In process of time," at the end of the days, "Abel brought an offering." Here was priest, altar, matter of sacrifice, appointed time, motive to sacrifice, and atonement made, and accepted. The distinction of animals into clean and unclean before the Flood, and Noah's sacrifice immediately after his deliverance, without any new direction, is an unanswerable proof of the same truth. It is testified of Abraham, by God himself, that he kept his charge, his commandments, his statutes, and his laws. These expressions comprehend the various branches into which the law given at Sinai was divided. They contain the moral precepts, affirmative and negative, the matter of religious service, a body of laws to direct obedience, and to which man was to conform his conduct in every part of duty. Agreeably to this, we find that sacrifices were offered, altars and places of worship consecrated, and the Sabbath also mentioned as a well-known solemnity, before the promulgation of the law. It is expressly taken notice of at the fall of manna; and the incidental manner in which it is then mentioned is a convincing proof that the Israelites were no strangers to the insti-

tuition. For had it been a new one, it must have been enjoined in a positive and particular manner, and the nature of it must have been laid open and explained, otherwise the term would have conveyed no meaning.

The division of time into weeks, or periods of seven days, which obtained so early and almost universally, is a strong indication that one day in seven was always distinguished in a particular manner. *Week*,¹ and *seven days*, are in scripture language synonymous terms. God commanded Noah, seven days before he entered the ark, to introduce into it all sorts of living creatures. When the waters of the Flood began to abate, Noah sent forth a dove, which, finding no rest for the sole of her foot, returned to him. After seven days he sent forth the dove a second time, and again she returned to the ark. At the expiration of other seven days he let go the dove a third time; and a week is spoken of (Gen. xxix.) as a well-known period of time.

This septenary division of time has, from the earliest ages, been uniformly observed over all the eastern world. The Israelites, Assyrians, Egyptians, Indians, Arabians, and Persians, have always made use of a week, consisting of seven days. Many vain attempts have been made to account for this uniformity; but a practice so general and prevalent could never have taken place had not the septenary distribution of time been instituted from the beginning, and handed down by tradition.

From the same source also must the ancient heathens have derived their notions of the sacredness of the seventh day. That they had such notions of it is evident from several passages of the Greek poets quoted by Aristobulus, a learned Jew, by Clement of Alexandria, and Eusebius.

ἡ ἑβδόμη, ἡμέραν ἡμετέραν.
The seventh, the sacred day.

Ἐβδόματη δ' ἐπειτα κατηλύθεν, ἡμέραν ἡμετέραν.
Afterwards came the seventh, the sacred day.

Again:

Ἐβδόμον ἡμέραν ἵναι, καὶ τὰ τετελεῖτο πάντα.
On the seventh day all things were completed.

Ἐβδόματη δνοὶ τετελεσμένα πάντα τετελεῖται.
All things were made perfect on the seventh day.

That they likewise held the number *seven* in very high estimation, has been shown by a learned, though sometimes fanciful author,² with such evidence as to enforce conviction. The Pythagoreans call it the venerable number, *σεβασίμου ἀξίος*, worthy of veneration, and held it to be perfect and most proper to religion. They denominated it fortune, and also styled it voice, sound, muse, because, no doubt, seven distinct notes comprehend the whole scale of music, beyond which neither voice nor instrument can go, but must return from the seventh, and begin again anew. They likewise designed it *τελειόφορος*, leading to the end. Seven, in the Hebrew language, is expressed by a word that primarily signifies fulness, completion, sufficiency, and is applied to a week, or seven days, because that was the full time employed in the work of creation; to the Sabbath, because on it all things were completed; and to an oath, because it is sufficient to put an end to all strife. This opening of the Hebrew root will enable us to come at the meaning of those expressions of the heathens, and also let us see whence they derived their ideas and modes of speaking, and that the knowledge of the transactions at the creation, though much perverted, was never entirely lost by them.

It has been supposed by some, that the heathens borrowed the notion of the sacredness of the seventh day from the Jews. But this opinion will not readily be admitted, when it is considered that the Jews were held in the greatest con-

¹ שבוע, *seven*.

² Holloway's Originals, vol. ii. p. 60.

Sabbath. tempt by the surrounding nations, who derided them no less for their sabbaths than for their circumcision. All sorts of writers ridiculed them on this account. Seneca charged them with spending the seventh part of their time in sloth. Tacitus said, that not only the seventh day, but also the seventh year, was unprofitably wasted. Juvenal brings forward the same charge; and Persius upbraided them with their *recutita sabbata*. Plutarch said that they kept it in honour of Bacchus; Tacitus affirmed that it was in honour of Saturn; but the most abominable assertion of all is that of Apion, who said that they observed the Sabbath in memory of their being cured on that day of a shameful disease, called by the Egyptians *sabbo*.

Some, perceiving the force of this objection, have contended that time was divided into weeks of seven days, that each of the planetary gods, the Sun, Moon, Mercury, Venus, Mars, Jupiter, and Saturn, who were the *Dii majorum gentium*, might have a day appropriated to his service. But if such was the origin of weeks, how came the great and ancient goddess Tellus to be omitted? She was worshipped by the early idolaters as well as the other planets, and must surely have been deemed by them as worthy of a particular day set apart to her honour as the planet Saturn, who was long undiscovered, afterwards seen but occasionally, and at all times considered as of malign aspect.

Strict manner in which the ancient Jews observed the sabbath.

Others have supposed, that as the year was divided into lunar months of something more than twenty-eight days, it was natural to divide the months into quarters from the different phases of the moon, which would produce as many weeks of seven days. But this supposition is less tenable than the former. The phases of the moon are not so precisely marked at the quarters as to attract to them any particular notice; nor are the quarterly appearances of one month commonly like those of another. We cannot, therefore, conceive what should have induced the earliest observers of the phases of the moon to divide the month into four parts rather than into three, or five, or seven. Had the ancient week consisted of fourteen days, it might have been inferred, with some degree of plausibility, that its length was regulated by the phases of the moon, because the shape of that luminary, at the end of the second quarter, is very precisely marked; but there is nothing which, in the present hypothesis, could have everywhere led mankind to make their weeks consist of seven days. This division of time, therefore, can be accounted for only by admitting the primeval institution of the Sabbath, as related by Moses in the book of Genesis. That institution was absolutely necessary to preserve among men a sense of religion; and it was renewed to the Jews at the giving of the law, and its observance enforced by the severest penalties. It was accordingly observed by them with more or less strictness in every part of their commonwealth; and there is none of the institutions of their divine lawgiver which, in their present state of dispersion, they more highly honour. They regard it, indeed, with a superstitious reverence, call it their spouse, their delight, and speak of it in the most magnificent terms. They have often varied in their opinions of the manner in which it ought to be kept. In the time of the Maccabees, they carried their respect for the sabbath so very high, that they would not on that day defend themselves from the attacks of their enemies. But afterwards they did not scruple to stand upon their necessary defence, although they would do nothing to prevent the enemy from carrying on their operations. When our Saviour was on earth, it was no sin to loose a beast from the stall and lead him to water; and if he had chanced to fall into a ditch, they pulled him out. But now it is absolutely unlawful to give a creature in that situation any other assistance than that of food; and if they lead an animal to water, they must take care not to let the bridle or halter hang loose, otherwise they are transgressors.

VOL. XIX.

As the law enjoins rest on that day from all servile employments, in order to comply with the injunction, they undertake no kind of work on Friday but such as can easily be accomplished before evening. In the afternoon they put into proper places the meat that they have prepared to eat the day following. They afterwards set out a table covered with a clean cloth, and place bread upon it, which they also cover with another cloth; and during the sabbath the table is never moved out of its place. About an hour before sunset, the women light the sabbath lamps, which hang in the places where they eat. They then stretch forth their hands to the light, and pronounce the following benediction. "Blessed be thou, O God, king of the world, who hast enjoined us, that are sanctified by thy commandments, to light the sabbath lamp." These lamps are two or more in number, according to the size of the chamber in which they are suspended, and continue to burn during the greater part of the night. In order to begin the sabbath well, they wash their hands and faces, trim their hair, and pair their nails, beginning at the fourth finger, then going to the second, then the fifth, then the third, and ending with the thumb. If a Jew casts the parings of his nails to the ground, he is *rascah*, that is, a wicked man; for Satan has great power over those parings of nails; and it seems they are of great use to the wizards, who know how to employ them in their enchantments. If he buries them in the earth, he is *tzedic*, that is, a just man; if he burns them in the fire, he is *chesid*, that is, worthy of honour, or an holy man. When they have performed these preparatory ceremonies, they repair to the synagogue, and enter upon their devotions. As soon as prayers begin, the departed souls spring out of the purgatorial flames, and have liberty to cool themselves in water while the sabbath lasts, for which reason the Jews prolong the continuance of it as much as they can; and the rabbin have strictly commanded them not to exhaust all the water on the sabbath day, lest those miserable souls should by these means be deprived of the refreshing element. When they have ended their prayers, they return home, and salute one another, by wishing a good sabbath. They then sit down to table. The master of the family takes a cup full of wine, and lifting up his hand, says, "Blessed be thou, O God our Lord, king of the world, who hast created the fruit of the vine. Blessed be thou, O God our Lord, king of the world, who hast sanctified us by thy commandments, and given us thy holy sabbath; and of thy good will and pleasure hast left it to us an inheritance, the memorial of thy works of creation. For it is the beginning of the congregation of saints, and the memorial of the coming out of Egypt. And thou hast also chosen us from all other people, and sanctified us, and with love and pleasure hast left thy holy sabbath an inheritance. Blessed be thou, O God, who sanctifiest the sabbath." After this benediction is ended, he drinks, and gives the cup to all who are present. He then removes the cloth, and taking bread, says, "Blessed be thou, O God our Lord, king of the world, who bringest bread out of the earth." Then he breaks off a bit, and eats, and also gives a piece of it to every one of the company.

On the morning of the sabbath, the Jews do not rise so early as they do at other times, thinking, the greater pleasure they take on that day, the more devoutly they keep it. When they come into the synagogue, they pray as usual, only the devotions are somewhat longer, being intermingled with psalmody, in honour of the sabbath. The pentateuch is then produced, and seven sections of it are read in order by seven persons chosen for the purpose. Several lessons are likewise read out of the prophets, which have some relation to what was read out of the law. After morning prayers, they return to their houses, and eat the second sabbath-meal, showing every token of joy, in honour of the festival. But if one has seen any thing ominous in his

Sabbath. Mode of observing it among the modern Jews.

Sabbath. sleep; if he has dreamed that he burned the book of the law, that a beam has come out of the walls of his house, or that his teeth have fallen out; then he fasts until very late at night, for all such dreams are bad ones. In the afternoon they go again to the synagogue, and perform the evening service, adding to the ordinary prayers some lessons that respect the sabbath. When the devotional duties are ended, they return home, and light a candle resembling a torch, and again sit down to eat. They remain eating until near six, and then the master of the family takes a cup, and pouring wine into it, rehearses some benedictions; after which he pours a little of the wine upon the ground, and says, "Blessed be thou, O Lord, King of the world, who hast created the fruit of the vine." Then holding the cup in his left hand, with the right he takes a box of sweet spices, and says, "Blessed be thou, O Lord God, who hast created various kinds of sweet spices." He smells the spices, and holds them out to the rest, that they may do the same. He then takes the cup in his right hand, and going to the candle views the left very narrowly, and pronounces a blessing. With the cup in the left hand, he examines the right in the same manner. Again, holding the cup in his right hand, he rehearses another benediction, and at the same time pours some of the wine on the ground. After this he drinks a little of it, and then hands it about to the rest of the family, who finish what remains. In this manner the sabbath is ended by the Jews, and they may return to their ordinary employments. Those who meet pay their compliments, by wishing one another a happy week.

Prohibitions observed.

The rabbin have reckoned up thirty-nine primary prohibitions, which ought to be observed on the sabbatical festival; but their circumstances and dependents, which are also obligatory, are almost innumerable. The thirty-nine articles are, not to till the ground, to sow, to reap, to make hay, to bind up sheaves of corn, to thrash, to winnow, to grind, to sift meal, to knead the dough, to bake, to shear, to whiten, to comb or card wool, to spin, to twine or twist, to warp, to dye, to tie, to untie, to sew, to tear or pull in pieces, to build, to pull down, to beat with a hammer, to hunt or fish, to kill a beast, to flay it, to dress it, to scrape the skin, to tan it, to cut leather, to write, to scratch out, to rule paper for writing, to kindle a fire, to extinguish it, to carry a thing from place to place, and to expose any thing to sale. These are the primary prohibitions, and each of them has its proper consequences, which amount to an incredible number; and the Jews themselves say, that if they could keep but two sabbaths as they ought, they would soon be belivered out of all their troubles.

If a Jew on a journey is overtaken by the sabbath in a wood or on the highway, no matter where, nor under what circumstances, he sits down, he will not stir out of the spot. If he falls down in the dirt, he lies there; he will not rise up. A fresh wound must not be bound up on the sabbath day. A plaster that had been formerly applied to a sore may remain on it; but if it falls off, it must not be put on anew. The lame may use a staff, but the blind must not. These particulars, and a great many more of the same nature, are observed by the Jews in the strictest manner. But if any one wishes to know more of the practice of that race, he may consult Buxtorf's *Judaica Synagoga* (chap. x. xi.), where he will find a complete detail of their customs and ceremonies on the sabbath, and likewise see the primary prohibitions branched out into their respective circumstances.

Institution of Sunday, or the Lord's day. As the seventh day was observed by the Jewish church, in memory of the rest of God after the works of creation, and their own deliverance from Pharaoh's tyranny; so the first day of the week has always been observed by the Christian church, in memory of the resurrection of Jesus Christ, by which he completed the work of man's redemp-

tion upon earth, and rescued him from the dominion of him who has the power of death. **Sabbath.**

This day was denominated by the primitive Christians the Lord's day. It was also sometimes called Sunday, which was the name given to it by the heathens, who dedicated it to the sun. And, indeed, although it was originally called Sunday by the heathens, yet it may very properly retain that name among the Christians, because it is dedicated to the honour of the true light, which lighteth every man that cometh into the world; of Him who is styled by the prophet the Sun of righteousness, and who on this day arose from the dead. But although it was, in the primitive times, indifferently called the Lord's day or Sunday, yet it was never denominated the sabbath; a name constantly appropriated to Saturday, or the seventh day, both by sacred and ecclesiastical writers.

Of the change from the seventh to the first day of the week, or even of the institution of the Lord's day festival, there is no account in the New Testament. However, it may be fairly inferred from it, that the first day of the week was, in the apostolic age, a stated time for public worship. On this day the apostles were assembled, when the Holy Ghost came down so visibly upon them to qualify them for the conversion of the world. On this day we find St Paul preaching at Troas, when the disciples came to break bread; and the directions which the same apostle gives to the Corinthians concerning their contributions for the relief of their suffering brethren, plainly allude to their religious assemblies on the first day of the week. **The mention of it in the New Testament accidental.**

Thus it would appear from several passages in the New Testament, that the religious observation of the first day of the week is of apostolical appointment; and may indeed be very reasonably supposed to be amongst those directions and instructions which our blessed Lord himself gave to his disciples during the forty days between his resurrection and ascension, in which he conversed with them, and spoke of the things pertaining to the kingdom of God. Still, however, it must be owned that those passages, although the plainest that occur, are not sufficient to prove the apostolical institution of the Lord's day, or even the actual observation of it. In order, therefore, to place the matter beyond all controversy, recourse must be had to ecclesiastical testimony.

From the consentient evidence and uniform practice of the primitive church, and also from the attestation of Pliny, we find that the first day of the week was observed in the earliest ages as a holiday or festival, in honour of the resurrection of Christ. Now there are but two sources whence the custom could possibly have arisen. It must have been instituted either by human or divine authority. But by human authority it was not instituted; for there was no general council in those early times, and without the decree of a general council it was impossible that any ecclesiastical institution could have been universally established at once. It remains, therefore, that it must have been instituted by divine authority; and that it really was so, will further appear from the following considerations. It is certain that the apostles travelled over the greatest part of the world, and planted churches in the remotest parts of it. It is certain also that they were all led by the same spirit; and their desire was, that unity and uniformity should be observed in all the churches which they had founded. It is not therefore surprising that, in the primitive times, the same doctrine, the same worship, the same rites and customs, should prevail all over the Christian world; nay, it would have been unaccountable had the case been otherwise. For this reason we may conclude that every custom, universally observed in the early ages of the Christian church, and not instituted by a general council, was of original appointment. **It nevertheless appears to be of divine origin.**

As the Lord's day is sanctified, that is, set apart, to Chris-

Sabbath. tians for the worship and service of God, their Creator, Redeemer, and Sanctifier, a little consideration will easily discover how it ought to be observed. Although a day separated from worldly business, yet it is in no sense a day of idleness, but a season appropriated to the works of salvation and labours of charity.

How it was observed in the primitive times. In the primitive times this holy day was observed in the most solemn manner. From the monuments of those early ages we learn, that it was spent in a due and constant attendance on all the offices of divine worship. On it they held their religious assemblies, in which the writings of the apostles and prophets were read to the people, and the doctrines of Christianity further pressed upon them by the exhortations of the clergy. Solemn prayers and praises were offered up to God, and hymns sung in honour of Christ; the Lord's supper was constantly celebrated; and collections were made for the maintenance of the clergy and the relief of the poor. On this day they abstained as much as they could from bodily labour. They looked upon it as a day of joy and gladness; and therefore all fasting on it was prohibited, even during the season of Lent, their great annual fast. Such was the zeal of those times, that nothing, no not the severest persecutions, hindered them from celebrating the holy offices on this day. They were often beset and betrayed, and as often slaughtered in consequence of cruel edicts from emperors, those very emperors for whose happiness and prosperity they always offered up their fervent prayers. For this cause, when they could not meet in the day-time, they assembled in the morning before it was light; and when sick, in exile, or in prison, nothing troubled them more than that they could not attend the service of the church. No trivial pretences were then admitted for any one's absence from public worship; for severe censures were passed upon all who were absent without some urgent necessity. When the empire became Christian, Constantine and his successors made laws for the more solemn observation of the Lord's day. They prohibited all prosecutions and pleadings, and other juridical matters, to be transacted on it, and also all unnecessary labour; not that it was looked upon as a Jewish sabbath, but because these things were considered as inconsistent with the duties of the festival.

But although the primitive Christians did not indulge themselves in the practice of unnecessary labour or trifling amusements, yet they did not wholly abstain from working, if great necessity required it. The council of Laodicea enjoined that men should abstain from work on the Lord's day if possible; but if any were found to Judaize, they were to be censured as great transgressors. So circumspect were the primitive Christians about their conduct on this festival, that on the one hand they avoided all things which tended to profane it, whilst on the other they censured all those who insisted that it should be observed with Pharisaical rigour and devotion.

Advantages resulting from the observation of it. The primary duty of the Lord's day is public worship. The nature and design of the Christian religion sufficiently shows the necessity and importance of assembling for the duties of devotion. The whole scope of Christianity is to bring us to an union with God, which cannot be obtained or preserved without frequent communications with him; and the reasons which show religious intercourse to be the indispensable duty of Christians in a private capacity, will bind it with equal or more force on them considered as a community.

The advantages of public worship, when duly performed, are many and great. There are two, however, which deserve to be considered in a particular manner. It gives Christians an opportunity of openly professing their faith, and testifying their obedience to their Redeemer in the wisest and best manner; and in an age when infidelity has arisen to an alarming height, when the Son of God is crucified afresh, and put to open shame, every man, who has

any regard for religion, will cheerfully embrace all opportunities of declaring his abhorrence of the vicious courses pursued by those apostates. He will lay hold with pleasure on every occasion to testify that he is neither afraid nor ashamed to confess the truth; and will think it his indispensable duty openly to disavow the sins of others, that he may not incur the guilt of partaking of them.

Public worship preserves in the minds of men a sense of religion, without which society cannot exist. Nothing can keep a body of men together, and unite them in promoting the public good, but such principles of action as may reach and govern the heart. But these can be derived only from a sense of religious duties, which can never be so strongly impressed upon the mind as by a constant attendance upon public worship. Nothing can be more weak than to neglect the public worship of God, under the pretence that we can employ ourselves as acceptably to our Maker at home in our closets. Both kinds of worship are indeed necessary; but one debt cannot be paid by the discharge of another. By public worship every man professes his belief in that God whom he adores, and appeals to Him for his sincerity, of which his neighbour cannot judge. By this appeal he endears himself more or less to others. It creates confidence; and it roots in the heart benevolence, and all other Christian virtues, which produce, in common life, the fruits of mutual love and general peace.

SABBIONETTA, a town of Austrian Italy, Lombardy, in the province and 18 miles S.W. of Mantua, near the left bank of the Po. Anciently a place of much importance, it has now fallen to a low position, and is only remarkable for some public buildings, an old palace, now the court-house, and several churches.

SABELLIUS, an ecclesiastic, who flourished in the second century at Ptolemais in Pentapolis, was the author of the heretical system of Sabellianism. According to that creed, there existed in the ages of eternity one God, in one person, absolute, solitary, and inactive. At the beginning of time it occurred to him to create beings who should delight and glorify him. In order to do this, he found it necessary to assume, in addition to his own innate character, other two characters, impersonations, or *persons*. According to the *Logos*, he created men after his own image; and as the Holy Spirit, he endowed them with wisdom. These two impersonations continued to act in a limited manner during the whole period before the Christian era. At the end of that period, they took a wider range. The *Logos* appropriating a human body, and by that appropriation creating the person of Christ, removed the guilt of men, and became their permanent intercessor. The Holy Spirit, in virtue of that removal and intercession began to act with greater facility upon sinful souls. Their influence is still exerted, and will be exerted until men be redeemed, and be rendered capable of glorifying their Maker. Then will the Father put off the two impersonations, and appear again in his own eternal character as the one absolute God. (See Neander's *Church History*.)

SABINI, an ancient people of Central Italy, were generally supposed to have derived their name from Sabus, their chief tutelary deity. Their antiquity was very great. They were the parent-stock of many of the neighbouring tribes, such as the Samnites, the Peligni, and the Picentes. Of their early descent nothing certain was known. The only plausible genealogy is that which infers, from a similarity of language and religion, that they were a cognate branch with the Umbrians. So completely, indeed, was their origin lost in obscurity that Strabo calls them natives of the soil. The territory of the Sabines was bounded on the S. by Latium, on the E. by the Marsi and Vestini, on the N. by Umbria, and on the W. by Umbria and Etruria. It was very broken and rugged. The eastern part was occupied with the barren ranges and offshoots of the Apen-

Sabbionetta
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Sabini.

Sabinus
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Sables
d'Olonne.

nines. The western part, though arable, sloped away in considerable undulations towards the valley of the Tiber. A country of such highland nature had an effect upon the character of the Sabines. The mountain air and exercise made them healthy, strong, and hardy. Their want of all luxuries preserved them from weakness and effeminacy. The religious superstitions which were fostered by the wild and weird phenomena of their homes heightened their valour to the pitch of enthusiasm. They were indeed men who were ready to dare and able to accomplish the conquering of inroads upon their neighbours' territories. Accordingly, at an early age of authentic history, the Sabines, issuing from the north-eastern uplands to which they were originally confined, began a system of warlike aggression. Gradually, and by repeated attacks, their invading hordes subdued the aborigines, and advanced southward, occupying the land. At length, pushing their outposts to the very gates of Rome, they commenced to interfere with the affairs of the rising city. By victory or by compromise they gained admittance into the state upon very advantageous terms. The Quirinal Hill was allotted for their residence; a share in the government was given to them; and their sacerdotal and religious institutions were adopted by the whole body of the people. Nor did this important acquisition satisfy the ambition of the rest of the Sabine nation. They persisted in their encroachments upon the Roman territory. The defeats they received from Tullus Hostilius and from Tarquinius Priscus only checked them for a time. Their system of predatory raids was resumed, and was not discontinued till 449 B.C. The power of the Sabines then began to be broken. In that year M. Horatius gave them a defeat which stilled their animosity for more than a century and a half. They recovered in 290 B.C., only to be overthrown by Manlius Curius Dentatus with greater completeness than ever. Their nationality had received its death-blow. Not more than twenty years had elapsed before the Roman right of suffrage was conferred upon them, and they were absorbed into the commonwealth of Rome.

SABINUS, GEORGE, a Latin poet, born in the electorate of Brandenburg in 1508. His poem *Res Gestæ Cæsarum Germanorum* spread his reputation all over Germany, and procured him extensive patronage. He was made professor of the belles lettres at Frankfurt-on-the-Oder, rector of the new academy of Königsberg, and counsellor to the Elector of Brandenburg. He married two wives, the first of whom was the eldest daughter of Melancthon, and died in 1560. His poems are well known, and have often been printed.

SABLÉ, a town of France, in the department and on the right bank of the Sarthe, at its confluence with the Erve, 27 miles W.S.W. of Le Mans. It is a beautiful town, almost encircled by the river, which is spanned by a bridge of black marble. Sablé was formerly strongly fortified, but the defences have been all destroyed. On a height above the town stands a splendid mansion built upon the site of an old castle. Gloves, hats, serge, &c., are made here; and marble is quarried in the vicinity. There is some trade in corn, fruit, and marble. Pop. 5282.

SABLES D'OLONNE, LES, a town of France, capital of an arrondissement in the department of Vendée, on a peninsula on the coast of the Atlantic, 20 miles S.S.W. of Napoleon (formerly Bourbon) Vendée. Part of its site consists of level ground, hardly raised above the sea; the remainder is slightly elevated in the form of an amphitheatre. Several of the streets are long and handsome. Two churches, a nunnery, alms-houses, schools, hospitals, and a prison are among the establishments of the place. There is a lighthouse, and a harbour capable of accommodating vessels of 200 tons burden. The town is de-

Sabzawar
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Saccatoo.

fended towards the sea by a fort and battery; and on the land side by salt marshes and a wall. Pop. (1856) 6133.

SABZAWAR, or SUBZAWAR, a town of Persia, in the province of Khorasan, in a wide plain, 65 miles W. of Nishapoor. It is an old place, and was once the residence of an independent monarch, but was afterwards deserted, and its walls have only recently been rebuilt. It is still a very insignificant place, and has a small bazaar. Pop. 4000.

SACCATOO, or SOCOTO, a kingdom of Soodan, in Central Africa, stretching from about N. Lat. 7. to 13. E. Long. 5. to 15., between the kingdoms of Borneo and Baghirmi on the E., and that of Gando on the W. It occupies the country formerly known as the kingdom of Houssa; but the conquest of this and the adjacent regions by the Fellatas has changed the political relations of the country. This people, who are the most intelligent of all the African races, and who profess the Mohammedan religion, are believed to have originally dwelt in the remote east; but this period is involved in impenetrable darkness; and when they first made their appearance as conquerors they came from the west, apparently from the Senegal. As early as the sixteenth century they were in sufficient numbers on the east side of the Kuara (Niger) to be of some consequence in the civil wars of these countries; and in the early part of the seventeenth century they had formed some settlements as far east as Lake Tsad. But they were too much scattered and disunited to have much power; and they were subject to the native heathen tribes of the country until the beginning of the present century. Othman, or Danfodio, one of the Fellata chieftains, who exercised the office of imam at a village near Wurno, succeeded in inspiring his countrymen with a fresh religious impulse, and marshalled them under his colours for a crusade against the unbelievers. Though at first defeated in almost every encounter, yet the warlike spirit of fanaticism grew so high that Othman obtained for himself an extensive empire. This he divided, on his death in 1816, into two parts, Gando and Saccatoo; the former he left to his brother Abd Allahi, the latter to his son Mohammed Bello. This sultan, one of the most distinguished rulers in Soodan, overcame the dangers that threatened his throne from the subject native tribe and the rivalry of surrounding potentates, and endeavoured to introduce order into his dominions. He was succeeded in 1832 by his brother Atiku, under whom the prosperous state of the country continued; but in the reign of his nephew and successor Aliu, the present monarch, who ascended the throne in 1837, great internal disturbance took place, which the weakness of the government was unable to quell, and which brought the country into a wretched condition. It is true that the kingdom includes, with one exception, the same number of provinces as in its most thriving condition, but the revenue has much fallen off, and the provinces have so loose a connection with one another as to be virtually almost independent states. The greater part of the kingdom of Saccatoo lies in the obtuse angle between the Kuara (Niger) flowing from the N.W., and its affluent the Benue or Tchadda from the east. The former river does not touch the country at all, but flows at some distance nearly parallel to its frontier; the latter forms part of its southern boundary, and in the upper part of its course flows through the province of Adamana, which, however, may be almost regarded as an independent kingdom. The greater part of the country is watered by tributaries of the Kuara, the chief of which is the Rima or Kebbi, in the N.W. of the kingdom. In the N.E. portion, however, there are many rivers which belong to the basin of Lake Tsad. The province which contains Saccatoo and Wurno, the principal town, lies in the N.W. extremity

Sacchetti
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Sacchi.

of the country, and is composed of portions of two once very extensive provinces, Kebbi and Sanfara. In it is a small desert tract called Gundumi. Katsena, which lies farther to the S.E., is one of the finest regions in the whole of Soodan. It occupies the watershed between the Niger and Lake Tsad, and consists of an undulating hilly country, with innumerable small rivers. The air is salubrious. Pop. about 300,000. Kano, which lies to the E. of this province, includes a large extent of extremely fertile country, and has a population of more than 400,000, about half of them slaves. Industry and trade are in a flourishing condition here. Still farther east lie the provinces of Katagum, Schera, and Messau, which are in no way remarkable. The provinces already named occupy the whole northern part of the kingdom. To the south of them lie the extensive provinces of Segseg and Bautshi. The former is an exceedingly fertile country, covered with luxuriant corn-fields and meadows of the richest green, variegated with pleasant hills and valleys. Rice is produced here in great abundance. Adamana, the most easterly of all the provinces, is almost an independent state, and is nearly isolated from the rest of the kingdom by the surrounding tribes. Part of this province is mountainous, and still occupied by the native heathens, the Mohammedan conquerors having only a few detached settlements in the country. The residence of the sultan of Saccatoo is at Wurno, but the official capital is the neighbouring town of Saccatoo, on the left bank of the Rima. It was founded in 1803 by Othman, the original conqueror of the country, and is surrounded with walls from 20 to 30 feet high. Entrance is afforded by eight gates, which are closed at sunset. The streets are pretty regularly laid out; and the town contains two large mosques, one of which is 800 feet long, richly adorned and supported by wooden pillars. There is also an extensive palace and a bazaar. The surrounding country is flat and marshy, but of much fertility; and the river abounds in fish. Saccatoo has important manufactures of leather, hardware, and cotton fabrics. The trade is also very extensive; and it is said that British exchequer bills are current here. Large caravans of salt arrive annually from among the Tuariks of the Sahara. It was at Saccatoo that the unfortunate traveller Clapperton died, April 13, 1827. Pop. from 20,000 to 22,000.

SACCHETTI, FRANCO, an eminent Italian novelist, was born at Florence about 1335. The birth and influence of his family gave him a high standing in the republic. His whole life was engrossed with the duties of several important municipal offices. He was in succession one of the Council of Eight, and *podesta* at Bibbiena, at San Miniato, and at Faenza. Yet Sacchetti devoted his leisure hours to the composition of a series of excellent tales. The incidents which he chose were short and simple. His language was a model of classical purity. Many of his references to men and manners had an historical value. The whole series was executed with so much taste and skill that, next to the *Decameron* of Boccaccio, it was reckoned by critics the finest collection of tales in Italian literature. Sacchetti died about 1410. His tales were first printed by Bottari in 1724.

SACCHI, ANDREA, one of the greatest painters of the Roman school, was born near Rome about 1600, and studied under Albani. He pursued his art with the most careful assiduity. The works of Raphael were the subject of his constant contemplations. His own ideas were allowed to lie long and ripen in his imagination. "It was better," he said, "to produce a few masterpieces than a great many mediocre pictures." And when he took up the brush, he painted like one who brought all his powers into play. His composition was simple and natural; his figures were easy and dignified; and his colouring was sober and harmonious. The result of this thorough system of study

was, that Sacchi, at his death in 1661, left behind him several pictures of first-rate excellence. They still call forth the admiration of visitors at Rome. "St Romualdo surrounded by his Monks," in the museum of the Vatican, is reckoned one of the four best paintings in the city. The pictures from the life of the Baptist in St John Lateran, the "Death of St Anna" in S. Carlo di Catinari, a "Crucifixion" in S. Maria sopra Minerva, "St Gregory the Great," in the Vatican museum, and the "Intoxication of Noah," in Palazzo Sciarra, are also very beautiful. (See Lanzi's *History of Painting*, &c.)

SACCHINI, ANTONIO MARIA GASPARO, a very eminent composer of the Neapolitan school, was born at Pozzuoli on the 23d of July 1734, and not at Naples on 13th May 1735, as most of his biographers have stated. He was the son of a poor fisherman, and was destined for the same occupation. Durante, then at the head of the Conservatorio of Sant' Onofrio at Naples, happening accidentally to hear the boy Sacchini singing some popular airs, was so much pleased with his natural talent and intelligence as to ask his parents to give him up to be regularly instructed in music. Sacchini accordingly entered the Conservatory, and there learned the elements of music, and became a good violinist. He then studied musical composition under Durante, who looked upon him as the most promising of his pupils, although Piccini and Guglielmi, older than he, were his fellow-students. Soon after the death of Durante, in 1755, Sacchini quitted the Conservatory, and began to teach singing and to compose operas. In 1762 he was called to Rome to compose a serious opera, which was so well received that he resided chiefly at Rome for the next seven years, during which time he visited several other towns in Italy, in order to compose for them serious and comic operas. The great merit of his opera *Alessandro nell' Indie*, performed at Venice in 1768, obtained for him there the directorship of the Conservatory of L'Ospedaletto. He wrote much beautiful music for convents and churches while he occupied that post for a few years. Doctor Burney met him at Venice in 1770, and heard a *Salve Regina*, of which he speaks very highly in his *Tour*, p. 143. Although then only thirty-six years of age, Sacchini had composed forty serious and ten comic operas, and possessed a high reputation. In 1771 he visited Germany and Holland, and composed two operas for Munich and Stuttgart. He arrived at London in April 1772, and brought out, at first, some of his old operas. Dr Burney says (*History of Music*, vol. iv., p. 498) that Sacchini's first opera for the English stage, *Il Cid*, came out in January 1773, and in May his *Tamerlano*. In November 1773 his *Lucio Vero*, and in the spring of 1774 his *Nitetti* and *Perseo*; his *Montezuma* and *Il Creso* in 1775; *Erifile* in 1776; *L'Amor Soldato* in 1777; *Il Calandrino* in 1778; *Enea e Lavinia* in 1779. According to Dr Burney, who knew Sacchini intimately, the musical partisans of other composers immediately raised violent cabals against Sacchini when he first came to London; although his great merits were afterwards amply acknowledged. Unfortunately, Sacchini was thoughtless, dissipated, and extravagant, and was obliged to fly from his creditors in the summer of 1781, and take refuge in Paris. In Madame D'Arblay's *Diary*, vol. ii., p. 75, under the date July 16, 1781, we find a very melancholy portrait of Sacchini, then in London, ruined and miserable. In 1782 he returned to London, but only to get into greater difficulties. He finally left England in 1784, and settled in Paris, where his latter days were rendered more comfortable by a pension from the Queen of France, and also the theatrical pension. In Paris he composed his operas, *Renaud*, *Chimène*, *Dardanus*, and *Œdipe*; the latter a masterpiece in every respect. But even in Paris hostile jealousy pursued him. His health failed; and a severe attack of gout caused his death on the 7th October

Sacchini.

Sacheverell 1786. He was honoured with a public funeral and great marks of respect, which were certainly due to his extraordinary abilities, if not to his prudent conduct. Immediately after his funeral his friend and rival Piccini published a letter, in which his praises of Sacchini's musical powers did equal credit to his head and heart. How very rare are such noble tributes from rival musicians! The merits of Sacchini were very great. He was a perfect musician. His style was always free, graceful, and unconstrained in every kind of composition. His command of musical language embraced the grand, the serious, the comic, the pathetic, with equal ease. His influence upon the progress of his art is now too much lost sight of; but is known to those who have studied his works, and compared them with the works of his contemporaries and successors. Mozart, in his operatic music, was much indebted to Sacchini. There is a bust of Sacchini in the Pantheon chapel at Rome. Besides many of his compositions not published, his works include 16 pieces of church music; 5 oratorios; 38 operas; 6 trios for violins and bass; 6 quartets for violins, viola, and bass; 6 sonatas for the harpsichord, with violin accompaniment.

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Sack.

(G. F. G.)
SACHEVERELL, DR HENRY, a famous Tory clergyman in the reign of Queen Anne, who distinguished himself by indecent and scurrilous sermons and writings against the dissenters and revolution principles. He was born in 1672, and was educated at Magdalen College, Oxford, where he was chamber-fellow with Addison, and where he seems to have cultivated the muses. He became a fellow of his college; took his degree of M.A. in 1696, of B.D. in 1707, and of D.D. in 1708. He owed his consequence, however, to being indiscreetly prosecuted by the House of Lords for his assize-sermon at Derby, and his 5th of November sermon at St Paul's in 1709, in which he asserted the doctrine of non-resistance to government in its utmost extent, and reflected severely on the Act of Toleration. The High and Low Church parties were very violent at that time; and the trial of Sacheverell inflamed the High Church party to dangerous riots and excesses. He was, however, suspended for three years, and his sermons were burned by the common hangman. The Tories being in administration when Sacheverell's suspension expired, he was freed with every circumstance of honour and public rejoicing; was ordered to preach before the Commons on the 29th of May; had the thanks of the House for his discourse; and obtained the valuable rectory of St Andrews, Holborn. He was evidently a very weak, vain, and selfish man, and was subsequently as notorious for his lawsuits with his parishioners as he had been for his quarrels with the state in the earlier part of his career. He died in 1724.

SACHS, HANS, a German *meister-singer* of the time of the Reformation, was born at Nürnberg in 1494, and was bred to the trade of a shoemaker. His mind was ingenious and unweariedly active. While plying the awl he was constantly manufacturing verses. The books of Scripture, the sentiments of the Reformers, and the tales and history in classical literature were taken indiscriminately as the raw material for his rhyming fabrics. His brain continued for many years to produce piece after piece with all the regularity and despatch of a machine. Accordingly, at his death in 1576 his compositions amounted to upwards of six thousand, a portion of which were published at Nürnberg in 5 vols. folio, 1576-79.

SACK (Fr. *vin sec* and *vin d'Espagne*), a species of wine used by our ancestors, regarding the peculiarity of which there have been various conjectures. It is generally supposed to have been a Spanish wine of the dry kind, while some have conceived it to be Rhenish and some Canary. Venner says of sack in 1628 that, "taken by itself, it is very hot and very penetrative; being taken with sugar, the heat is somewhat allayed, and the penetrative quality thereof

also retarded." This statement has led some to imagine that sack was not a sweet wine, from the fact of its being occasionally taken with sugar. At a later period, however, when Falstaff spoke of it as *sherris sack* (properly *Xeres sack*, according to Blount in his *Glossographia*), the word seems to have been used as a general name for all sorts of sweet wines. In contradistinction to the French derivation of the term from the word *sec*, it has been conjectured to be derived from the Spanish *sac*,—a bag in which it was transported from place to place.

SACKVILLE, THOMAS, Lord Buckhurst and Earl of Dorset, a statesman and poet, the son of Richard Sackville of Buckhurst, in the parish of Withiam in Sussex, was born in the year 1536. He was sent to Hart Hall, Oxford, in the latter end of the reign of Edward VI., whence he removed to Cambridge, where he took the degree of Master of Arts. He applied himself to the study of the law in the Inner Temple, and was called to the bar. We are told that he cultivated poetry whilst at the universities, and that these juvenile productions were much admired, though none of them have been preserved. In the fourth and fifth years of Queen Mary we find him a member of the House of Commons, about which time, in 1557, he wrote a poetical piece, entitled the *Induction, or the Mirror of Magistrates*. This last was meant to comprehend all the unfortunate great from the beginning of our history; but the design being dropped, it was inserted in the body of the work. The *Mirror of Magistrates* is formed upon a dramatic plan, in which the persons are introduced speaking. The *Induction* is written much in the style of Spencer, who, with some probability, is supposed to have imitated this author.

In the year 1561 the tragedy of *Ferrex and Porrex*, subsequently called *Gorboduc*, was acted before Queen Elizabeth by the gentlemen of the Inner Temple. This was the first tolerable tragedy in our language. The *Companion to the Playhouse* tells us that the first three acts were written by Mr Thomas Norton. Sir Philip Sidney, in his *Apology for Poetry*, says, "it is full of stately speeches and well-sounding phrases, climbing to the height of Seneca in his style." Rymer speaks highly in its commendation. Spence, at the instigation of Pope, republished it in 1736 with a pompous preface. It is said to be our first dramatic piece written in verse. In the first Parliament of this reign Mr Sackville was member for Sussex, and for Buckinghamshire in the second. In the meantime he made the tour of France and Italy; and in 1566 was imprisoned at Rome, when he was informed of his father's death, by which he became possessed of a very considerable fortune. Having now obtained his liberty, he returned to England, where he was knighted, and afterwards created Lord Buckhurst. In 1570 he was sent as ambassador to France. In 1586 he was one of the commissioners appointed to try the unfortunate Mary, Queen of Scots, and was the messenger employed to report the confirmation of her sentence, as well as to see it executed. The year following he went as ambassador to the States-General in consequence of their complaint against the Earl of Leicester, who, disliking his impartiality, prevailed on the queen to recall him, and confine him to his house. In this state of restraint he continued about ten months, when Leicester dying, he was restored to favour, and in 1580 was installed knight of the Garter. But the most incontrovertible proof of the queen's partiality for Lord Buckhurst appeared in the year 1591, when she caused him to be elected chancellor in the university of Oxford, in opposition to her favourite Essex. In 1598, on the death of the treasurer Burghley, Lord Buckhurst succeeded him, and by virtue of his office became in effect prime minister; and when in 1601 the Earls of Essex and Southampton were brought to trial, he sat as lord high steward on that awful occasion. On the accession of James I. he was graciously received, had the office

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of lord high treasurer confirmed to him for life, and was created Earl of Dorset. He continued high in favour with the king till the day of his death, which happened suddenly on the 19th of April 1608, in the council-chamber at Whitehall. He was interred with great solemnity in Westminster Abbey.

SACKVILLE, *Charles*, Lord Buckhurst and Earl of Dorset, a poet and wit, was born on the 24th of January 1637-8. After receiving a private education, he visited Italy; and returning to England shortly before the Restoration, sat in Parliament for East Grimstead in Sussex. Being of wild and dissolute habits, he became a great favourite of Charles II., and did not choose to engage in any public employment. He attended the Duke of York as a volunteer in the Dutch war of 1665, and is said to have composed the celebrated song, "To all you ladies now at land," on the eve of the 3d of June, when the Dutch were defeated, and Opham, their admiral, slain. Buckhurst was soon after made a gentleman of the bed-chamber, and sent a short embassy to France on one of those missions, which was, according to Dryden, "a sleeveless errand." Charles II. had become enamoured of Nell Gwyn, with whom Buckhurst was then living, and this little journey to France was contrived by the king to get rid of his rival. In 1674 he became heir to the estate and title of his maternal uncle, the Earl of Middlesex; and in 1677, by the death of his father, he inherited the title of Earl of Dorset and the whole of the family estates. He buried his first wife in 1684, and subsequently married a daughter of the Earl of Northampton, a woman of beauty and superior mind, who may still be seen among the Kneller beauties at Hampton Court. Dorset was taken favourable notice of by James II., but ceased to adhere to his policy on his becoming more violent in his measures. On the accession of King William III. he was made lord chamberlain of the household, and received the honour of the Garter. His health afterwards declining, he died at Bath on the 29th January 1705-6.

The epitaph of Dorset was written by Pope; Dryden penned dedications and fulsome panegyrics to him; and Prior eulogized his excellencies in the most elaborate manner. He was distinguished among his contemporaries for his elegant manners, sprightly wit, and courtly address; and his bounty to the learned may be judged of by the number of dedications which were addressed to "the witty Earl." His poetical pieces are, according to Johnson, "the effusions of a man of wit,—gay, vigorous, and airy." (Johnson's *Lives of the Poets*, by Cunningham.)

SACRAMENT, is derived from the Latin word *sacramentum*, which signifies an oath, particularly the oath taken by soldiers to be true to their country and their general. The words of this oath, according to Polybius, were *obtemperaturus sum et facturus quicquid mandabitur ab imperatoribus juxta vires*. The word was adopted by the writers of the Latin Church, and employed to denote those ordinances of religion by which Christians came under an obligation, equally sacred with that of an oath, to observe their part of the covenant of grace, and in which they had the assurance of Christ that he would fulfil his part of the same covenant.

Of sacraments, in this sense of the word, Protestant churches admit but of two; and it is not easy to conceive how a greater number can be made out from Scripture, if the definition of a sacrament be just which is given by the Church of England. By that church the meaning of the word sacrament is declared to be "an outward and visible sign of an inward and spiritual grace given unto us, ordained by Christ himself as a means whereby we receive the same, and a pledge to assure us thereof." According to this definition, baptism and the Lord's Supper are certainly sacraments; for each consists of an outward and visible sign of what is believed to be an inward and spiritual grace; both were ordained by Christ himself; and by the

reception of each does the Christian come under a solemn obligation to be true to his Divine master, according to the terms of the covenant of grace. The Roman Catholics, however, add to this number confirmation, penance, extreme unction, ordination, and marriage; in all, seven sacraments. They call the eucharist, by way of eminence, the Holy Sacrament. Thus to expose the holy sacrament, is to lay the consecrated host on the altar to be adored. The procession of the holy sacrament is that in which this host is carried about the church, or about a town.

SACRAMENTO, a river of the United States of North America, in California, rises in a chain of mountains connecting the Sierra Nevada with the coast range, and flows generally southwards, uniting with the San Joaquin from the south, at the head of Suisoon Bay, through which their united waters are discharged into the Pacific. Its whole length is about 370 miles, for 200 of which it is navigable. It abounds in fish, the catching of which is here an important branch of industry. The valley watered by the Sacramento is one of the most beautiful and fertile portions of California.

SACRAMENTO CITY, the capital of the state of California, on the left bank of the river of the same name, about 150 miles above San Francisco. It owes its origin entirely to the gold discovered here, and was founded in 1849, since which time it has risen to be a large and flourishing town. It is regularly laid out; the streets cross each other at right angles, and are distinguished by numbers and the letters of the alphabet. Many of them are lined with large oak and sycamore trees, which have a very fine effect. Until recently it was very liable to inundations, but the river has been confined to its channel by embankments. The houses, which were formerly of wood, often suffered from fire; but they are now built of more substantial materials. In and about the town are many very beautiful gardens. Among the most conspicuous buildings are numerous churches, hotels, steam-mills, and manufactories. The commercial importance of Sacramento is very great, it being the chief emporium for supplying provisions to the gold regions. Steamers ply regularly between this and San Francisco. Pop. estimated at 20,000.

SACRED, something holy, or that is solemnly offered and consecrated to God by prayers and benedictions. Kings, prelates, and priests are reckoned sacred persons; abbots are only blessed. The deaconhood, sub-deaconhood, and priesthood, are all sacred orders, and are said to impress an indelible character. The custom of consecrating kings with holy oil is derived, says Gutlingius, from the Hebrews, amongst whom, he agrees with Grotius, it was never used but to kings who had not an evident right by succession. He adds that the Christian emperors never used it before Justin the younger. This term was first added to the title of Majesty, in designating the English sovereigns, on the accession of James I. in 1603.

SACRIFICE, an offering made to the object of religious worship, is one of the forms of religious cultus everywhere met with, being co-extensive with religion itself. The offerings made have been various, and the forms under which they have been presented have also varied. The offerings for the most part have been the fruit of the field and of the flock; but not unfrequently the tiller of the field and the keeper of the flock have also been offered in sacrifice. The forms in which they have been presented embrace the natural form, or that form transmuted by slaughtering and burning. The selection of the sacrifice appears to have been made upon the ground of its nearness of relation and preciousness to the offerer: it must be his own, the first and the best of its kind; it must represent him,—must be therefore what he values and loves. And as the sacrifice not only represented the offerer, but represented what was his deepest feeling on the occasion of the offering, this

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Sacrilege || ground of nearness and preciousness furnished different offerings on different occasions. The idea present in and underlying all the forms of presentation appears to be that of bringing the sacrifice near to the object of worship. Another peculiarity of a sacrifice consisted in destroying, in whole or in part, the offering presented to the object of worship. Sacrifices prevailed throughout the whole of the ancient world, both Jewish and Gentile. Christians believe them to have been entirely abolished by the death of Christ. The precise significance of Christ's death has, however, been variously interpreted by different men, and there exists upon the various sides of this important question a large amount of theological literature.

SACRILEGE, **SACRILEGIUM**, the crime of profaning sacred things, or things devoted to God; or of alienating to laymen, for common purposes, what was given to religious persons and pious uses.

SACRO-BOSCO, **JOHANNES DE**. See **ARITHMETIC**, *History of*.

SACY, **ANTOINE ISAAC SILVESTRE DE**, a celebrated orientalist, was born at Paris on the 21st September 1758. Although a delicate boy, he soon became a precocious linguist. His ready mind, under the direction of a private tutor, speedily mastered Latin and Greek. He then applied himself to other languages. Hebrew, Syriac, Chaldee, Samaritan, Arabic, and Ethiopic were acquired in succession; Italian, Spanish, English, and German were added; and at the age of twenty-three he appeared before the public as a prodigy in philology. It was not long before Sacy directed his attention to the history and antiquities of the East. As his studies advanced he continued to lay their results before the learned world. Two memoirs, one on the bursting of the dike of Irem in Arabia Felix, and another on the origin of Arabian literature, were published in the *Recueil de l'Académie des Inscriptions*. Numerous papers on ancient Persian and Arabic history were contributed to the collection entitled *Notices et Extraits des Manuscrits*. He also read before the academy several memoirs on the antiquities of Persia, and especially on the inscriptions found among the ruins of Persepolis. Nor did the turmoil of the Revolution interrupt his engrossing pursuits. He retired to a small country house in the neighbourhood of Paris, and divided his time between the cultivation of his garden and the investigation of the religious system of the Druses. After the revolutionary period the efforts of Sacy for the promotion of oriental learning took a most practical turn. Much of his earnest attention was given to the duties of professor of Arabic and Persian, to which he had been appointed. No less than fifteen years were engrossed in the composition of an Arabic Grammar. He exerted himself to found the Asiatic Society of Paris, a service which was acknowledged by his being made its first president. At the same time, his pen was not slow in advancing the great work of his life. He was a powerful supporter of the *Magasin Encyclopédique* and of the *Mines de l'Orient*; and among other works he published a collection of Arabic extracts entitled *Chrestomathie Arabe*, 1806; the Arabic text of the fables of Pilpay, under the name of *Calila et Dimna*, 1816; the *Pend-Nameh* (Book of Counsels) in Persian and French, 1819; and the *Sessions of Hariri*, in Arabic, 1822. Towards the close of his life Sacy held a very high position. In the class-room no professor could be more eminent. His information was profound, well-arranged, and ready at command. He explained with precision, clearness, and force. So astonishing, indeed, were his qualifications for teaching that old men, who had themselves written and spoken on the subject, came from all parts to sit at his feet. Nor was it only in his lecture-room that he was esteemed. After the death of Cuvier the French held him up as their great champion in learning. He was universally acknowledged

to be the greatest living authority in his own particular branch of study. The influence of his commanding intellect was felt throughout the learned world. Chairs of Chinese, Sanscrit, and Hindustanee were established in Paris by his advice. Russian and Prussian institutions for oriental studies were founded under his direction. His pupils filled the principal professorships in Europe; and he had his readers and correspondents in every country. Sacy fell down dead in the street, in a fit of apoplexy, on the 19th of February 1838. At his death he was a peer of France, keeper of the oriental manuscripts in the king's library, and perpetual secretary to the Academy of Inscriptions. His friend Reinaud pronounced his eulogy, which was afterwards published under the title of *Notice Historique et Littéraire sur M. le Baron de Sacy*.

SACY, the name by which **Louis Isaac le Maistre** was commonly known. He was born in Paris in 1613, and was educated for the church. The instructions of his uncle, the great Arnould, and of his spiritual guide, the Abbé of Saint Cyran, made him a zealous Jansenist. Withdrawing in the company of those of the same mind to the famous suburban retreat of Port-Royal-des-Champs, he commenced a life of opposition to the errors and vices of the Jesuits. For several years he assisted his fellow-recluses in instilling their opinions into a small number of pupils, and in composing works for the better enlightenment of their age. Persecution assailed him in 1661, but his zeal remained unabated. Fleeing before his enemies, he became an outcast for his principles. Till 1666 there was no other hiding-place for him but the dingy recesses of the Faubourg Saint Antoine. For the following three years his studies were prosecuted in a cell of the Bastille. Even after his liberation the attacks of his enemies did not cease. He returned to Port-Royal in 1675, only to be chased from it in 1679. Weary and worn-out, he retired to the house of his cousin, the Marquis of Pomponne, and died there in 1684. The following is a list of the principal works of Sacy:—*Enluminures du Fameux Almanach des Jésuites intitulé la Déroute et la Confusion des Jansénistes*, in 8vo, 1654; a French translation of the *De Imitatione Christi*, in 8vo, 1662; a French translation of the New Testament, in 2 vols. 8vo, 1667; and a French translation of the Psalms of David, in 3 vols. 12mo, 1696.

SADDUCEES were a famous sect among the ancient Jews, and consisted of persons of great quality and opulence. Respecting their origin there are various accounts and various opinions. Epiphanius, and after him many other writers, contend that they took their rise from Dositheus, a sectary of Samaria, and derived their name from the Hebrew word צדק, *just* or *justice*, from the great justice and equity which they showed in all their actions; a derivation which neither suits the word Sadducee nor the general character of the sect. They are thought by some, too, to have been Samaritans. But this is by no means probable, as they always attended the worship and sacrifices at Jerusalem, and never at Gerizim.

In the Jewish Talmud we are told that the Sadducees derived their name from Sadoc, and that the sect arose about 260 years before Christ, in the time of Antigonus of Soch, president of the Sanhedrim at Jerusalem, and teacher of the law in the principal divinity school of that city. Antigonus had often in his lectures, it seems, taught his scholars that they ought not to serve God as slaves do their masters, from the hopes of a reward, but merely out of filial love for his own sake; and from this Sadoc and Baithus inferred that there were no rewards at all after this life. They therefore separated from their master, and taught that there was no resurrection nor future state. This new doctrine quickly spread, and gave rise to the sect of Sadducees, which in many respects resembled the Epicureans. Dr Prideaux thinks that the Sadducees were at first no

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Sadducees.

Sadducees. more than what the Caraites are now; that is, they would not receive the traditions of the elders, but acknowledged the written word only; and the Pharisees being great promoters of those traditions, these two sects hence became directly opposite to each other. Afterwards the Sadducees imbibed other doctrines which rendered them a sect truly impious. They denied the resurrection of the dead, and the existence of angels, and the spirits or souls of men departed. They held that there is no spiritual being but God only; and that as to man, this world is his all. They did not deny but that we had reasonable souls; but they maintained that this soul was mortal, and, by a necessary consequence, they denied the rewards and punishments of another life. They pretended also that what is said of the existence of angels and of a future resurrection is nothing but illusions. St Epiphanius, and after him St Augustin, have advanced that the Sadducees denied the Holy Ghost; but neither Josephus nor the evangelists accuse them of any error like this. It has been also imputed to them that they thought God corporeal, and that they received none of the prophecies. It is difficult to apprehend how they could deny the being of angels, and yet receive the books of Moses, where such frequent mention is made of angels and of their appearances. Grotius and Le Clerc observe that it is very likely they looked upon angels, not as particular beings subsisting of themselves, but as powers, emanations, or qualities, inseparable from the Deity, as the sunbeams are inseparable from the sun. Or perhaps they held angels not to be spiritual, but mortal, just as they thought that substance to be which animates us and thinks in us. The ancients do not tell us how they solved this difficulty, that might be urged against them from so many passages of the Pentateuch, where mention is made of angels. As the Sadducees acknowledged neither punishments nor recompenses in another life, so they were inexorable in chastising the wicked. They observed the law themselves, and caused it to be observed with the utmost rigour by others. They admitted none of the traditions, explications, or modifications of the Pharisees; they kept to the text of the law, and maintained that only what was written was to be observed. The Sadducees are accused of rejecting all the books of Scripture except those of Moses; and to support this opinion, it is observed that our Saviour makes use of no Scripture against them, but passages taken out of the Pentateuch. But Scaliger produces good proofs to vindicate them from this reproach. He observes that they did not appear in Israel till after the number of the holy books was fixed; and that if they had been to choose out of the canonical Scriptures, the Pentateuch was less favourable to them than any other book, since it often makes mention of angels and their apparition. Besides, the Sadducees were present in the Temple, and at other religious assemblies, where the books of the prophets were read indifferently, as well as those of Moses. They were in the chief employments of the nation; many of them even were priests. Would the Jews have suffered in these employments persons that rejected the greater part of their Scriptures? Menasse Ben-Israel says expressly that they did not indeed reject the prophets, but that they explained them in a sense very different from that of the other Jews. Josephus assures us that they denied destiny or fate; alleging that these were only sounds void of sense, and that all the good or evil that happens to us is in consequence of the good or evil side we have taken, by the free choice of our will. They said also that God was far removed from doing or knowing evil, and that man was the absolute master of his own actions. This was roundly to deny a providence; and upon this footing I know not, says

Calmet, what could be the religion of the Sadducees, or what influence they could ascribe to God in things here below. However, it is certain that they were not only tolerated among the Jews, but that they were admitted to the high priesthood itself. John Hircanus, high priest of the nation, separated himself in a signal manner from the sect of the Pharisees, and went over to that of Sadoc. It is said also that he gave strict command to all the Jews, on pain of death, to receive the maxims of this sect. Aristobulus, and Alexander Jannæus, son of Hircanus, continued to favour the Sadducees; and Maimonides assures us, that under the reign of Alexander Jannæus they had in possession all the offices of the Sanhedrim, there only remaining of the party of the Pharisees, Simon the son of Secra. Caiaphas, who condemned Jesus Christ to death, was a Sadducee: as was also Ananus the younger, who put to death St James the brother of our Lord. At this day the Jews hold as heretics the small number of Sadducees which are to be found among them.¹

The sect of the Sadducees was much reduced by the destruction of Jerusalem, and by the dispersion of the Jews; but it afterwards revived. At the beginning of the third century it was so formidable in Egypt that Ammonim, Origen's master, when he saw them propagate their opinions in that country, thought himself obliged to write against them, or rather against the Jews, who tolerated the Sadducees, though they denied the fundamental points of their religion. The Emperor Justinian mentions the Sadducees in one of his novels; banishes them out of all places of his dominions; and condemns them to the severest punishments, as people that maintained atheistical and impious tenets, denying the resurrection and the last judgment. Annus, or Ananus, a disciple of Juda, son of Nachman, a famous rabbi of the eighth century, declared himself, as it is said, in favour of the Sadducees, and strenuously protected them against their adversaries. They had also a celebrated defender in the twelfth century, in the person of Alpharagius, a Spanish rabbi. This doctor wrote against the Pharisees, the declared enemies of the Sadducees, and maintained by his public writings that the purity of Judaism was only to be found among the Sadducees; that the traditions avowed by the Pharisees were useless; and that the ceremonies, which they had multiplied without end, were an insupportable yoke. The rabbi Abraham Ben David Italleri replied to Alpharagius, and supported the sect of the Pharisees by two great arguments,—that of their universality, and that of their antiquity. He proved their antiquity by a continued succession from Adam down to the year 1167; and their universality, because the Pharisees are spread all the world over, and are found in all the synagogues. There are still Sadducees in Africa and in several other places. They deny the immortality of the soul and the resurrection of the body; but they are rarely found, at least there are but few who declare themselves friendly to these opinions.

SADLER, MICHAEL THOMAS, was born at Snelstone, a village in Derbyshire, in January 1780. He was descended, on the father's side, from Sir Ralph Sadler, one of Queen Elizabeth's ministers; and his mother's family had been French refugees at the revocation of the edict of Nantes. He was educated principally at home, his father having intended him for one of the learned professions; but when about eighteen years old he was induced to join his brother in business at Leeds, where he continued until called into public life by the ministerial proposal of the Catholic Relief Bill. On a vacancy occurring for the borough of Newark, in March 1829, Mr Sadler, being invited to become a candidate, immediately complied, and triumphantly

Sadler.

¹ See upon this matter Menasse Ben-Israel, *De Resurrectione Mortuorum*; Basnage's *History of the Jews*; and Calmet's *Dissertation upon the Sects of the Jews, before the Commentary of St Mark*.

Sadler.

carried his election, though opposed by Mr Sergeant Wilde, one of the ablest and most energetic members of the bar. Mr Sadler distinguished himself by a long and eloquent speech delivered against the Roman Catholic claims on the 17th of the same month; and during the continuance of the discussion he was the great champion of the Protestant cause. At the general election of 1830 he was again chosen for Newark; and in 1831 he took his seat for Aldborough in Yorkshire. At the first general election under the Reform Bill, Aldborough having been disfranchised, he became a candidate for the new borough of Leeds; but though highly esteemed by a large number of his townsmen, his reputation as an anti-reformer preponderated over his less equivocal merits, and he lost his election.

In his public career Sadler was generally associated with the old constitutional Tories. To the policy of free trade he was also most decidedly hostile; nor was he less unfriendly to the settlement of the currency question, which he considered should have been effected upon a more equitable adjustment. He was likewise very hostile to the Reform Bill, to which he recorded his objections in a speech when seconding General Gascoigne's motion, the effect of carrying which was the dissolution of Parliament. For Ireland he always expressed the deepest interest, and twice introduced a poor-law bill for that country into Parliament. During the last session he sat in Parliament he was almost constantly occupied in prosecuting the bill he had brought before the legislature for the protection of children employed in the manufactories, and which is familiarly called the Ten Hours Bill. This measure was referred to a select committee, of which Sadler was appointed chairman; and it is believed that the fatigue and responsibility thus imposed on him, of collecting the mass of evidence contained in the report, laid the foundation of his long and fatal illness. Neither, after all, were his efforts successful in passing this measure. Sadler was some years a member of the Royal Society, and author of several works, the most important of which are,—*Ireland, its Evils, and their Remedies*; and *An Essay on the Law of Population*, in two volumes, written principally to controvert the opinions of Malthus. A third volume, intended to complete this treatise, the author was engaged upon at the time of his death, which took place at New Lodge, near Belfast, on the 29th of July 1835. Sadler's disease appears to have been an incurable affection of the heart, brought on by severe study and intense anxiety. At the time of his death he was the leading partner of the firm of Sadler, Fenton, and Company, of Belfast.

SADLER, *Sir Ralph*, an eminent English statesman, was born of a good family at Hackney in Middlesex in 1507. His shrewdness and address in business early began to lead him to promotion. While a mere child he was serving the secretary Cromwell with great acceptance. In his eleventh year he attracted the notice of the king, Henry VIII., and a series of appointments was the result. He was made clerk of the hamper, one of the gentlemen of the privy chamber, and a knight. His services were employed in dissolving the religious houses, and rewarded with a large share of the rich spoils. Above all, several successive embassies to Scotland were entrusted to his management. In 1537 he was sent thither to strengthen the English interest; in 1539–40 he was commissioned to persuade the Scottish king, James V., to cast off the supremacy of the Pope; in 1541 he went back to enforce this same counsel; and in 1542 he was appointed to settle the proposed match between Edward, Prince of Wales, and Mary the infant queen of Scots. Nor did Sadler's want of success on all these various occasions affect his prospects. Fortune still remained constant to him. On Henry's death in 1547, his name was found in the royal will as one of the councillors to the sixteen nobles who

were entrusted with the guardianship of the young king. In the same year he was appointed treasurer to the army sent against Scotland, and for his great services in rallying the repulsed cavalry he was dubbed a knight-banneret on the battle-field of Pinkie. Even the relentless vengeance of "bloody Mary" did not injure his prosperity. During her reign he lived in peaceful seclusion on his estate near Hackney. On the accession of Elizabeth in 1558, Sir Ralph Sadler came once more into a sphere of active employment. He immediately became a member of Parliament for the county of Hertford, and a privy councillor. Not long afterwards his intimacy with the affairs of Scotland recommended him as a fit person to take up his abode in the town of Berwick, and to support with secret supplies of money the Scottish lords of the Congregation in their resistance to their Popish queen-dowager. A number of years were spent in less obtrusive business; and he was then, in 1584, appointed keeper of Mary, Queen of Scots, in the Castle of Tutbury, an office which he discharged with great honesty and humanity. His last service was to repair to Scotland to pacify the king's indignation on account of Mary's death. He returned worn out with the labours of a long life, and died at his lordship of Standon in Hertfordshire in 1587. Sadler's *State Papers and Letters* were published in 2 vols. 4to, Edinburgh, 1809. Prefaced to that edition was a memoir by Sir Walter Scott, which has also appeared among that great author's prose works.

SADOLETO, JACOPO, a learned cardinal, was born at Modena in 1477. Leo X. made him and Peter Bembo his secretaries, an office for which they were both well qualified; and Sadoleto was soon afterwards made bishop of Carpentras, near Avignon. He was made a cardinal in 1536 by Paul III.; was employed in several negotiations and embassies; and died in 1547, not without the suspicion of poison, for corresponding too familiarly with the Protestants, and testifying too much regard for some of their doctors. His works, which are all in Latin, were collected in 1607 at Mentz, in one volume 8vo. They consist of a commentary on the Epistle of Paul to the Romans, a work on Education, a disputation in two books, on the merits of philosophy, and a poem on the discovery of the group of the "Laocoon" at Rome. His sincere piety and love of letters have led him to be compared with Fénelon.

SAFFI, or ASAFFI, a town of Morocco, in a barren valley between two hills, on the shore of the Atlantic, not far from Cape Cantiro. It was formerly a place of much European trade; and until 1641 belonged to the Portuguese, but now it is gradually decreasing in size and importance. The roadstead in front of the town affords good anchorage. Pop. about 9000, of whom 3000 are Jews.

SAFFRON, the dried stigmata of the common crocus (*Crocus sativus*), much used as a colouring ingredient both in food and medicine. Though affording a brilliant yellow colour, it can hardly be called a dye-stuff. This substance was formerly largely cultivated in England in the neighbourhood of Saffron-Walden. It is now chiefly imported from Spain, France, and the south of Europe, and is used in pharmacy. The total importations for 1857 from those parts were 12,175 lb., which, at L.1, 8s. 6d. per lb., cost L.17,349.

SAFFRON-WALDEN, a market-town and municipal borough of England, county of Essex, 22 miles N.N.W. of Chelmsford, and 42 N.N.E. of London. It stands partly in a valley at the foot, and partly on the sides and top of a hill that was formerly rich in saffron, so as to give the name to the town. Above all the other buildings the parish church is conspicuous, from its lofty situation. It is a fine Gothic pile, with an embattled tower. The streets are irregularly laid out, but many of them good; the houses have an antique, but generally neat appearance. There is a large market-place, in which stands an elegant town-hall

Sadoleto
||
Saffron-
Walden.

Sagan
Sage, Le.

The post-office and corn exchange are also handsome buildings, the latter in the Italian style. Besides the parish church, there are places of worship for Baptists, Independents, Quakers, Wesleyan and Primitive Methodists. For public instruction the town has a free grammar school, founded in 1522; national, British, and infant schools; a museum, and a literary institution. Here stands part of the walls and towers of an ancient castle built by Magnaville, a Norman knight who came over with the Conqueror. The only manufactories of importance are an iron foundry and a brewery. Barley and malt are the chief articles of trade. Markets are held weekly, and there are three annual fairs. The borough is governed by a mayor, three other aldermen, and twelve councillors. Near Saffron-Walden is Audley End, the seat of Lord Braybrooke, built on the site of an old monastery. Pop. of the borough (1851) 5911.

SAGAN, a town of Prussia, province of Silesia, on the Bober, in the government and 48 miles N.W. of Liegnitz. It is strongly fortified, and entered by three gates. There is a large and handsome ducal palace, with fine parks, gardens, and hot-houses. There are one Protestant and five Roman Catholic churches here, also a Roman Catholic school. Woollen and linen cloth is manufactured; and there is an important trade in corn. The principality of Sagan, with an area of 420 square miles, and a population of 52,000, was sold in 1628 by the Emperor Ferdinand II. to Wallenstein; after whose death it passed to the princes of Lobkowitz, who sold it in 1785 to Duke Peter of Courland. This duke abdicated his sovereignty in 1795, retaining his titles and honours; and his second daughter was created duchess of Sagan in 1845. Pop. of the town, 8948.

SAGE, ALAIN RENÉ LE, author of *Gil Blas*, and the greatest of the French novelists, was born at Sarzeau, near the town of Vannes in Brittany, on the 8th of May 1668. His father, Claude Le Sage, a lawyer, who held the office of registrar of the Cour Royale of Ruis, having died while his son was yet young, left him a small property, and entrusted him to the care of a worthless uncle, who sent him to the Jesuit's college of Vannes, but who seems otherwise to have neglected both the fortune and education of the future novelist. Père Bochart, principal of his college, early detected the lurking genius of the young scholar, and took great pleasure in cultivating his growing taste for letters. On leaving this institution, he was compelled to accept of an office in connection with the collection of taxes of Brittany, which he held for five or six years. Leaving this situation, he went to Paris in 1692, and entered the university with the intention of prosecuting the study of philosophy. His youth, talents, and taste, combined with a remarkably handsome person, soon gained ready access for Le Sage to the best society of the French capital. In 1694 he married a beautiful girl, the daughter of a joiner in Paris, and with this date begins the activity of a long and a very happy life. He was induced by Danchet, professor of rhetoric at Chartres, whom he had known at the university of Paris, to translate into French the *Letters of Aristænetus*. This volume appeared at Chartres in 1695, at the expense of the professor, but with the imprint of Rotterdam. Le Sage continued to frequent the literary circles of Paris, and had the good fortune to make the friendship of the Abbé de Lyonnet, who, besides bestowing upon him a pension of 600 livres, deserves the gratitude of posterity, for introducing him to the literature of Spain, which he was afterwards to combine in such a striking manner with that of his own country. Then followed each other in quick succession the comedy of *Le Traître Puni* in 1700, translated, or rather imitated from the Spanish of De Roxas; *Don Félix de Mendocce* in 1700, from a piece by Lope de Vega; *Le Point d'Honneur*, a comedy also taken from De Roxas; and *Les Nouvelles*

Sage, Le.

Aventures de Don Quichotte, from the Spanish of Avelaneda. In none of these works, however, did the translator meet with any success. Le Sage had now reached his thirty-eighth year, and a superficial observer would have pronounced his life a failure. Genius, however, of the permanent kind, is usually of slow growth; and while Le Sage had been wasting, according to some, the brightest years of his life in idle folly, he was nevertheless receiving a discipline in making his own the wonderful wealth of the Spanish drama, which should ultimately open up for him a more brilliant triumph than any which the French nation then knew. Hitherto he had confined himself to translations or imitations. He was now to enter more boldly upon his voyage to literary fame, by committing himself more freely to the element than hitherto had been the case. In 1707 his comedy of *Don César Ursin* appeared at the Théâtre Français, with no success; but a small piece of his own, entitled *Crispin, Rival de son Maître*, had a brilliant run, and is said to be almost equal to Molière in the truthfulness of its dialogue. The success of his next work, the *Diable Boiteux*, 1707, was enormous. Its title and plan were derived from *El Diabolo-Cojuelo* of Guevara, but the fancy, the gaiety, the wit, and the vivacity of it, were entirely the work of his charming French pen. Its pictures and characters, many of whom were sketched from real Parisian life, were purely French, and yet truly world-wide; and its nervous, clear, and uncommonly accurate style, gained for it a lasting reputation. (See "Le Sage" in the article ROMANCE.) He increased this work by an additional volume in 1726, and in 1737 added to it the *Entretien des Cheminées de Madrid*. In 1708 he brought forth a regular comedy in five acts called *Turcaret*, in which he satirized with unsparing hand those financiers and men of business, who, inflated by their sudden rise in the world, so frequently outrage all propriety, and even decency, by the absurdity of their conduct and the rudeness of their manners. A cabal of those concerned in the finances clubbed together to put it down, but an order from Monseigneur, dated 15th October 1708, "commanded" the king's company to play it forthwith. It was accordingly performed on the 14th of February 1709, and had a much greater success than could have been expected. An anecdote of this period illustrates well the character of Le Sage. Chancing one day to be some hours late for a meeting which had been arranged at the Hotel de Bouillon, at which he was to read his manuscript comedy, when he appeared he pled an engagement as an excuse, upon which the Duchess of Bouillon haughtily remarked that he had made the company lose two hours. "It is easy to make up the loss, madam," replied Le Sage; "I will not read my comedy, and you will thus regain the lost time." He stepped out of the hotel, and never after could he be prevailed on to return. Shortly after, he broke off all connection with the Théâtre Français. He offered them a small piece in 1708, called *La Tontine*, but it was not performed till 1732. This, combined with other indignities, created in Le Sage that bitter dislike towards performers which all readers of his romance will remember. He never permits an opportunity to slip without holding them up to indignant scorn.

With the exception of the comic opera *De la Foire*, for which he composed, either in whole or in part, upwards of a hundred small pieces, calculated to beguile the tedium of the hour, he bade adieu to the theatres, and began to compose those delightful romances for which posterity have never ceased to bless the name of Le Sage. His great work, *Gil Blas de Santillane*, which was published in the following order—2 vols. in 1710, 1 vol. in 1724, and 1 vol. in 1735, raised his fame to the very highest pitch, and secured it upon an immovable basis. "Few," says Sir Walter Scott, in his biographical notice of Le Sage, "have ever read this charming book without remembering,

Sage, Le. as one of the most delightful occupations of their life, the time which they first employed in the perusal; and there are few also who do not occasionally turn back to its pages with all the vivacity which attends the recollection of early love." (See ROMANCE.)

Three distinct charges have been made against this work. The first was brought by Bruzen de la Martinière, and followed up by Voltaire in his *Siècle de Louis XIV.* in 1752, who unite in pronouncing the *Gil Blas* "to be entirely taken from Espinel's *Marcos de Obregon*," an accusation as absurd as it was malignant. The secret of Voltaire's dislike to the book was his having been subjected to a personal caricature in it. The next attack on the authenticity of *Gil Blas* was made by the Jesuit Father Isla, who published a Spanish translation of it, claiming it as "stolen from the Spanish, and now restored to its own country and native language by a Spaniard who does not choose to have his nation trifled with." Isla declares, without the shadow of proof, that it was originally the performance of an Andalusian advocate, who had given his manuscript to Le Sage when on a visit to Spain, as French secretary to some ambassador. This was of course as great a fiction as the first charge; for neither manuscript nor advocate were ever forthcoming, and Le Sage was never in Spain. These two charges have both been refuted by Le Comte François de Neufchâteau, in his *Examen de la Question de savoir si Le Sage est Auteur de Gil Blas*, 1819. A third, and in some respects a more ingenious, attack was made upon the reputation of Le Sage by Llorente, in two works, the one in French, the other in Spanish, 1822, who asserts that *Gil Blas* was the work of Solis, for this very good reason, that no one was capable, in the judgment of Llorente, of writing such a romance except the eminent historian. Ticknor, who in his *Spanish Literature* devotes some pages to an examination of these charges, remarks,—“There is a ready answer to all such merely conjectural criticism. Le Sage proceeded, as an author in romantic fiction, just as he had done when he wrote for the public theatre; and the results at which he arrived in both cases are remarkably similar; . . . the *Gil Blas*, the greatest of all his works of prose fiction, is the result of his confirmed strength, and in its characteristic merits is as much his own as the *Turcaret*. On this point the internal evidence is as decisive as the external.”

Le Sage meanwhile pursued his honest labour, and reaped the fruits of his industry by securing an independence. His *Roland l'Amoureux*, 1717, was a rather poor imitation of Bojardo's *Orlando Innamorato*; but his *Guzman d'Alfarache*, which appeared in 1732, was a great improvement upon the original Spanish work of Aleman. In the same year he published the *Les Aventures de Robert dit le Chevalier de Beauchesne*, 2 vols., a sort of Paul Jones who scoured the West Indian seas during that period. This work was followed in 1733 by *L'Histoire d'Estevanille Gonzales surnommé le Garçon de bonne Humeur*, 2 vols., avowedly imitated from *El Escudero Obregon*, but to which it bears a very distant resemblance. Next year he published *Une Journée des Parques*, a philosophical piece, written with great wit and boldness. In 1738 appeared the *Bachelier de Salamanca*; and in 1740 *La Valise Trouvée*, which appeared anonymously. His last work, *The Melange Amusant de Saillies d'Esprit et de Traits Historiques les plus frappants*, a lively collection of anecdotes and criticisms, was published in 1743. The long domestic tranquillity and happiness which Le Sage had enjoyed, and which was only interrupted by his eldest and youngest son becoming actors, was now wearing gradually to a close. His eldest son, who had been bred to the bar, and who, on assuming the sock, took the name of Mentménil, gained a high reputation as an actor. This very amiable man died suddenly in 1743, shortly after he

had been reconciled to his father. His second son became canon of the cathedral of Boulogne, and on his father's ceasing to ply his pen, had the gratification of affording him a shelter in his retirement. Le Sage died at his son's residence on the 17th November 1747, in his seventy-ninth year.

Most of Le Sage's works of any importance were published under the title of *Œuvres Choieses de Le Sage*, 15 vols. 8vo, Paris, 1783, and 16 vols. 8vo, Paris, 1810. The *Diable Boiteux* has been translated into English under the title of *The Devil on Two Sticks*; the *Vanillo Gonzales*, and most of his other novels of much importance, have likewise been translated into English. The *Gil Blas*, which has appeared in all the languages of Europe, has been translated into English by Dr Smollett.

SAGHALIEN, TARAKAI, or KRAFTO, an island of Asia, lying off the coast of Mantchooria, between N. Lat. 46. and 54. 20. It extends nearly due north and south for a distance of 600 miles; its greatest breadth at the head of the Bay of Patience is about 120 miles, its average breadth 50, and its area more than 30,000 square miles. The sea of Ochotsk washes it on the east, on the west the sea of Tartary separates it from Mantchooria, and on the south the Strait of La Pérouse divides it from the island of Jesso. The coasts are much indented, but there are few harbours or safe anchorages. The southern portion of the island is occupied by a chain of mountains stretching northwards from Capes Crillon and Aniva, which form the twofold extremity of the island, to about the middle. Few of the summits exceed the height of 5000 feet, but they are covered with snow for a great part of the year. Between the mountains and the sea there is in general a narrow strip of land densely covered with lofty trees. About the centre of the island is a low, swampy, and sandy flat; while the extreme north is occupied with a hilly and fertile country. The coast here consists of lofty white cliffs. The climate is generally cold, and dense fogs almost always enshroud the island. Oak, fir, birch, and maple compose the forests, and afford excellent timber; gooseberries, raspberries, and strawberries are the principal fruits. Bears and martens are the wild animals most numerous; salmon and herring are caught, cured, and exported. Whales are obtained in large numbers along the east coast and in the Strait of La Pérouse. The natives call themselves *Ainos*, or men, and they resemble the people of the Kurile Islands. They make a kind of cloth from willow-bark, and build large and strong boats. A few Japanese and Mantchoos have settled on different parts of the island. The whole of the island now belongs to the Russian empire, the southern portion having been obtained within recent years from Japan, to which empire it had previously belonged.

SAGITTA. See ASTRONOMY.

SAGO, a species of starch obtained from several palms, of which the most common are *Sagus Rumphii*, *S. Cævis*, and *Saguerus Rumphii*. It forms when cooked a bland, mucilaginous, and nutritive substance, and is commonly given to children and invalids. The sago is obtained from the pith of the palm, and is shaped into grains by being passed through a coarse sieve when half dry. This process of granulation is unknown to Europeans. Sago was imported from the British East Indies, Sumatra, Borneo, and other parts, to the amount of 149,416 cwt. in 1857; the cost of which, at L.1, 2s. 4d. per cwt., was L.166,848. It pays 4½d. per cwt. of duty.

SAGUM. See PALUDAMENTUM.

SAGUNTUM, an ancient town of Spain, in the country of the Edetani or Sedetani, in the Roman province of Hispania Tarraconensis. It stood on a hill near the shore of the Mediterranean, about 100 miles S.W. of the mouth of the Ebro. It is said to have been founded by Greeks from Zacynthus, along with Rutuli from Ardea; and the fertility

Saghalien
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Saguntum.

Sahara
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Sail.

of the surrounding country, together with the commercial activity of its inhabitants, raised the town to a high position. The figs of the vicinity were highly esteemed; and the name of Saguntum was widely known for the earthenware cups manufactured there. At a time when the greater part of Spain was under Carthaginian influence Saguntum was an ally of Rome; but it was besieged by Hannibal in 219 B.C. This act of aggression, as it was considered by the Romans, formed the pretext for the second Punic war. After a desperate resistance, Saguntum was taken by Hannibal, but recovered in 210 by the Romans. After this period it became a Roman colony. The site is now occupied by Murviedro, which derives its name, a corruption of *muri veteres*, from the ancient fortifications in the place. (See MURVIEDRO.)

SAHARA. See AFRICA.

SAIDA, or SAID, a town of Syria, occupying the site of the ancient *Sidon*, on the Mediterranean, about 20 miles S. of Beyrout. It stands partly on level ground, and partly on a slope; the streets are narrow, gloomy, and dirty. Mosques and bazaars are the principal buildings. Here is a harbour and an old castle. Silk is manufactured in the town. Pop. 8000. (See SIDON.)

SAIGON, SAIGONG, or SAIGUN, a town of Anam, in the province of Cambodia, on a small affluent of the River Saigon or Mekong, about 30 miles from the sea. It may be considered the capital of the province, as it is the seat of the government. It consists of an old and a new town; the latter, called Pingeh, is on the main river, about 3 miles from the other. Here is the residence of the governor, and a citadel built in the European style by French engineers; also arsenals and ship-building docks. Both this and the old town are intersected with numerous canals, on which boats are continually plying; and many people here, as in some parts of China, live wholly on the water. The streets are straight and handsome, lined with shops built of bamboo; the houses of the Chinese are the largest and best in the place. At the beginning of this century the trade of the town was very considerable, but now hardly ever does a foreign vessel enter the river. China-ware, silk, paper, tea, &c., are sold in the shops, as well as a few European goods. Pop. about 30,000.

SAIL, in navigation, an assemblage of several breadths of canvas, sewed together by the lists, and edged round with cord, fastened to the yards of a ship, to make it drive before the wind. The edges of the cloths or pieces of which a sail is composed are generally sewed together with a double seam; and the whole is skirted round at the edges with a cord called the bolt-rope. Although the form of sails is extremely different, they are all nevertheless triangular or quadrilateral figures; or, in other words, their surfaces are contained either between three or four sides. The former of these are sometimes spread by a yard, as lateen-sails, and otherwise by a stay, as stay-sails, or by a mast, as shoulder-of-mutton sails; in all which cases the foremost leech or edge is attached to the said yard, mast, or stay, throughout its whole length. The latter, or those which are four-sided, are either extended by yards, as the principal yards of a ship; or by yards and booms, as the studding-sails, drivers, ring-tails, and all those sails which are set occasionally; or by gaffs and booms, as the main-sails of sloops and brigantines. (See SHIP, and SHIP-BUILDING.) Sail is also a name applied to any vessel seen at a distance under sail, and is equivalent to ship. To *set* sail, is to unfurl and expand the sails upon their respective yards and stays, in order to begin the action of sailing. To *make* sail, is to spread an additional quantity of sail, so as to increase the ship's velocity. To *shorten* sail is to reduce or take in part of the sails, with an intention to diminish the ship's velocity. To *strike* sail is to lower it suddenly. This is particularly used in saluting or doing homage to a

superior force, or to one whom the law of nations acknowledges as superior in certain regions. Thus all foreign vessels strike to a British man-of-war in the British seas.

SAILING. See NAVIGATION.

SAINT. See CANONIZATION.

SAINT-ARNAUD, MARSHAL LEROY DE, a brave French general, was born of poor parents at Paris in 1801. His fiery disposition made him an ardent soldier. He entered the *Gardes du Corps* at the age of ten. It is true that he soon afterwards became stage-struck, and played for several years in the suburban theatre of the Batignolles; but the revolutionary turmoil of 1830 once more roused his passion for military renown. Being engaged in the war of La Vendée, he fought his way rapidly towards promotion. He continued to rise after he went to Algiers in 1836. His valour at the siege of Constantine gained for him the decoration of the Legion of Honour. In every successive battle his sword achieved for him a higher position than he had held before. He was especially successful in 1851 in his expedition against the Kabyles. With little more than 6000 men he overran the whole of that savage district, and achieved one of the greatest campaigns ever carried out by his countrymen in Algeria. At length, on his return to France, he was taken into the confidence of Louis Napoleon, and made minister of war in 1851, and a marshal in 1852. He had hitherto appeared perhaps too much in the light of a reckless and not very scrupulous adventurer; but on the outbreak of the Crimean war the valour of Saint-Arnaud shone forth in a much clearer light. It had long been the desire of his heart to command the French eagles on a European field, and he was now eager to gratify it. The mark of death was already upon him, but he set out to the seat of war. His disease was stealthily making way when he landed at the Crimea; but he kept down every symptom of pain, and manned himself to lead his troops against the enemy. Accordingly, on the 20th of September, the day of the Alma, he mounted his horse with great difficulty, and amid the turmoil of battle showed all his former fire, energy, and decision. Even after the victory was gained his enthusiasm still continued to burn, and he wrote home despatches remarkable for the high tone in which he recounted the bravery of the English and French armies. It was not until the 27th that the disease mastered him, and forced him to resign his command. The end of Saint-Arnaud was now fast approaching. On the 29th of September he died at sea off the Crimea; and on the 19th of October he was deposited in the vaults of the Invalides with every mark of honour. The *Letters* of Marshal Saint-Arnaud have been published by his brother in 2 vols. 8vo, Paris, 1855.

SAINT-SIMON, CLAUDE HENRI, *Comte de*, founder of the sect which bears his name, was born of a family which claimed kindred with the old counts of Vermandois and the Emperor Charlemagne, on the 17th October 1760. His grandfather was the famous Duc de Saint-Simon, author of the *Memoirs*; but his father having lost his ducal designation, Claude Henri, although counting kindred with emperors, had to commence life among the lower grades of the French noblesse. Having received a solid education under the teaching of such men as D'Alembert, this youth, remarkable from the first for restless eccentricity, entered the American service as a French officer in 1777. Here he fought under Bouillé and Washington, and was made prisoner in 1782 with De Grasse. Returning to Paris in the following year he was made colonel of a regiment of Aquitaine. From his earliest recollection he had dreams of his future greatness, and his servant had been long instructed to awaken him with "Levez-vous, M. le Comte, vous avez de grandes choses à faire." After various unsettled wanderings in France and Spain, he at last came to the conclusion that something must be done for "the advancement of

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human civilization." He had reached nearly his fortieth year when he resolved to commence a thorough course of study preparatory to the inauguration of the new scheme which was troubling his brain. All he knew as yet was that it must be a "physico-political" reformation which he was to effect. He accordingly commenced a ten years' course of intellectual and practical study, to put himself thoroughly abreast of the knowledge of the world. Taking up his residence near the Ecole Polytechnique, and subsequently near the Ecole de Médecine, he began his "theoretical education." Here he studied the physical sciences, and acquainted himself with the whole field of physiological knowledge. This department completed, he entered upon his "experimental education." He now strove to realize "in his own person the whole range of human situations and emotions," to enable him the more fully to fraternize with humanity in every phase. He married, he gave dinners, he got up balls. He played, he drank, he debauched himself. Old age was artificially brought near; rosy youth was counterfeited by medicaments; contagious diseases were courted; and, in short, all the appliances of science and art were laid under contribution to the gratification of pleasure or the production of pain. All moral law was set at defiance, but Saint-Simon calmly took refuge in the plea, that the end justifies the means. Could not a man be permitted any amount of self-indulgence when he kept his eye steadily on the highest theoretical philosophy? For a man to seek self-indulgence through sheer love of pleasure, was one thing; for a man to court self-indulgence through pure love of experimental philosophy, was quite a different thing. The one was simply another name for perdition; the other was the high road to virtue. So reasoned Saint-Simon. He rose from the giddy whirl under which all this process of experimentalism had submerged him, just in time to discover that his money was all spent. He was now glad to accept a clerkship at L.40 a year. Poverty stared him in the face; but the genius of his great mission beckoned him on. In 1812, when he had reached at once the brink of starvation and of fifty-two, he gave to the world his first publication. It bore the name of *Letters from an Inhabitant of Geneva to his Contemporaries*. In this work we discover the germs of his social philosophy, which, to say the least, were sufficiently shadowy. All men of thought were to form the spiritual order, all men of action the temporal order,—an adaptation to modern society of the mediæval distinction of the Romish Church. These *Letters* were followed up by an *Introduction to the Scientific Labours of the Nineteenth Century*. Startled by the novelty, and excited by the original views of these works, a few ardent youths began to gather round Saint-Simon, over whom the master exercised the fascination of an enthusiast. There were Olinde Rodrigues, Augustin Thierry, and Auguste Comte the well-known author of the *Philosophie Positive*. The Saint-Simonian school being thus inaugurated, the pupils began their tasks under the eye of their master. *The Re-organization of European Society* appeared in 1814, by Saint-Simon and Thierry; and in 1819 a small pamphlet called the *Parabole*, by the same authors. The doctrines promulgated in this brochure were subsequently elaborated in more formal works, particularly in the *Catechisme des Industriels*. Next appeared the *Système de Politique Positive* of Auguste Comte, afterwards developed into the *Cours de Philosophie Positive* of the same author. In that work Comte neglected too much the sentimental and religious elements for the taste of his master. Saint-Simon's work of reform succeeded very slowly; poverty still haunted him in his obscurity; the great master became tired of life, and attempted suddenly to blow out his brains. He had miscalculated upon his courage, for he only succeeded in getting rid of an eye. This occurred on the 9th of March 1823. Whether he continued to instruct his servant as

to what he should call to his master each morning does not appear. He was probably content when the menial had announced the simple "Lèvez-vous." He was evidently much confused as to his own destiny; and indeed the gradual approach of that life-long hallucination of which Saint-Simon had been the dupe, now became more and more apparent. Paris continued scantily to supply his school with new pupils; and Bazard and Enfantin now sought the person of this industrious teacher. Whether or not the ideas of Saint-Simon had gained clearness and solidity by the recent opportunities which he had of gazing into the world of spirits, he at all events now announced it as his intention to leave his last bequest to the world in the form of a new religion. The *Nouveau Christianisme*, in 1825, contained an exposition of his great religious maxim, "Love one another." Everything both in substance and form connected with Christianity was destined to a progressive change; only this adage was to remain eternal and immutable. First came Catholicism; next came Protestantism; and lastly, men were to enjoy the mild sway of Saint-Simonianism. This revolution was to be effected by two principles—an end and a means; first, "The most rapid possible amelioration, physical and moral, of the condition of the class the most numerous and poor;" and the means of effecting this was, "To each man a vocation according to his capacity, and to each capacity a recompense according to its works." The last act of Saint-Simon's life was the organization of *Le Producteur*. This journal, afterwards to be conducted by Rodrigues, Bazard, and Enfantin, was to be the vehicle on which pure Saint-Simonianism was to be wheeled to the doors of the citizens of Paris. The master now, after much experience of ill-health, was to bestow his last instructions upon his pupils. They gathered round the couch of the dying man, when he addressed them as follows:—"It has been imagined," said he, "that all religion must disappear. But religion cannot disappear from the world; it can only change its form. Do not forget this; and remember that, in order to do great things, one must be enthusiastic." Simple words, and yet possessed of more truth than the speaker was aware of. He died on the 19th of May 1825, aged sixty-five years.

The subsequent history of Saint-Simonianism is curious. On the death of the master, M. Bazard announced himself as his successor, and began to lecture on his creed. Fresh pupils flowed in, and in a short time they formed themselves into a little church, which chose as its creed a mystical theosophy composed mainly of the more recondite doctrines of their deceased master. They dwelt together in the Rue Morsigny, and started a weekly journal called the *L'Organisateur*. On the establishment of the government of Louis Philippe, the sect made considerable progress. They gained an able coadjutor in Pierre Leroux, editor of *Le Globe* newspaper, by the conversion of whom they gained over the influence of this important journal as a vehicle for disseminating Saint-Simonianism. The result was an immense increase in their numbers throughout all parts of France, particularly among the young and well-educated. A schism soon occurred, however, among their leaders as to some peculiar points of doctrine, of which the most important was "the future of women." Enfantin wishing to proclaim the social equality of the sexes, the rest of the fraternity formally seceded. A government prosecution led to the dissolution of the Society of the Rue Morsigny, and *Le Globe* newspaper became defunct. Enfantin could not brook the idea of allowing Saint-Simonianism to die so cheaply; and he accordingly, with some forty adherents, retired to a country house in the neighbourhood of Paris, and instituted a sort of monastery, in which the duties of the devotees were divided between manual and intellectual labour. This institution was broken up, and Saint-Simonianism dispersed, by a public prosecution on the

Saint-Simon.

Saint-Simon.

27th of August 1832. Since that time the creed has become virtually extinct; but the Saint-Simonian notions still operate in French thought, and it is really astonishing to observe how strong a hold the system must have taken upon the minds of thinking men, when we find in so many public departments of the French state, the outgrowths of the industrialism taught by the descendant of the Vermandois.

SAINT-SIMON, *Louis de Rouvroy, Duc de*, author of the celebrated *Memoirs of the Court of France under Louis XIV. and his Successors*, was born at Paris, of a family claiming kin with the old counts of Vermandois and the Emperor Charlemagne, in 1675. From his earliest years he was accustomed to the presence of royalty, having been presented at the font by Louis XIV. and by Maria Theresa of Austria. He embraced early the military profession, and served under the Marechal de Luxembourg in 1692, when he signalized himself by his valour at the siege of Namur and at the battles of Fleurus and of Nerwinden. The following year he rose to be captain and colonel; but was arrested in his military progress by the death of his father in 1693, who left him heir to his titles and his estate. Louis de Rouvroy, now Duc de Saint-Simon, exchanged the military attire for the dress of the diplomatist. In this new sphere he would have risen to distinction by the brilliancy of his talents, had not the native independence of his character interfered. The king, it is said, overlooked him; the royal councils were filled by meaner men; and the Duc de Saint-Simon occupied his time in secretly transferring to paper the characters of the court. This staunch aristocrat was a firm Jansenist, and looked with no favourable eye on the rise of Madame de Maintenon. He opposed the scheming Jesuits; he warned the populace against the financial projects of Law; he strongly advocated the claims of the Duc d'Orleans to the regency, and used all his efforts to counteract Cardinal Dubois. Such measures were calculated to elevate his name among the populace; but he was a French peer, and opposed to every plan of reform. Though supporting the regent, he was too independent a man to follow him servilely. In 1721 he performed a fruitless embassy to the court of Spain in support of the marriage of the Infanta with Louis XV., who was then a minor. On the death of Orleans and the ascension of Louis, this proud old aristocrat retired in disgust from the court, and occupied his remaining years in writing his *Memoirs*. He died at Paris on the 2d of March 1755.

These famous *Memoirs*, now known over the whole world, consist of a curious compound of history and of biography, written in a somewhat rough style, but with great honesty of purpose, and with an exceedingly clear eye for truth. His vivid perception of character, his stores of illustrative anecdote, and his boundless detail of quaint and curious allusion, despite the strong prejudice of the author, constitute his book the most invaluable record of the life and manners of the age of Louis XIV. and of the regency. The family of the author obtained after his decease a *lettre de cachet* for the deposition of the original manuscript in the national archives, not judging it prudent to publish it while the characters it described were alive. After many ineffectual attempts to recover the MS., the Abbé Voisenon was commissioned by Louis XVI. to examine it. The work was retained; but the Abbé made large extracts and copies from it, which were afterwards surreptitiously got hold of, and printed in 7 vols. in 1788 and 1789. In 1791 Soulavie issued another edition, but still incomplete, in 13 vols. 8vo. In 1829-30, by order of Louis XVIII., the first complete edition was given to the world in 21 vols. 8vo. Another edition, in 20 vols. of superb typography, by M. de Chérueil, with an introductory notice by Sainte-Beuve of the French Academy, was published in 1856-57. Since then there have been numerous editions of this highly interest-

ing book. An English translation of select portions of St Andrews the *Memoirs*, by Bayle St John, was published in 4 vols. in 1857.

ST ANDREWS. See ANDREWS, ST.

ST ANTONIO, one of the Cape de Verd Islands. (See VERD, CAPE.)

ST CATHARINES, a town of West Canada, in the county of Lincoln, on a beautiful table-land above the valley traversed by the Welland Canal, 11 miles W. of Niagara, the county town. The surrounding country is so fertile as to have acquired the name of the Garden of West Canada, and the town is much resorted to during the summer. There are many elegantly fitted-up hotels here. Machinery and farming implements are extensively manufactured. Pop. about 6500.

ST GEORGE, one of the Azores. See AZORES.

ST HYACINTH, a town of East Canada, in the county of the same name, on the River Yamaska, 30 miles E. by N. of Montreal, and 137 S.W. of Montreal. The Roman Catholic college, founded in 1812, occupies a fine stone building surmounted by a dome, and has beautiful grounds. The number of professors and directors is 23, that of students 343; and there is an excellent library of 7000 volumes. There are also in the town an episcopal palace, court-house, city-hall, and market. Public education and the relief of the destitute sick are provided for by schools and hospitals. Numerous manufactures are carried on, and the place is one of the most thriving commercial towns of Canada. Pop. about 5000.

ST IAGO, one of the Cape de Verd Islands. See VERD, Cape.

ST JOHN'S, *New Brunswick*. See NEW BRUNSWICK.

ST JOHN'S, *Newfoundland*. See NEWFOUNDLAND.

ST MICHAEL'S, one of the Azores. See AZORES.

ST NICHOLAS, one of the Cape de Verd Islands. See VERD, Cape.

SAINTES, a town of France, capital of an arrondissement in the department of Charente-Inférieure, on a hill on the left bank of the Charente, here crossed by a stone bridge, 43 miles S.E. of Rochelle. From whatever side it is viewed the town presents a very picturesque appearance. From the south it is approached through a fine avenue of trees; but in the interior it consists of irregularly-arranged, ill-built houses. The cathedral occupies the site of a church built by Charlemagne, and has an ancient portal and tower. Another fine old edifice is the church of St Eutrope, which dates from the eleventh century. It is remarkable for a large and curious crypt. Two remains of the period of the Romans are still to be seen here: the amphitheatre, equal in size, but much inferior in beauty, to that of Nîmes; and a triumphal arch of limestone, but of no great beauty, on the bridge. The latter bears inscriptions, recording it to have been built in honour of Germanicus, his father Drusus, and his uncle the Emperor Tiberius. Saintes is the seat of courts of law, a theatre, public library, college, museum, &c. Woollen fabrics, hosiery, leather, earthenware, &c., are manufactured here; and some trade is carried on in cognac brandy from the adjacent districts, as well as in corn and wool. Pop. (1856) 10,664.

SAINTONGE, an old province of France, of which Saintes was the capital, bounded on the N. and N.E. by Poitou, E. by Angoumois; S. by Guienne, and W. by Aunis. It now forms a small portion of the department of Charente, and the greater part of that of Charente-Inférieure.

SAIS, an ancient city of Lower Egypt, capital of a district in the delta, on the right bank of the Canopic or Rosetta arm of the Nile, in N. Lat. 31. 4. It was built on artificial mounds, so as to be out of the reach of the inundations of the Nile, and covered an extensive area, as it was a place of great importance in ancient times. It was

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especially famous as a sacred city, devoted to the worship of Neith or Athene, and of Isis. The temple of the former deity appears to have stood in a large inclosure surrounded by massive walls of brick. It had a portico erected by Amasis, which was one of the most splendid in Egypt. To the same monarch this temple owed several colossal statues and sphynxes, as well as a large shrine made out of a single block of granite. Sais also contained the tombs of all the Saite kings of Egypt; that is, the single monarch of the 24th, the six of the 26th, and the single one of the 28th dynasty. The reigns of these monarchs form one of the most flourishing periods of Egyptian history, during which Sais reached the acme of its prosperity. The place was equally celebrated as a seat of learning and commerce, and had many institutions that resembled those of Athens. The remains of Sais consist of mounds of brick mingled with fragments of marble and granite. Except that of the temple of Neith, no site of any of the edifices in the town has been discovered. There are some traces of the lake where the annual mysteries of Isis were celebrated. (See EGYPT.)

SALADIN, or more properly **SALAH-ED-DEEN**, a celebrated sultan of Egypt, who flourished between A.D. 1137 (A.H. 532) and A.D. 1192 (A.H. 589). (For further notice of him, see ARABIA.)

SALAHIEH, or **SALHIEH**, a town of Lower Egypt, near the Pelusiatic arm of the Nile, 37 miles N.E. of Belbeis. It is surrounded by palm trees, and contains a large mosque. Near this are the ruins of Tahpanhes, mentioned in Scripture as the seat of a palace of the Egyptian monarchs. Pop. 6000.

SALAMANCA, a province of Spain, bounded on the N. by those of Zamora and Valladolid, E. by that of Avila, S. by that of Caceres, and W. by Portugal; area, 8158 square miles. It is for the most part mountainous; but contains many fine plains and valleys, a large proportion of which, as well as the slopes of the mountains, is covered with forests of oaks and chestnuts. The River Tormes enters the province in the south-east, flows first north and then west into the Douro, which forms a portion of the N.W. boundary of the province. The west part of the country is watered by the Agueda, another affluent of the Douro, and the south by the Alagon, which rises here, and flows southwards to join the Tagus. The River Alagon has in some places auriferous sands. The other important minerals obtained here are iron, copper, lead, rock-crystal, and saltpetre. Corn of various kinds, wine, oil, honey, almonds, and other fruits, are among the productions of the country. From the neighbourhood of Ciudad Rodrigo a great quantity of madder is exported to Portugal. Besides Salamanca the capital, the chief towns in the province are Alba, Tormes, Barca, Salvatierra, and Ciudad Rodrigo. Many important historical events have taken place here, especially during the Peninsular war. Pop. (1857) 280,722.

SALAMANCA, the capital of the above province, on the Tormes, 45 miles N.E. of Ciudad Rodrigo, and 120 N.W. of Madrid. It is built on three hills, in the centre of a curve formed by the river, which flows beneath the walls and domes of the picturesque old town. Antique, venerable, and stately, but desolate and dreary, are its narrow, steep streets and palatial mansions. The glory of the place as a seat of learning and religion is a thing of the past; younger universities have robbed it of its pre-eminence, and the ravages of war have laid in ruins the greater part of its academic buildings. Still there are many noble architectural remains to recall the time when its stately piles obtained for Salamanca the title of the Little Rome (*Roma la Chica*). The Plaza Mayor is the largest square in Spain, and can hold on the occasion of a bull-fight from 16,000 to 20,000 spectators. It is surrounded by colonnades and public buildings. The university was founded about 1200 by Alfonso

IX. of Leon, and enlarged by union with that of Palencia in 1239. It soon rose to eminence; and its professors attained a European reputation before the revival of learning, from their acquaintance with the Arabian writers, and through them with the Greek. In the fourteenth century it numbered 14,000 students; but soon afterwards it became stationary, while the rest of Europe was rapidly advancing in science and literature; and it was subsequently celebrated only for medicine and theology. At the time of its greatest prosperity there were four *colegios mayores*; namely, San Bartolomé (1410), Cuenca (1506), Santiago (1521), and Del Rey, or King's College (1625); and twenty-one *colegios menores*. The former taught classics, law, medicine, and theology; the latter grammar and rhetoric. The greater colleges were aristocratic foundations, possessing extensive privileges and patronage; but these were very much reduced in 1770. Among the university buildings are the schools (*escuelas*) built in 1415, where degrees were conferred, synods held, and disputations conducted. It has a fine library and chapel, lecture-rooms, and spacious halls, now deserted. The university library has a magnificent front, most delicately carved in the fine cream-coloured stone so much used at Salamanca. It is one of the finest works of the age of Ferdinand and Isabella. Of the four greater colleges which alone now remain, San Bartolomé is much admired; but it is heavy and disfigured by modern additions; Cuenca was formerly the gem of the place, and the little of it that has survived the French invasion shows what it must have been; Santiago has an exceedingly graceful and ornamental quadrangle; and King's College is a simple Doric edifice. The other collegiate edifices were ruthlessly destroyed by the French to construct fortifications, which the British took in a few hours. The whole number of students at the university in 1845 was 302. Salamanca has two cathedrals, an old and a new: the former a massive strong edifice, much like a fortress, and commanding from its tower a fine view; the latter a beautiful specimen of Gothic of the age of Leo X., although some parts of it were not completed till as late as 1734. It has a nave and two aisles, and its principal dimensions are as follows:—Length, 378 feet; breadth, 181; height of the nave, 130 feet; of the aisles, 80. Besides these, Salamanca contains twenty-five other churches and thirty-three former convents, the greater part of which have been much injured by the French. There are few manufactures and no commerce in the town. On the adjacent plains was fought the battle of Salamanca, July 22, 1812, when Wellington defeated the French under Marmont. Pop. (1849) 15,000.

SALAMIS, or **KOLURI**, an island of Greece, in the Saronic Gulf, off the coast of the ancient Attica and Megaris. Its length is about 10 miles, and its greatest breadth nearly the same; but owing to the irregularity of its outline the entire area is not more than 50 square miles. A deep bay indents its western coast, and thus gives the island something like a semicircular form. Between the island and the mainland lies the beautiful Bay of Eleusis, communicating with the sea at either end by a narrow strait. These channels are deep and not difficult of entrance, and the bay within is very safe; but in modern times the Bay of Salamis, on the west coast, has been preferred for a harbour. The island is rugged and barren, but some portions of it produce vines and olives. At one period it had large pine forests; whence its ancient name of *Pityussa*. Salamis formed up to 620 B.C. an independent state; but about that period a contest arose for its possession between Athens and Megara, which was at length settled in favour of the former by the arbitration of Sparta. The island continued under the Athenian dominion till 318 B.C., when it received a Macedonian garrison; and in 232 Athens regained possession of it by purchase. The

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chief towns were Old and New Salamis, the former on the south and the latter on the north-east coast. Salamis is chiefly remembered for the great naval battle fought here in 480 B.C., which secured the independence of Greece. It took place in the narrow channel to the east of the island; the Greek fleet under Themistocles was posted in front of New Salamis, the Persian armada was ranged along the opposite coast, with the immense army drawn up on the shore behind them, and King Xerxes enthroned on a lofty promontory to view the anticipated victory. But the event disappointed his expectations; the vast numerical superiority of the Persians was of no avail, for want of sea-room, against the skill of their foes; the magnificent fleet was totally destroyed, and barely succeeded in conveying the monarch home in safety. A trophy was erected on the most easterly point of the island to commemorate the victory.

SALAYER, a group of islands in the Indian Ocean, off the S.E. promontory of the island of Celebes, between S. Lat. 5. 40. and 6. 20., E. Long. 120. and 121. The principal island Salayer is about 40 miles long by 8 broad on an average. It is traversed from N. to S. by a ridge of hills, densely wooded, and haunted by deer. The low land at their foot is cultivated, and produces millet, the chief food of the inhabitants, and cotton, which is made into coarse cloth. The island is dependent on the Dutch, and belongs to their province of Macassar. Pop. 20,000. The other islands are small and mostly uninhabited.

SALE, GEORGE, a learned orientalist and translator of the *Korân*, was born in the county of Kent 1680. Little is known regarding his private life. He was educated at King's School, Canterbury. He followed the profession of a lawyer, and was one of the founders of a society for the encouragement of learning begun in 1736. He was a valuable contributor to the *Universal History* of Swinton and others, and one of the authors of the *General Dictionary*, to which he contributed much of the translation from Bayle. The work by which Sale is now alone remembered is his English version of the *Korân*, translated from the original Arabic, with notes and quotations from approved commentators, and a learned preliminary discourse, London, 1734, 4to. He died in London on the 14th November 1736. Sale's oriental manuscripts were purchased after his death for the Radcliffe Library, Oxford, where they now lie.

SALEM, a district of British India, in the presidency of Madras, bounded on the N. by the Rajah of Mysore's dominions and the northern division of Arcot, E. by the southern division of Arcot, S.E. and S. by Trichinopoly, S.W. and W. by Coimbatore and Mysore; and lying between N. Lat. 11. 2. and 12. 54., E. Long. 77. 32. and 79; area, 7499 square miles. The western part of the district is mountainous, being occupied by several ranges, some of which rise to a height between 5000 and 6000 feet above the sea. The principal river is the Cauvery, which flows along the western and south-western frontiers of Salem for 140 miles. Another river is the Tyromany, which, like the former, flows into the Bay of Bengal. There are no lakes, but numerous tanks and ponds in the district. The climate is various in different parts of the country, but in general it is salubrious. Iron is the most important mineral production; and cotton, coffee, indigo, sugar, and tobacco are cultivated. Pop. 1,195,377.

SALEM, the capital of the above district, in a valley formed by the Sheevaroy Hills on the N., and a smaller ridge to the S., on the Tyromany, 170 miles S.W. of Madras. The valley is studded with tanks, as well as with a great number of wells; and being thus plentifully irrigated, the soil is highly cultivated. Salem itself is a fine specimen of a native Indian town, having broad streets planted with rows of cocoa-nut trees, and some of them lined with handsome houses two storeys in height. Here is an old fort, a jail, and many handsome inns. Salem is the principal seat of

VOL. XIX.

Salem
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Salerno.

the Indian steel manufactory, which is carried on by a process of great ingenuity, proceeding upon a very recondite theory. It appears to have been practised from a remote antiquity; and probably the hieroglyphic carvings on the ancient Egyptian monuments were executed with Indian steel, as no other nation at that period was acquainted with the article. Pop. of the town (1843), 19,021.

SALEM, a city and seaport of the United States of North America, Massachusetts, on a projecting tongue of land, 14 miles N. by E. of Boston. The peninsula on which it stands is about 2 miles in length and three-quarters of a mile across; and its position is somewhat low. The streets are irregular, but many of the buildings very handsome. Chestnut Street, which is the finest, has a beautiful row of shady elms; and Washington Square, a large public park, is also planted with trees. The principal buildings of the place, which are in general very handsome, are the city-hall, court-house, custom-house, market-house, mechanic hall, athenæum, alms-house, and jail. There are many excellent public schools in the town; and in 1852 the total number was 27. The manufactures of the place are very important, and include a large cotton factory, and manufactories of chemical substances, machinery, black and white lead, sperm oil, candles, cordage, leather, and other articles. There are many banks, insurance offices, and newspaper offices in the town. The trade and navigation of the place are still important, though not so extensive as they were at a former period of its history. In December 1852 the shipping of the port had an aggregate tonnage of 50,455. The number of vessels that entered from foreign ports in the year ending June 30, 1852, was 448, tonnage 40,721; of those that cleared for foreign ports the number was 437, tonnage 40,084. Much of the trade of Salem has been absorbed by the ports of Boston and New York. Next to Plymouth, Salem is the oldest town in New England. It was founded in 1626, and soon embarked in the fisheries and coasting trade. Before the American revolution it had acquired a high place among the commercial towns of America; and it opened up the trade with many different countries in all quarters of the globe. On the breaking out of the war with the mother country, Salem eagerly embraced the cause of liberty; and in the course of seven years (1776-83) fitted out no fewer than 158 privateers, many of which became the terror of the seas. After the close of the war most of these vessels were turned into Indiamen. Pop. (1850) 20,263; (1853) about 22,500.

SALEMI, a town of Sicily, occupying a beautiful situation on a hill, in the province and 20 miles S.E. of Trapani. It is fortified, and has a large number of churches and convents; but the inhabitants are chiefly distinguished for laziness and dirt. There is no manufacture or commerce here. Salemi is believed to occupy the site of the ancient Halyciæ. Pop. 8000.

SALEP, a sort of gum and starch extracted from the bulbs of the orchis. It is imported from the Levant in considerable quantities, particularly from Smyrna and Constantinople, and large imports of it find their way into the Indian bazaars from Affghanistan and Persia. This substance is said to be particularly nourishing, and is more palatable than sago or arrow-root. It is prepared by powdering the salep in a brass mortar, and making a solution with hot water.

SALERNO, a town of Naples, the seat of an archbishop, and capital of the province of Principato Citra, in a beautiful country at the foot of a branch of the Apennines, at the head of the Gulf of Salerno, 30 miles S.E. of Naples. The older parts of the town are ill and irregularly built, with narrow, dirty streets; but the Marina or quay, which was built by the French, forms a fine promenade, extending for about a mile along the shore. The principal edifice is the cathedral, which has been so much repaired and

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Sales.

altered in modern times that it exhibits a most singular combination of different styles of architecture, of the ancient and of the modern. It was founded in 1084 by Robert Guiscard, who did not hesitate to plunder the ruins of Pæstum in order to enrich it, nor to employ the heathen sculptures to embellish this Christian fane. Hence the singular appearance of the tombs of some of the archbishops, adorned with the "Triumphs" of Bacchus and Ariadne, and the "Rape of Proserpine." In the crypt lies, according to the tradition of the church, the body of St Matthew. Other celebrated and probably more authentic tombs are also to be seen here,—of Hildebrand, Pope Gregory VII. (who died here in exile), of the second wife, the son, and the grandson of Robert Guiscard. Of the many other churches in Salerno none are very remarkable, nor are there any other buildings of much interest. The lyceum is said to be one of the best schools in the kingdom, and has inherited from the former university the privilege of conferring degrees. The port was once very good; and is well sheltered, but now almost useless from the accumulation of sand. A fair for cattle and other goods is held here annually in September; and is resorted to by great numbers of the peasantry, exhibiting a most picturesque variety of costumes. The ancient *Salernum* occupied the same site, or rather stood on the hill behind the modern town, where the ruins of the mediæval citadel are still to be seen, and where some antiquities have been dug up. A fort seems to have stood here before it was colonized by the Romans, 194 B.C.; but its previous history is unknown. Indeed, the only notable circumstance in its ancient annals is its capture during the Social War by the Samnite general Papius. It was, however, a place of consequence under the empire, and appears to have been frequented as a watering-place. But it was not till after the fall of the Western Empire that Salerno rose to its height. It passed first into the hands of the Goths, then into those of the Lombards, from whom it was taken by the Saracens in 905; but fifteen years after, it was recovered by the Greek emperor, and subsequently reverted to the Lombards. In 1076 Salerno was taken, after a siege of eight months, by Robert Guiscard; and thenceforward became the capital of the Norman possessions south of the Apennines. It is described at this period as remarkable for its amenity and its splendid palaces, its fruits and its wine, the beauty of its women, and the honesty of its men. The celebrated school of medicine, the first that arose in the darkness of Europe, was then in the zenith of its prosperity, under the patronage and protection of the Norman dukes. The university existed till 1817, when it was replaced by the present lyceum. At Salerno, in 1127, the kingdom of Naples was founded by the election of Roger II. to the crown. In 1193 the town was destroyed by the Emperor Henry VI.; but from this blow it soon after recovered. Its course, however, has been in modern times one of decline to its present condition. Pop. (1848) 16,000.

SALES, SAINT FRANÇOIS DE, Bishop of Geneva, and son of François, Count of Sales, was born at the castle of Sales, near Anneci in Savoy, on the 21st August 1567. He had his early education at La Roche and Anneci, and subsequently at the Jesuits' college at Paris. Leaving the capital in 1584, he went to Padua, to study civil law under the eminent legal professor Guy Panciroli. Here his progress was attended with the most marked success; and after spending some time in travel in Italy, he returned to the old castle of Sales with a high reputation for learning and piety. His father was induced by his kinsman, Louis de Sales, canon of Geneva, to abandon a project which he had formed of appointing him counsellor of Chambery, and through that churchman's mediation he was permitted to become a preacher. The success of De Sales in this sphere was quite astonishing. His strikingly

handsome figure, his powerful and pleasing voice, his modest and mild demeanour, combined with an earnestness which thrilled and a vivacity which engaged his audience, proved how well he was adapted for the business of religious conversion, and how deep had been his self-knowledge in courting such a sphere of labour. He accordingly set out with his clerical kinsman to convert the city of Geneva from the faith of Calvinism to that of the Church of Rome. By dint of eloquence and of gold, he is said to have succeeded in three years in the conversion of no less than 800 persons. On the return of François to Anneci in 1596, he was made coadjutor to the Bishop of Geneva, with the title of Bishop of Nicopolis *in partibus infidelium*. The king, anxious to retain him in France, offered him the first bishopric that might become vacant, but he politely refused. The death of the Bishop of Geneva raised him to that important office on the 8th December 1602; and he was no sooner consecrated than he made himself felt to the remotest corner of his see, by the vigour of his reforms and by the mild charity of his mandates. In 1605 he had the honour of refusing a cardinal's hat. His *Introduction to a Religious Life* appeared in 1607. It will be seen from this work that the man who is eloquent and persuasive in speech is very likely to be neither when he assumes the pen. The work is characterised throughout, however, by the most unaffected piety. In 1610 De Sales founded the Order of the Visitation, and placed over it Madame de Chantal, a particularly fervid lady, who was sister to the Archbishop of Bourges. The work in which the good Bishop of Geneva had been so long engaged was now destined to pass into other hands. After preaching on the Christmas Eve of 1622, he was seized with an attack of paralysis, which closed his days on the 28th of December 1622.

We are indebted to Camus, Bishop of Bellay, for the very interesting work *The Spirit of François de Sales*. The best edition of his works is that of Paris, 1641, 2 vols. folio. He was canonized on the 29th of January 1665 by pope Alexander VII.

SALFORD. See MANCHESTER.

SALIC or SALIQUE LAW (*Lex Salica*), an ancient and fundamental law of the kingdom of France, usually supposed to have been made by Pharamond, or at least by Clovis, in virtue of which males only are to inherit. Some, as Postellus, would have it to have been called *Salic*, as if *Gallie*, because peculiar to the Gauls. Montanus insists that it was so named because Pharamond was at first called *Salicus*. Others will have it to be so named as having been made for the Salic lands. These were noble fiefs which the first kings used to bestow on the Saliens; that is, the great lords of their *salle* or court, without any other tenure than military service; and for this reason such fiefs were not to descend to women, as being by nature unfit for such a tenure. Some, with more probability, derive the origin of this word from the Saliens, a tribe of Franks that settled in Gaul in the reign of Julian, who is said to have given them lands upon condition of their personal service in war. He passed the conditions into a law, which the new conquerors acquiesced in, and called it *salic*, from the name of their former countrymen. (See FRANCE.)

SALIERI, ANTONIO, a celebrated composer, was born at Legnano, in the state of Venice, on 19th August 1750. In his boyhood he was taught the violin by his elder brother, a good pupil of Tartini, and the harpsichord by Simoni, organist of the cathedral of Legnano. When fifteen years old he lost his father, and repaired to Venice, where one of the Mocenigo family patronised him. He received lessons in composition from Pescetti of St Mark's cathedral, and lessons in singing from Pacini, one of the chapel tenors. Gassmann, master of the imperial chapel at

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Vienna, came at that time to Venice, and accepted Salieri as a pupil at the request of Giovanni Mocenigo. On 15th June 1766 Salieri followed Gassmann to Vienna. Gassmann treated him with great kindness and generosity, benefits which he was afterwards able to repay to Gassmann's two infant daughters when they were left destitute by their father's death. Under Gassmann Salieri made rapid progress in composition. In 1770 he produced his first opera *Le donne letterate*, which was well received. Several others followed with great success, especially the serious opera *Armida*, which delighted by the beauty of its melodies. Gassmann dying in 1774, Salieri, in 1775, succeeded him as imperial chapel-master. At this time Salieri being struck by Gluck's compositions, began to study the works of that great master, and also received instructions from him. In 1778-1780 he composed operas for Milan, Venice, and Rome. In 1781 Gluck having become aged and infirm, and feeling unable to set to music the French libretto of *Les Danaïdes*, for which he had been engaged at Paris, entrusted the composition of the music to Salieri. In 1784 Salieri carried *Les Danaïdes* with him to Paris, where it was performed with the greatest applause as a composition of Gluck until the thirteenth representation, when Gluck publicly declared Salieri to be the sole composer of the music. Returning to Vienna, he composed several operas between 1784 and 1787, and in the latter year his opera of *Tarare* was performed at Paris with great success. He was called upon the stage and crowned; the first time that such an honour was bestowed on an operatic composer. After his return to Vienna in that year he composed fourteen operas, the last of which was performed in 1804. Among his operas, *Les Danaïdes* and *Tarare* are reckoned the finest. In some points he was pre-eminently skilful as a dramatic composer, so that such men as Beethoven and Meyerbeer considered it an honour to receive his advice. In 1824, aged seventy-three, he obtained leave to retire from his avocations, and received a grant of his entire salary for life. He died on the 12th May 1825. A requiem which he had composed for his own death was performed on the occasion of his funeral. He was married and left several daughters. He bore the titles of Foreign Member of the French Institute, Member of the Royal Academy of Fine Arts, Foreign Correspondent of the Paris Conservatory, and Member of the Royal Academy of Music at Stockholm. Interesting details regarding Salieri's private and artistic life are contained in Herr Edler von Mosel's work *Ueber das Leben und die Werke des Anton Salieri*. Wien, 1827. Salieri's compositions for the church were five masses, one requiem, three Te Deum, and several other pieces. He composed three oratorios and eight cantatas; forty-six operas, and a great number of detached pieces of vocal music with accompaniments; two collections of fifty canons for voices alone, and one hundred and fifty compositions of the same kind in MS; a book of instruction in singing, one concerto for the organ, two do. for piano, 1 do. for flute and oboe; two symphonies; several serenades and some ballet-music; twenty-four variations for orchestra upon the subject of the *The Spanish Folly*.
(G. F. G.)

SALII, priests of Mars, of which there were twelve, corresponding to the twelve ancilia or shields of which they had the care, were instituted by Numa, and wore parti-coloured garments and high bonnets, with a steel cuirass on the breast. They were called *salii*, from *sal-tare*, to dance; because, after assisting at sacrifices, they danced along the streets, with bucklers in their left hand and a rod in their right, with which they struck on one another's bucklers, and sang hymns in honour of the gods.

SALINS, a town of France, in the department of Jura, picturesquely placed at the head of a beautiful valley, in a

gorge between two mountains, 26 miles N.E. of Lons-le-Saulmer. It is encircled by walls, and defended by two forts on adjacent heights. Most of the buildings are new and substantial, as the town was almost wholly destroyed by fire in 1825. There are many churches, a large college theatre, barracks, and jail. But the largest establishment in the town are the salt works (*Saline Royales*), which give the place its name. These are about 300 yards long by 100 broad, and are inclosed with an embattled wall. The salt is obtained from springs, which are supposed to have been used as early as the time of the Romans. Brandy, leather, and sulphate of soda are also made here; and there is some trade in wine, brandy, cheese, honey, salt, timber, gypsum, &c. Pop. 7481.

SALISBURY, or NEW SARUM, a municipal and parliamentary borough of England, capital of Wiltshire, in a low, rich country, at the confluence of the Avon, Wily, and Bourne rivers, 82 miles W.S.W. of London. It is very regularly built, six principal streets stretching from N. to S., and as many others crossing them at right angles. Through some of the streets streams of water from the Avon are conducted in artificial channels. The houses, which are large, and some of them very handsome, are generally built of brick; but some, of a more ancient date, are of wood. The chief building is the cathedral, which rises majestically to the south of the town, from the close and beautiful meadow, about half a square mile in extent, planted with trees, and entered by three antique gates. The building itself is one of the finest and most regular in England; it is in the form of a double cross, from the centre of which rises a graceful spire, the loftiest in the country, being 404 feet, equal to the height of the cross of St Paul's, London. Salisbury cathedral is in the early English style, and was built, with the exception of the spire and west front, which are later, between 1220 and 1258. It is very complete in all its parts, having a nave and choir, with two aisles; a lady chapel, east of the choir; a larger and a smaller transept, with one aisle each; besides an octagonal chapter-house, the roof supported by a single elegant pillar, and cloisters 181 feet square. Within the close stands also an extensive episcopal palace, and a deanery with fine gardens. The principal dimensions of the cathedral are as follows:—Extreme length, 474 feet; length of great transept, 230 feet; of nave, 229 feet; height of the interior, 81 feet; of the exterior, 115 feet. The west front is a very rich and fine specimen of the pointed style, flanked by massive square towers surmounted by pinnacles. According to an old Latin epigram, the cathedral has as many windows as days in the year, as many pillars as hours, and as many gates as moons. Many of the monuments are interesting, and some more ancient than the building itself, having been transferred from the former cathedral at Old Sarum. Salisbury has, besides the cathedral, two parish churches and a chapel of ease; also places of worship for Independents, Baptists, Roman Catholics, Wesleyan and Primitive Methodists. There is a grammar school attached to the cathedral for the instruction of the choristers, and another founded by Queen Elizabeth in the town. There are, besides, a bishop's school and various others of different kinds. In the middle of the town is a large open market-place, at one corner of which stands the council-house, a building of brick with a handsome stone portico in the Grecian style. Near this is the poultry market, containing a fine hexagonal cross of the time of Edward III. Salisbury contains also a county jail and bridewell, library and reading-room, museum, assembly and concert rooms, a small theatre, and several charitable institutions. Races are held annually in August, on the downs near the town. No important manufacture is carried on here. Much woollen cloth was once made, but that branch of industry has become extinct; the manufacture of cutlery is now the only one that is pur-

Salisbury.

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sued. There is some traffic in the produce of the surrounding country, which is disposed of at weekly markets and annual fairs. The borough is governed by a mayor, six aldermen, and eighteen councillors, and returns two members to Parliament. Salisbury owes its origin to a quarrel which took place in the thirteenth century between the bishop and canons of Old Sarum and the captain of the castle, in consequence of which these ecclesiastical dignitaries left their former seat, about a mile and a half north of Salisbury, and founded a new cathedral here. The most of the townsmen followed them; and hence the name of New Sarum applied to the town. A charter was granted by Henry III., and the town was walled in 1315. Salisbury has been honoured by several visits of royalty, and more than one Parliament has been held here. Pop. of the borough (1851), 11,657.

SALLEE, or SLA, a seaport of Morocco, on the Atlantic coast, at the mouth of the Bu Regreb, on its northern bank, opposite to Rabatt on the southern; N. Lat. 34. 3., W. Long. 6. 50. It is strongly fortified, but not very well built; there are several batteries which command the entrance to the river. It has a harbour, roadstead, magazines, and marine arsenal; and is the principal station of the fleet of Morocco. As a commercial town, it is still thriving, though a portion of the trade has been transferred to Mogadore. Sallee was once notorious as a haunt of pirates, but this is no longer the case. Carpets are made here. In the vicinity are many fine gardens. Pop. 25,000.

SALLUSTIUS CRISPUS, CAIUS, a celebrated Latin historian, was born of a plebeian family of Amiternum, a city of the Sabines, B.C. 86, the same year that Marius died. We can have no doubt that the cultivation of his mental powers must have been carefully attended to, though this does not seem to have prevented him from falling into all the extravagances and dissipation of a profligate age. His intrigue with Fausta, daughter of Sulla, and wife of Milo, became known to her husband, and was punished in a way which made the two parties irreconcilable enemies. Sallust became quæstor at the age of twenty-seven, and tribune of the people in the year B.C. 52. His profligacy, however, became so notorious that the censors Appius Claudius and L. Piso, B.C. 50, found it necessary to remove him from the Senate, though his removal has been ascribed by others to political reasons, as he was a warm supporter of Cæsar. It is supposed that he at this time wrote his account of the conspiracy of Catiline. His absence from public affairs continued only for a short time, as we find him prætor B.C. 47, when he accompanied Cæsar to Africa; and after the battle of Thapsa he was appointed to the province of Numidia, where he enriched himself by the most nefarious means. He returned to Rome with immense wealth; and after the murder of Cæsar abstained from taking any part in public affairs. He again devoted himself to a life of pleasure, and constructed a magnificent palace on the Quirinal, in the midst of gardens which were afterwards known as the Horti Sallustiani. This palace was subsequently occupied by Vespasian, Nerva, and many other emperors, and was destroyed by fire when Rome was plundered by Alaric. According to Eusebius, Sallust was married to Terentia, wife of Cicero; but this story is improbable. He died B.C. 35, in the fifty-first year of his age, being not less distinguished for his talents than for his profligacy. Of his historical works the following remain:—*Bellum Catilinarium*, a history of the conspiracy of Catiline, B.C. 63, with a very beautiful introduction, in which he laments, with much apparent feeling, the corruption of the age, and the profligacy of his contemporaries; *Bellum Jugurthinum*, a history of the wars carried on against Jugurtha, King of Numidia, which he was probably induced to write from his residence in that country; *Historiarum*

Libri Quinque, a work on the history of Rome, from the consulship of M. Æmilius Lepidus and Q. Lutatius Catulus, B.C. 78, to that of M. Æmilius Lepidus and L. Volcatius Tullus, B.C. 66, with an introduction on the manners and government of Rome, and a short summary of the wars of Marius and Sulla. Of this work only a few fragments have been preserved. Some other works, however, have come down to us which are ascribed to Sallust, though without sufficient reason; *Duæ Orationes de Respublica Ordinanda*, addressed to Julius Cæsar when he was proceeding against Petreius and Afranius in Spain; and *Declamatio in Ciceronem*, which is alluded to by Quintilian. The character of Sallust as a historian stood high among the ancients, who regarded him as the rival of Thucydides, and in many points he was certainly the imitator of that writer. Like Thucydides, he endeavours to give the causes of the various events which he is narrating; and if he more frequently ascribes them to unworthy motives, we may readily discover the reason of this in the corruption of the age in which he lived. But they both show themselves profound thinkers, and intimately acquainted with the springs of human action. The first edition of the works of Sallust was published in Rome in 1470, and in Venice the same year; but since that time a variety of impressions have appeared. A very excellent edition is that of C. H. Frotcher, giving the notes and emendations of Cortius, 3 vols., Lips. 1830. The translations are numerous. It has been done into German by Gerlach (1827); into Spanish, by the son of the king (1772); into Italian, by Alfieri; and into French, by De Brosses. The oldest English version is by Barclay (1511), and since his time no less than fourteen writers have executed translations of Sallust. The best are those of Gordon (1774), Rose (1751), Murphy (1807), Peacock (1845), and Watson (1852). Gerlach (1823), Kriz (1834), and Dietsch (1846), have published the best texts of Sallust.

SALMASIUS, CLAUDIUS, the Latinized form of CLAUDE DE SAUMAISE, a very learned man of the sixteenth century, was born of a noble family at Sémur in Auxois, on the 15th of April 1588. He received his early education in Latin and Greek from his father, who had himself translated the work of Dionysius of Alexandria into French verse, Paris, 1597. At the age of ten he is reported by his ancient eulogist, Antoine Clement, to have been able to read Pindar with fluency and correctness. At the age of sixteen he sought Paris, to complete his studies, where he became acquainted with the celebrated Casaubon, through whose influence, it is said, he was led to embrace Protestantism. Young Saumaise now sought Heidelberg, and was favoured with an introduction from his friend Casaubon to the great jurist Denis Godefroy. He prosecuted his studies with uncommon diligence during his stay in Germany, and was exposed to a severe illness from over-exertion. For a considerable time he had been accustomed to devote every third night entirely to study. He published in 1608 his first work, consisting of two books of Nilus, Bishop of Thessalonica, and that of a monk Barlaam, both on the supremacy of the Pope, enriched with corrections and notes. Next year he dedicated to the eminent Latin scholar Gruter an edition of Florus. Shortly after his return to France he published, in opposition to Sirmondus, *De Suburbicariis Regionibus et Ecclesiis*; in 1620 his *Historiæ Augustæ Scriptores Sex* appeared; and two years afterward he published his edition of Tertullian's work *De Pallio*. In 1623 Salmasius married, and was engaged for many years in the neighbourhood of Paris on his great work, which first appeared in 1629, in 2 vols., under the title of *Pliniana Exercitationes in Cuii Julii Solini Polyhistor*. This was a work of astonishing erudition, but written in a rambling, confused style. It possessed all the blemishes and all the excellences of his previous writings. It exhibited great carelessness as to the

Salmasius.

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correct statement of facts, and displayed much arrogance and pretension. The publication of this work raised his reputation to its highest pitch; and he received the solicitations of various European princes to settle in their dominions. He finally retired to Leyden in 1632 to an honorary professorship. Salmasius had numerous tempting offers from Cardinals Richelieu and Mazarin to return to France; but he continued to reside in Leyden till 1650, when he visited Queen Christina of Sweden, who is reported to have written "she could not be happy without him." The climate of this northern kingdom not agreeing with him, Salmasius returned to Holland, to comply with the request of Charles II. of England to write a defence of his father and of monarchy. Salmasius accordingly published his *Defensio Regio Carolo I.* in 1649, but had not calculated on so powerful a hand as John Milton's being raised against him. The *Defensio pro Populo Anglicano* entirely eclipsed Salmasius in passionate logic, vehement rhetoric, and profound scholarship; and the unfortunate Frenchman, pampered by kings and fondled by princes, is said to have taken this withering exposure so much to heart that it cost him his life. He died in September 1653, while engaged on a reply to Milton.

In addition to the works already mentioned, Salmasius wrote and edited the following works:—*Notæ in Pervigilium Veneris*, Ley. 1638; *De Usuris*, Ley. 1639; *De Modo Usurarium*, Ley. 1639; *Dissertatio de Fanone Trapezetico*, Ley. 1640; *Commentarius in Simplicii Enchiridion Epicteti*, Ley. 1640; *Interpretatio Hippocratei Aphorismi de Calculo*, Ley. 1640; *De Hellenistica Commentarius Controversiam de Lingua Hellenistica Decidens*, Ley. 1645; *Observationes in Jus Atticum et Romanum*, Ley. 1645. Antoine Clement prefixed a Life of Salmasius to his Letters, which were published at Leyden in 1656.

SALMON FISHERY. See **FISHERY**.

SALO, a town of Austrian Italy, Lombardy, in a beautiful region at the head of a bay of the same name on the west shore of the Lake of Garda, in the province and 15 miles E.N.E. of Brescia. It is well built, partly on piles, and contains several churches, a nunnery, school, theatre, and hospital. It is the seat of a court of justice, and has manufactories of thread and of silk, which are considered the best made in Italy. Groves of olives, oranges, citrons, and mulberries encircle the town, and the heights of Mount San Bartolomeo overhang it. Pop. (1846) 4531.

SALON, a town of France, in the department of Bouches-du-Rhone, in a plain rendered luxuriantly fertile by irrigation, 29 miles N.N.W. of Marseilles. There is a neat modern quarter surrounding the old town in the centre, and separated from it by a well-planted boulevard. Some of the houses in the old town are good, and there are two curious ancient churches, one of which contains the remains of the celebrated Nostradamus. On a height at one end of Salon stands the castle of this astrologer, now a barrack. Silk, hats, soap, and olive oil are made here; and the trade of the place is considerable. Pop. 5617.

SALONICA, or **SALONIKI** (anc. *Thessalonica*), a town of European Turkey, Macedonia, capital of an eyalet of the same name, at the head of the Gulf of Salonica, the ancient Thermaic Gulf, 315 miles W.S.W. of Constantinople. From the noble and almost land-locked bay, up the side of a steep hill, rises the town—domes, minarets, and cypress trees,—encircled by lofty whitewashed walls, to the seven-towered citadel on the summit. From this point two ravines diverge in a semicircular direction, and stretch down to the sea, inclosing the city between them. The walls, which are built on ancient Cyclopean and Greek foundations, are about five miles in circuit. The interior presents that wretched and irregular appearance that is characteristic of Turkish towns; hovels of unburnt brick, and bazaars consisting of long narrow streets, shaded with

vine-covered trellises and branches of trees, or obstructed with projecting wooden sheds, stand side by side with the large and magnificent piles erected in ancient or mediæval times. A long street intersects the town from east to west, spanned at either end by a triumphal arch. This is the ancient Egnatian road, the highway between the western and the eastern capitals. Some of the mosques are very ancient, and have witnessed in successive ages the rites of pagan, Christian, and moslem worship performed within the same walls. One of these is circular, like the Pantheon at Rome, and covered with mosaics on the inside. Another was originally consecrated to the Thermæan Venus; and did not the modern arrangement of the building somewhat conceal and disfigure its beauty, it would stand out as one of the most perfectly-preserved monuments of antiquity. A Corinthian colonnade, surmounted with large and beautiful figures in high relief, is supposed to have been the entrance to the hippodrome, and has received from Jewish superstition the name of *Las Incantadas*, on the idea that these are human figures magically turned to stone. The hippodrome or race-course itself is a large area near the middle of the town. Of mosques, originally Christian churches, one bears the name, and is built after the model, of St Sophia at Constantinople, though of smaller size; and another, the former metropolitan church, is lined in the interior with marble, and adorned with pillars of *verd antique*. There are several Greek churches and convents, one Roman Catholic church, Jewish synagogues, baths, and *khans*. Salonica is the seat of a general governor and of a Greek archbishop. The manufactures of the town are of considerable importance, including weaving, dyeing, carpet-making, silk-spinning, the manufacture of hardware, &c. But the introduction of European goods has proved detrimental to the industry of the place. As a commercial town, Salonica is, among Turkish ports in Europe, second only to the capital. Corn, cotton, silk, and tobacco are the principal articles exported. The following table exhibits the navigation and trade for each year from 1848 to 1851:—

Year.	Entered.		Imports.	Cleared.		Exports.
	Vessels.	Tons.		Vessels.	Tons.	
1848	643	70,565	332,782	578	69,887	239,942
1849	566	65,103	345,638	548	66,358	214,728
1850	514	62,964	318,879	550	64,278	257,254
1851	509	59,756	427,920	522	61,174	179,373

In 1856 the navigation and commerce of the port was thus divided among the various nations:—

Flags.	Vessels.	Tonnage.	Imports.	Exports.
			L.	L.
Greek	266	15,067	33,400	27,200
Turkish	150	11,528	52,000	46,500
Austrian	90	32,098	732,500	398,800
British	62	21,078	221,000	640,500
French	46	11,922	51,800	241,000
Sardinian	31	5,682	8,600	27,000
Tuscan	7	2,668	...	2,500
Dutch	3	543	2,500	5,300
Russian	2	656	...	9,000
Norwegian	2	438	...	2,900
Total	659	101,680	1,101,800	1,400,700

The country about Salonica is exceedingly beautiful. Amid groves of cypresses and other trees stand many elegant residences of the consuls of foreign countries; and the view over the gulf is very fine, the snowy heights of Olympus rising in the distant west. Near the town are sulphurous springs. Salonica was very much injured by conflagrations which took place in 1856 and 1857. Nearly

Salop
||
Salt.

half of the inhabitants are Turks, the rest of the population being nearly equally divided between Greeks and Jews. Pop. about 70,000. (See THESSALONICA.)

SALOP. See SHROPSHIRE.

SALSETTE, an island of British India, north of that of Bombay, from which it is separated by a narrow strait, between N. Lat. 19. and 19. 18., E. Long. 72. 54. and 73. 3.: length, from N.E. to S.W., 18 miles; breadth, about 10; area, 150 square miles. It is a strikingly diversified and very picturesque land, with woody hills, gray rocky mountains, and gloomy caves, the haunts of wild beasts; rich valleys, broad rice-fields, tall graceful cocoa-nut palms, and meadows on which cattle graze. In various parts of the island, and especially at Keneri, near the centre, there are ancient rock-cut caves. Salsette formed part of the province of Aurungabad under the Mogul emperors, but fell into the hands of the Portuguese soon after their settlement in India. In 1739 it was conquered by the Mahrattas, and in 1774 came into the possession of the British. It forms part of the district of Taunah, so called from the chief town on the island. It is connected with Bombay island by a causeway, and traversed by the Great Indian Peninsular Railway, which crosses over on a viaduct to the mainland. Pop. estimated at 50,000.

SALT, a compound of chlorine and sodium, known in chemical language as *chloride of sodium*. Its symbol is Na Cl, and its equivalent 58.5. It is the only mineral food of man, and forms an essential constituent of the blood, the loss of saline particles therefrom by the secretions, the tears, the bile, &c., being repaired by the use of common salt as a condiment. The gastric juice of the stomach contains free hydrochloric acid, which is doubtless derived from the salt taken with food; while the blood and some of the secretions contain soda, also referable to the same source. The unwholesomeness of salted provisions is probably due rather to their hardness and indigestible nature than to the salt with which they are impregnated.

The use of salt must have been nearly coeval with man's existence on the earth, frequent references to it, or to customs connected with it, occurring in the sacred writings.

All animals appear to be more or less fond of salt; even bees will sip a solution of it with avidity. Mungo Park says that in the interior of Africa, "the greatest of all luxuries is salt. It would appear strange to a European to see a child suck a piece of rock-salt as if it were sugar. This, however, I have frequently seen; although in the inland parts the poorer class of inhabitants are so very rarely indulged with this precious article, that to say a man eats salt with his victuals is the same as saying he is a rich man. I have myself suffered great inconvenience from the scarcity of this article. The long use of vegetable food creates so painful a longing for salt that no words can sufficiently describe it." (*Travels*, i. 280.) Burchell, in his *Travels in South Africa*, states that he had to send 90 miles for a gallon of salt, which he and his party regarded as a "valuable and important acquisition."

Salt exists in inexhaustible quantities in the waters of the ocean, in the proportion of about 2.7 per cent., or nearly 4 oz. per gallon, or a bushel in from 300 to 350 gallons. Salt is also found in immense masses of what is called *rock-salt*, or *sal gem*, in rocks of all ages, but chiefly in the new red sandstone, or saliferous formation, or the *trias*, where it is associated with a set of red sandstones and pebbly conglomerates, yellow magnesian limestones, and variegated shales and marls, which inclose irregular masses of rock-salt and gypsum. The following section (fig. 1) represents the deposit at Wimpfen in Wirtemberg, where the gypsum is inclosed by a deep layer of shell limestone containing the rock-salt as a separate mass. There are considerable difficulties in accounting for these deposits, but the discussion of them belongs to GEOLOGY.

The subterranean streams of water percolating through saliferous strata become impregnated with salt, and give

Salt.

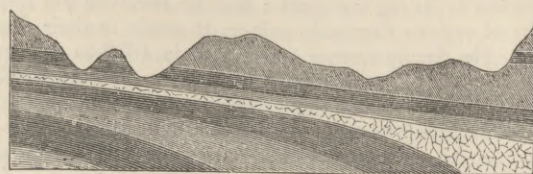


Fig. 1.

rise to *brine springs*, so abundant in the great plain of the red marls and sandstones of Cheshire. The salt is not uniform in extent, but occupies limited areas. The brine springs occur at various depths. At Nantwich the brine is met with about 10 or 12 yards from the surface; and in sinking for fresh water, caution is required to avoid the brine. At Winsford it is generally necessary to sink from 55 to 60 yards before it is met with, and it then rises to within 12 yards of the surface. It occurs at other places at various depths. Droitwich in Worcestershire furnished salt from its brine springs in the time of the Romans; and it is probable that the supply was procured from such springs as found their way to the surface. In the time of Edward the Confessor, as appears from Domesday-Book, brine pits were wrought at all the wiches in Cheshire. We read of several attempts made to improve the manufacture; and soon after the formation of the Royal Society reports of the methods of manufacture were published by that body. The salt made in England was long considered to be inferior to foreign salt; but at the commencement of the eighteenth century Parliament granted a reward to Mr Lowndes, a Cheshire gentleman, for improvements in the manufacture. In 1748 Dr Brownrigg published his *Art of Making Common Salt*, and by this time the manufacture had made some progress. The River Weaver was made navigable for vessels of large size from Northwich and Winsford to Liverpool, whereby means for distributing the salt of Cheshire were increased, and the manufacture gradually became important, the salt being distributed throughout the country, and also exported. About the year 1670 the beds of rock-salt, whence the springs originated, were discovered while searching for coal in Marbury, about a mile to the north of Northwich. They were found about 34 yards from the surface, in a bed 30 yards thick, resting on a stratum of indurated clay. It was afterwards found that, on sinking a shaft at any point within half a mile of Marbury, the salt was met with at the same depth. This was the only deposit discovered until 1779, when, in searching for brine near Lawton, it was met with about 42 yards from the surface in a stratum 4 feet in thickness; but on penetrating through the clay beneath it, a second stratum of rock-salt, 12 feet in thickness, was found. On continuing the sinking through 15 yards of clay, a third stratum of rock-salt was discovered, which was sunk into to the depth of 24 yards, the lowest 14 of which were found to be the purest. The existence of this pure salt at so great a depth induced the Northwich owners to sink deeper, which they had not hitherto done, for fear of meeting with freshwater springs. Accordingly, in 1781, they passed through the indurated clay below the rock-salt which had so long been worked. Immediately below this clay, which was 10 or 11 yards in thickness, they came upon a second stratum of rock-salt, the upper portion of which was about equal in purity to the higher stratum; but on penetrating to the depth of about 25 yards it was found to be much more free from earthy admixture. This increased purity, however, only extended to 4 or 5 yards.

The strata passed through in sinking for brine or rock-salt are usually clay and gypsum, mingled in various proportions, the latter predominating in nearing the brine or

Salt. rock-salt. The miners (named *wallers*, from the bank or wall which they raise round the pit with the rubbish of the works) call the clay, according to its colour, *red*, *brown*, or *blue metal*, and the gypsum they name *plaster*. The strata are usually sufficiently compact to exclude fresh water; but in some places are so broken and porous (*shaggy metal*, as the wallers call it) as to lead to the discontinuance of the sinking. The use of the steam-engine in pumping, and improved methods of sinking, have, however, in modern times, obviated the difficulty. The accompanying section (fig. 2) of the Wharton salt-mine, on the River Weaver, will further illustrate the nature of the workings.

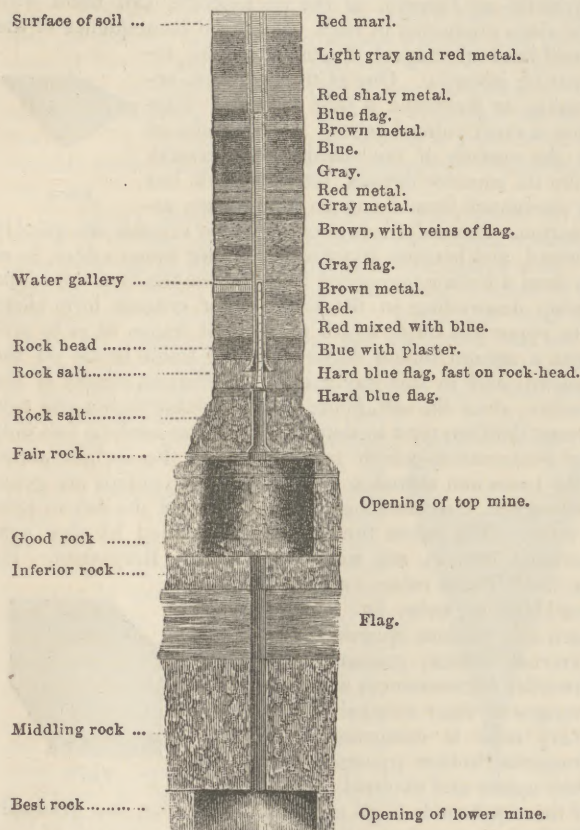


Fig. 2.

The different degrees of purity of the rock-salt are represented by a horizontal section of one of the beds, in which various irregular circular, oval, or pentagonal figures, varying from 2 or 3 to 10 or 12 feet in diameter, may be seen. The boundary-lines of these figures are white, and from 2 to 6 inches wide: they consist of pure rock-salt, while the other portions are of salt mixed with earth in varying proportions. In passing through the indurated clay or stone, small veins of rock-salt are found running in various directions; and wherever a crevice occurs it is filled up with rock-salt, to which the clay and oxide of iron have given a deep red tinge.¹

The rock-salt of Cheshire is obtained in masses of considerable size, differing in form and purity. They are separated by blasting, and with the aid of the usual tools. In extending the workings, a good roofing is secured for the intended cavity, and in doing this the men work horizontally with common picks, so as to leave a roofing of the rock as plane as possible. A few feet above the purer portion the

rock is of inferior quality, and is used in the refineries. The purer rock is called *Prussian rock*, from its being largely exported to the shores of the Baltic. The cavity thus formed, when illuminated by candles, presents a striking and brilliant appearance. In some cases pillars 8 or 10 yards square are left to support the roof; in others the salt is worked out in aisles. The salt is raised to the surface by steam-power, but horses are employed under-ground for conveying it to the bottom of the shaft. The shafts are usually square, and constructed of timber.

When, from any circumstance, water has reached a deposit of rock-salt, it forms a solution, and should the supply of water be constant, we thus have a brine spring. In order to reach it, a shaft is sunk down to a strong flag-stone over the brine; and in order to exclude fresh-water, a second inner shaft is formed, and space between the two filled with clay. When the clay puddle becomes solid the flag is broken, and the brine usually flows up the shaft. In Camden's time the brine was raised by human labour. He speaks of a "deep and plentiful brine-pit at Northwich, with stairs about it, by which, when the people have drawn the water in their leathern buckets, they ascend half-naked to their troughs, and fill them, from whence it is conveyed to the wich-houses." In places where a stream of water could be commanded, a water-wheel has been used for working the pumps; wind-mills and horse-power have been employed; but steam-power has now superseded all other methods of pumping.

The writer of this article has lately visited the salt-making town of Droitwich in Worcestershire, and will now describe the modes of manufacture adopted in that place, as a type of this branch of industry. The brine containing one-fourth of its weight of salt, rises from springs situated about 150 feet below the surface. A steam-engine is employed to pump it into reservoirs attached to each of the salt-works of the town, of which there are about five, producing about 60,000 tons of salt per annum. The reservoirs are large wooden cisterns, pitched within, or they may be ponds formed in clay and lined with brick. In Cheshire, where rock-salt is easily procured, a quantity is kept in the reservoir in order to ensure the saturation of the brine. The object of the manufacture is to evaporate the liquid portion of the brine in such a manner as to produce the variety of salt required. The different varieties were named by our Droitwich informant as follows:—*Fine* or *square salt*, the term square being due to the shape of the moulds; *Butter salt*; *brisk salt*; *basket salt*; *broad* or *coarse salt*; *bough salt*, made once a year in cold winter weather, and sometimes crystallized on boughs of trees, or on ornamental baskets, like alum baskets, for toys or presents; lastly, *agricultural salt*, consisting of the sweepings of the salt-works, and the deposit formed at the bottom of the evaporating pan.

The pans (fig. 3) used for evaporating the brine are made of wrought iron, and may contain from 600 to 1000 or more superficial feet: the usual form is that of an oblong square, and the depth from 12 to 16 or 18 inches. There are from two to four fires to each pan, according to its size; and the furnace extends far beneath the pan, and is so capacious as to require that iron supports should be fixed within it, on which the bottom of the pan rests. Thus, on looking into the furnace, the flames are seen to play around a number of short columns, spreading out at their bases and at their tops, so as to present a broad surface to the floor of the oven, and to the under part of the pan respectively. A supply of coal is kept near the fur-

¹ Engravings illustrative of the above descriptions are given in Mr Henry Holland's *General View of the Agriculture of Cheshire*; but the most complete and indeed the only separate work on salt is by Mr Charles Tomlinson, entitled *The Natural History of Common Salt*, published by the Christian Knowledge Society, 1850.

Salt.

nace doors, and a man works with long-handled iron tools at feeding the fire, stirring and spreading the fuel, and

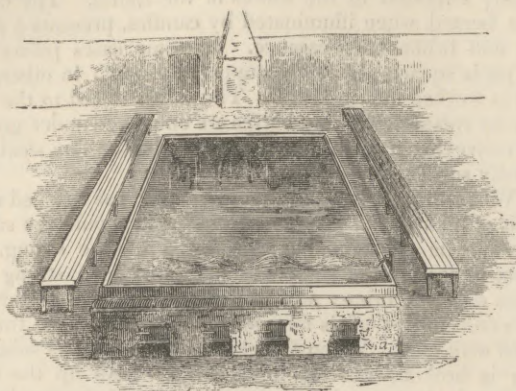


Fig. 3.

raking out the slag or clinkers. The fires are at one of the narrower sides of the oblong pan, and the flues conveying the heat into the drying-room (supposing the manufacture to be fine salt) are at the other; thus the two longer sides of the pan are left free for the operations of the work-people. For their convenience, the floor is raised, and presents a long walk on each side the pan, with a bench or a floor, with apertures, along side of it, where the moulds are set to drain. Standing on one of these raised walks, we watched the boiling of a panful of brine, which had been brought to the boil soon after daybreak, and was then (ten o'clock) ready for the moulds. The steam rose in dense white clouds to the roof, where it passed through apertures left for its escape, and the manipulators (in this case women) were bleached, by constantly living in an atmosphere of steam, to salt-like whiteness, but declared themselves to be perfectly healthy. The first step was slightly to lower the temperature of the boiling brine. This was effected by placing a wooden shoot beneath a tap in connection with the reservoir, and thus conveying into the pan a small quantity of cold brine, enough to check the boiling. Each woman now took a long-handled tool, which she called a *rake*, but which rather resembled the scrapers with which mud is collected in roads; this she flung forward towards the middle of the pan, and then dragged towards her, thus collecting the salt in large white heaps at the sides of the pan. The weight of the rake is so great as to make this a laborious part of the woman's work. At the back of the workers, ranged along beneath the side windows of the pan-room, stood a number of empty moulds or *tubs*, as the work-people call them. These are made of wood, and are of the well-known size and form of our *squares* of salt, or rather parallelopipeds. One of these moulds was now lifted into the pan, and set up on one of its narrow ends, which was perforated, the other being open. The woman now took a second long-handled tool called the *skimmer*, being a large iron disk, also perforated, and with which she lifted up masses of salt, and poured them into the mould. A few of these ladlesful seemed to fill the mould to the brim; but she took a short, thick stick, called a *rammer*, and worked the salt within the mould until it had subsided to half its former height, the brine meanwhile gushing out at every crevice. More salt was now poured into the mould, until a conical heap rose above the top; this was beaten down by a flat wooden tool called the *beater*, and was then lifted out of the pan and set aside to drain and consolidate. When all the salt had been thus removed from the pan and collected in moulds, fresh brine was added to that which remained in the pan, the fires were made up, and the boiling commenced anew. Such was the simple process of making fine or square salt, repeated at

each pan about three times daily. The consolidation of the salt was completed in a hot room, where the squares, released from their moulds, and trimmed by means of a smooth piece of wood called the *tapper*, were arranged on shelves, with small spaces between each, that the air heated by the flues might have free access to them. The quantity of salt made at one pan, and that not the largest, amounted to about twenty tons per week.

The form of the salt-crystal obtained by slow spontaneous evaporation is a solid cube; but when procured at a boiling heat from the surface of the solution, the crystals are very small, and collect together in groups in hollow four-sided pyramids or *hoppers*, as the work-people call them, with the sides graduated in steps (fig. 4), in consequence of the small lines of cubical crystals gradually re-treating inwards. One of these groups, according to Regnault, is thus formed:—Suppose a small cubical crystal to be produced at the surface of the solution, this crystal, from its superior density, tends to sink, but is prevented from doing so by capillary attraction. Around this first crystal other crystals are quickly formed, and become attached to its four upper edges, so as to form a hollow four-sided frame above the first cube; the group descending in the liquid, other crystals form along the upper and outer edges of the first frame, so as to present a second hollow frame; another frame forms on the second; and in this way the group enlarges, chiefly at the surface, since the salt, being equally soluble in hot and cold water, does not tend to deposit crystals on cooling, but only by evaporation, which takes place at the surface alone. The bases and altitudes of these little pyramids are generally equal, thus showing the disposition of the salt to form a cube. The cubes themselves, as obtained by slow evaporation (fig. 5), are well described by Bergmann. He says,—“These cubes exhibit diagonal markings or striæ, but frequently on each side produce squares parallel to the external surface, gradually decreasing inwards; circumstances which show the vestiges of their internal structure, for every cube is composed of six quadrangular hollow pyramids, joined by their apices and external surface: each of these pyramids filled up by others similar, but gradually decreasing, completes the form. By a due degree of evaporation, it is no difficult matter to obtain these pyramids separate and distinct, or six of such, either hollow or more or less solid, joined together round a centre. If we further examine the hollow pyramid of salt, we shall find it to be composed of four triangles, each of which is formed of threads parallel to the base, which threads, upon accurate examination, are found to be nothing more than series of small cubes.”

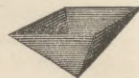


Fig. 4.

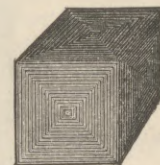


Fig. 5.

The brine is not a pure solution of chloride of sodium, but is contaminated with carbonate of lime and sulphate of lime, which, not being soluble, subside to the bottom of the pan, and form an incrustation, called by the workmen *pan scratch* or *scale*. This gradually accumulates, together with a portion of salt, and becoming thicker from day to day, it is necessary every week, or, where the evaporation is slower, once in three or four weeks, to clear it away by means of sharp iron picks. Heaps of this substance may be seen in the vicinity of the pan-house ready to be mixed with refuse salt, and ground up as *agricultural salt*. The larger fragments are sometimes given to cattle to lick instead of rock-salt. This pan-scratch in appearance resembles a thick layer of opaque ice. According to the analysis of Dr Henry, 480 parts of this substance contained 40 of chloride of sodium, 60 of carbonate of lime, and 380 of sulphate of lime; but the proportions vary in

Salt.

Salt. different brines. The greatest accumulation of pan-scratch is towards the close of the evaporation, for when much salt is deposited in the pan, it forms such a heavy mass at the bottom that the water cannot penetrate it, and the scale or deposit undergoes a kind of calcination and fusion which makes it very hard, and causes it to adhere strongly to the pan.

It was long supposed that the salt of Great Britain was inferior as a preserver of food to the salt produced in France, Spain, and Portugal, by the evaporation of sea-water, and hence we were accustomed to pay large sums of money for an article which we possessed in boundless profusion. Many years ago Dr Henry made a careful inquiry into the subject, in order to ascertain whether this preference of foreign salt was the result of accurate experience or merely prejudice, and in the former case whether any chemical difference could be detected to explain the superiority. The result of this investigation is given in an admirable paper contained in the *Philosophical Transactions*, vol. c.

Dr Henry found that the various descriptions of salt might be divided into *stoved* or *lump salt*, *common salt*, the *large-grained flaky*, and *large-grained* or *fishery salt*. In making the stoved or lump salt, the brine is raised to the temperature of boiling, or 225° F. When the water has nearly all evaporated, the fires are slackened, the salt is drawn to the sides of the pan, and placed in wicker baskets or *barrows* (fig. 6), which are set aside to drain, and afterwards dried in stoves. It loses in drying about one-seventh of its weight. In making this salt, according to Dr Henry's observation, the pan is filled twice in 24 hours, and for common salt only once. In the latter case, the brine is brought to a boiling heat in order to get a state of saturation as quickly as possible, and also to throw down the earthy matters. The fires are then slackened, and the crystallization is carried on at the temperature of from 160° to 170°. The salt is in quadrangular pyramids of close and compact texture. After it is drained in baskets, it is carried to the storehouse, and is not exposed to heat. The large-grained flaky salt is formed at 130° or 140°. It is somewhat harder than common salt, and approaches nearer the natural form of the crystals of chloride of sodium. The pan is filled once in 48 hours. Salt of this grain is sometimes made by slackening the fires between Saturday and Monday, and allowing the crystallization to proceed slowly on Sunday, whence it has obtained the name of *Sunday salt*. For the large-grained or fishery salt, the brine is heated to 100° or 110°, at which temperature the evaporation is comparatively slow, and as there is no agitation produced in the brine, the salt forms in large cubical crystals. Five or six days are required for the process.

Now it is on the difference in size and hardness of the crystals that their adaptability to different uses depends, and not on any differences in chemical composition, for these are too minute to have any influence. The large-grained salt is peculiarly fitted for the packing of fish and other provisions, a purpose to which the small-grained salts are much less suitable. Their different powers of preserving food depend on the size of the crystals and their degrees of hardness. Quickness of solution, other circumstances being equal, is nearly proportional to the quantity of surface exposed; and since the surfaces of cubes are as the squares of their sides, it follows that a salt, the crystals of which are of a given magnitude, will dissolve four times more slowly than one whose cubes are only half

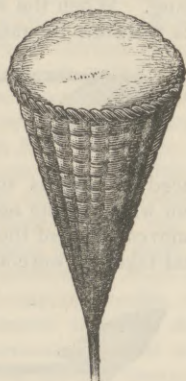


Fig. 6.

Salt. the size. The kind of salt, then, which is distinguished for hardness, compactness, and perfection of crystals, will be best suited for packing fish and other provisions, since it will remain permanently between the different layers, or will be very gradually dissolved by the fluids that exude from the provisions, thereby furnishing a slow but constant source of saturated brine; whereas for preparing the pickle or *striking* meat, which is done by immersion in a saturated solution of salt, the small-grained varieties answer equally well; or, on account of their greater solubility, even better. The specific gravity of various samples of salt depending to a great extent on hardness and compactness of crystal, was found to be almost the same in the large-grained British salt as in that of foreign manufacture. Dr Henry remarks that "if no superiority be claimed for British salt, as applicable to economical purposes, on account of the greater degree of chemical purity which unquestionably belongs to it, it may safely, I believe, be asserted that the larger-grained varieties are, as to their mechanical properties, fully equal to the foreign bay salt."

Before proceeding to notice foreign methods of manufacture, we may give the following statistics of salt, derived from the *Mineral Statistics of the Museum of Practical Geology*:—

	Tons.
<i>Cheshire.</i> —	
The quantities of white salt carried on the River Weaver from the 5th April 1857 to 5th April 1858, was	647,437
Do. do. of rock-salt	65,773
Salt carried by railway from the districts of Winsford and Northwich, estimated	525,000
<i>Worcestershire.</i> —	
Stoke and Droitwich	196,500
<i>Ireland.</i> —	
Duncone, near Carrickfergus, belonging to the Belfast Mining Company, shipped	16,660
Do. do. used for manufacturing purposes	5,798
Do. do. white salt manufactured	4,877
Total produce of the United Kingdom ...	1,462,045

The quantities of salt exported from the United Kingdom in the years 1855, 1856, and 1857, with the declared values, were as follows:—

1855.	1856.	1857.
630,154 tons.	745,513 tons.	651,766 tons.
L.268,857	L.276,242	L.239,969

There was formerly a duty on salt, which originated as a war-tax in the ninth year of the reign of William III., and was not removed until the year 1823. The price of salt, in consequence of the duty, was raised from 6d. a bushel to more than 20s.

In countries situated near the sea-coast common salt is frequently obtained by the evaporation of sea-water. There is not more than from 3 to 4 per cent. of saline matter in sea-water, and of this quantity common salt forms nearly two-thirds. Dr Schweitzer found in 1000 grains of the water of the English Channel, near Brighton:—

	Grains.
Water	964.74372
Chloride of sodium	27.05948
Chloride of magnesium	3.66658
Chloride of potassium	0.76552
Bromide of magnesium	0.02929
Sulphate of magnesia	2.29578
Sulphate of lime	1.40662
Carbonate of lime	0.03301

The specific gravity of the water at the surface, and from a depth of 10 fathoms, was 1.0274. A minute quantity of iodine was also found; and Professor George Wilson has discovered fluorine to be an element of sea-water. Dr Forchhammer has also detected minute quantities of manganese, ammonia, baryta, strontia, iron, and silica.

In the preparation of salt from sea-water the water is ex-

Salt.

posed in a series of shallow ponds, called *salt-gardens* or *salterns*, to the action of the sun and air. The salterns are laid out on a clay soil on the sea-coast, and are protected from the influence of the tides; they are worked during the warmer months, from March to September. They are arranged in such a way that, as the salt is deposited in the hindermost pools, the foremost ones receive constant supplies of sea-water. In the first place a *collecting pond* A (fig. 7)



Fig. 7.

is filled at the flow of the tide by means of a flood-gate to the depth of from 2 to 6 feet. In this pond the mud and mechanically-suspended substances are deposited, while the clear water is conveyed by means of a pipe to the front pool B, which is divided by a central embankment and arms proceeding alternately from it and the sides of the pool. This pool is horizontal and very shallow, and the salt water moves slowly through it in the direction of the arrows as far as the pipe C, which conveys it into a channel running along the four sides of the saltern. Arriving at the point D, it enters the ponds E into a third series of ponds F, and thence by channels *h* into the crystallizing ponds G. During all this time the brine has become stronger by evaporation of the water, so that when it reaches the crystallizing ponds it is ready to deposit its salt. This is indicated by a reddish tint on the brine. The ponds G are filled from channels at the corners, which admit of being closed with wooden plugs. The salt forms on the surface of the water, and is collected by means of rakes into small heaps *i* at the sides. Here the mother liquor flows off, and is collected in proper channels; and when no more salt separates by crystallization the spent liquor is allowed to flow off through K into the sea. The salt thus collected is contaminated with chloride of magnesium, so that the small heaps *i* are made up into large ones *j*, and covered with straw for keeping off the rain: the moisture of the air liquifies the chloride of magnesium, which gradually becomes separated from the saline mass. The process depends so much on the state of the weather that at the beginning of the season eight days may be required for the deposit of salt; but in fine dry weather salt may be collected two or three times a week, and in very favourable cases every day.

The repeal of the duty on salt enabled the Cheshire manufacturers to sell the article at so low a rate that the proprietors of the salterns could not compete with them. This will readily be understood when it is considered that the price of fuel, strength of brine, and facilities of carriage by river and canal, were all in favour of Cheshire. There was a saltern at Lymington in Hampshire, in which it was the practice to concentrate the sea-water to about one-sixth of its bulk, and complete the operation in boilers. The chief variety of salt manufactured resembled in grain the stoved salt of Cheshire. In preparing it, the salt was

not raked out of the boiler and grained, but the water was entirely evaporated, and the salt taken out every eight hours, and removed into perforated troughs, through which the bittern, or mother-liquor, drained off. Below the troughs, and in a line with the holes, were upright stakes, on which a portion of the salt crystallized, and formed in the course of ten or twelve days on each stake a mass or lump, called a *salt cat*, weighing 60 or 80 lb. During the winter, when the manufacture of salt could not be carried on, sulphate of magnesium (Epsom salts) was manufactured from the bittern.

Salterns can only flourish in countries which have no natural deposits of salt or brine, and where foreign salt is excluded by a high protective duty. The method of evaporating the sea-water differs somewhat in different localities, and attempts have even been made to increase the mineral contents of sea-water before the process of evaporation is commenced. A contrivance of this kind has been in use in Lower Normandy from the ninth century, and it consists in allowing the sea-water to percolate through a filter of sand collected on the sea shore after the tide has gone out, by means of a long broad scoop drawn by a horse. The strength of the sea-water is thus considerably increased, and the evaporation is conducted in leaden boilers with wood fuel, the scum being removed during the boiling. The boiler is repeatedly filled up with sea-water during the evaporation, and the salt which forms is kept in motion by means of long rakes, to prevent the lead from fusing. When the whole of the water has been driven off it is removed by means of a perforated tool (fig. 8), and

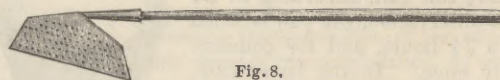


Fig. 8.

placed in baskets suspended over the boilers, the steam from which in the next charge penetrates the baskets, and removes much of the bitter deliquescent salts. The salt is next taken to warehouses, and by means of the tool (fig. 9)

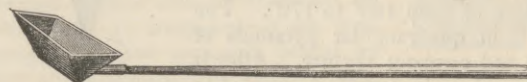


Fig. 9.

is piled up on the floor, which is made of hard cement. The salt remains here for about two months, during which time it loses from 20 to 28 per cent. of bittern. The salt is now fine and pure, and quite white. According to Dumas, from 700 to 800 litres of salt water are required to produce from 150 to 225 kilogrammes of salt. According to Sir Stamford Raffles a method of obtaining salt similar in principle to the above is adopted on the south coast of the island of Java.

There are vast deposits of rock salt at Bochnia and Wieliczka in Galicia, and others equally important along each side of the great Carpathian range, extending at various intervals from Moldavia to Suabia. In this extensive tract are the celebrated salt-mines of Wallachia, Transylvania, Galicia, Upper Hungary, Upper Austria, Styria, Salzburg, and the Tyrol. In some cases culinary salt is prepared from brine, formed by letting down fresh water through a bore to the middle of a salt-bed, and pumping it up as a saturated solution, which may be treated in the manner already described for the Droitwich works. In some inland districts which are not so fortunate as to possess deposits of salt, and where land carriage and fiscal regulations render the imported article costly, advantage is taken of natural salt-wells where such occur. These are for the most part but slightly impregnated with salt, arising probably from their contact with fresh water after leaving the salt-

Salt.

Salt.

Salt.

bed. Some of these springs have only half the strength of sea-water, and yet by judicious arrangements it has been found profitable to work them. The method of evaporation by artificial heat is of course out of the question, even supposing fuel to be abundant, which it is not. We will first describe the method which has been in use, it is said, from the year 1550 at Moutiers, the capital of the province of Tarentaise in Sardinia, taking as our chief authority Mr Bakewell's *Travels in the Tarentaise*, published in 1823.

The method here adopted is based upon the physical fact, that the rate of evaporation depends, other things being equal, on the amount of surface exposed; and the method practically consists in raising the weak brine to a height, and allowing it to fall in the form of rain, the single drops being retarded in their fall by a peculiar contrivance. In this way 3,000,000 lb. of salt are produced every year, from a source which in most other countries would scarcely be noticed except for medicinal purposes. The salt-springs rise at the base of a limestone rock, and are passed along an open canal, through the distance of about a mile, to the salt-works. In this canal the brine deposits a red ochreous incrustation, and also gives off a mixture of carbonic acid and sulphuretted hydrogen. The water has an acidulous and slightly saline taste: its temperature at its rising is 99° F., and it contains only 1.83 per cent. of saline matter, other springs only 1.50. In addition to common salt, the water contains small proportions of sulphate of lime, sulphate of soda, sulphate and muriate of magnesia, and oxide of iron. Thus there is about 1½ lb. of common salt in 13 gallons of water. The first method of evaporating the water was by allowing it to trickle repeatedly through pyramids of rye-straw arranged in open galleries. A portion of the sulphate of lime was deposited on the straw, and the water attained a certain degree of concentration. The process was then completed at a salt-pan with fuel. This plan continued in operation for nearly two centuries. In 1730 the modern plan came into use. There are four evaporating houses, called *maison d'épines* or "thorn-houses," the first two of which are 350 yards long, about 25 feet high, and 7 feet wide. They consist of frameworks of wood supported on stone buttresses, and containing double rows of fagots of black thorn, placed loosely so as to admit the air, but supported firmly by transverse pieces of wood. In the centre of each house is a stone building containing the pumping apparatus, moved by a water-wheel. By this means the water is raised to the top of the thorn-house, and is received in channels on each side, extending the whole length: these long channels distribute it to smaller ones, from which it trickles through a multitude of small holes in a very gentle shower upon the fagots, where it is further divided into innumerable drops, falling from one point to another, and is received in troughs below, from which it is again pumped up, until by repeated exposure to the air it is deemed sufficiently concentrated to be passed to the evaporating house No. 2, where it undergoes similar treatment. These thorn-houses are placed at different angles, so as to catch the different currents of air that flow down the valley. The sulphate of lime is deposited in incrustations on the twigs. The thorn-house No. 3 is covered to preserve the salt water from the rain: it is 370 yards in length, and has 12 pumps on each side to distribute the water more equally. After passing through No. 3, the water, reduced to one-seventh of its original bulk, is conveyed along channels to the thorn-house No. 4, which is 70 yards in length, where it is concentrated to saturation. The time occupied in obtaining this result, from the first commencement, is in summer about one month; in wet seasons of course much longer. A good idea will be formed of the quantity of water evaporated by the following statements:—8000 hogsheads, when received at the thorn-houses Nos. 1 and 2, contain about 1½ per cent. of salt, and

are reduced by evaporation to 4000 hogsheads; 4000 hogsheads, when received at No. 3, contain about 3 per cent. of salt, and are reduced to 1000 hogsheads; 1000 hogsheads, when received at No. 4, contain about 12 per cent. of salt, and are reduced to 550 hogsheads; 550 hogsheads received at the pans contain nearly 22 per cent. of salt. The process is completed in the usual way, and it is calculated that only 1/10th part of the fuel is consumed that would be required for evaporating the whole of the water by fire. The fagots last from four to seven years, those in Nos. 1 and 2 decaying sooner than those in Nos. 3 and 4. The chief deposit of sulphate of lime is in No. 3. Sulphate of soda is also manufactured at the works, and the other alkaline refuse goes to the glass-maker.

The method of graduation invented at Moutiers was introduced into Saxony in 1559, and has received considerable attention on the part of modern chemists. In Knapp's *Technology* (translated by Ronalds) is an engraving of a portion of one of the evaporating houses which we here copy (fig. 10.) The weak brine is pumped up into a large

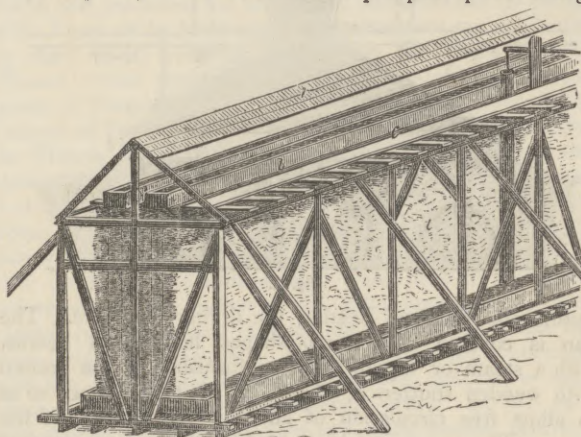


Fig. 10.

reservoir, from which it flows into the troughs *b, b* of the thorn-house. From these troughs the brine is conveyed in a thin stream to a perforated channel *c*, from which it falls in drops on the wall of black-thorn fagots *d*. There is a sloping board placed so as to prevent the wind from giving a wrong direction to the drops, and the whole arrangement is protected from the weather by a roof *r*, a portion of which has been removed in our engraving to show the troughs. The building is erected in an airy place, in a direction at right angles to that of the prevailing wind; but should the wind blow slantingly upon one of the faces of the wall, so as to dissipate the brine, certain channels are closed by means of a lever, and others are opened, whereby the supply of brine is carried to the opposite side of the wall. At Schönebeck the thorn wall exposes a surface of 390,000 square feet, and this evaporates on an average 3 3/10ths cubic feet of water from each square foot of wall per day, or nearly a million and a quarter hogsheads of water in a year of 258 working days, which include the most favourable portion of the year, frost being found to be injurious, for below 27° Fahr. sulphate of magnesia, and a portion of chloride of sodium, become converted into chloride of magnesium and sulphate of soda, and this decomposition, once begun, is not reversed when the weather becomes warmer; so that not only is salt lost, but the quantity of chloride of magnesium, which is injurious in the boiling process, is increased. Some loss is also entailed by the evaporation of salt with the water, an observation made in 1770 by Pallas, in the neighbourhood of the salt lakes of Asiatic Russia, where he found the dew to have a decidedly salt taste. The deposit upon the thorns, known as *thorn-stone*, consists of the carbonates of lime, magnesia, manganese, and iron, with traces of chlo-

Salt.

rides. These deposits gradually fill up the interstices of the thorn wall, and stop the draught; so that it is necessary to renew the wall every five, six, or eight years. In the brine cisterns the deposit forms a fine mud, with a greyish kind of scum filled with bubbles; this consists chiefly of living infusoria, evolving pure oxygen. The brine is generally considered fit for boiling when it contains 23 per cent. of salt. If the natural spring contain as much as this, it is boiled down at once without being graduated.

After the brine has been graduated it is passed into vast reservoirs of masonry covered over and protected from the frost. Here the brine makes a further deposit of suspended matters. The boiling is carried on in winter only, in flat four-sided pans of sheet-iron, somewhat deepened towards the middle. The bottom of each pan is supported by brick-work (fig. 11), which contains the flues for distri-

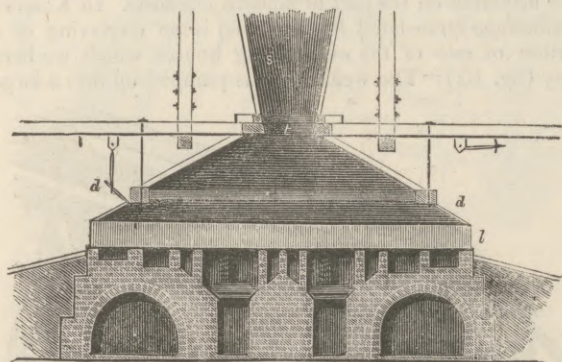


Fig. 11.

buting the fires and heating the drying-chambers. The pan is covered with a roof-shaped hooding of boards, with a steam or vapour trunk *s*, furnished at the bottom with wooden shutters *d*, which can be turned back so as to allow free circulation of air over the surface of the brine. The vapour is said to contain about 1 per cent. of salt, so that means are taken for condensing it, or rather that portion of it which trickles down the sides of the chimney, at the bottom of which is fixed a sort of channel connected with a tube *t*, leading into a tank. The process of boiling consists of *first*, the *schlotage*, or the further purification and evaporation of the brine, up to the point of saturation; and *secondly*, the *soccage*, or crystallization of the salt. During the boiling the scum which rises to the surface is removed, while the other impurities form pan-scale. A pan containing 1600 feet of brine, or 176 cwt. of salt, is re-filled as often as one-fourth of the quantity is evaporated; so that when, after twenty or twenty-four hours, a pellicle of crystals begins to form on the surface the fire is slackened until the temperature of the brine falls to 194° Fahr., and from that to 167°, when with slow evaporation the *soccage* begins, and is continued for several days. In this way salt of coarse grain is produced. During the *soccage* the salt is raked to the edge of the pan and placed in baskets of peeled willow, or heaped upon boards to drain, after which it is dried and packed for sale. The salt thus formed is not quite pure; it usually contains a minute portion of one or other of the following salts:—Chloride of magnesium, chloride of calcium, sulphate of soda, sulphate of magnesia, and sulphate of lime. The chloride of magnesium has the greatest influence on the quantity of the salt, on account of its highly saline taste and deliquescence in the air. Pure chloride of sodium does not attract moisture, but if it contain only a minute portion of chloride of magnesium, it becomes wet in damp weather. The greater pungency, however, of this salt, causes it to be preferred in places where salt is costly, as a smaller quantity of it will suffice. The chloride of magnesium can be removed during the *soccage* by the addition of slaked lime to the brine.

It is remarkable that in the neighbourhood of these inland salt-works plants which usually grow on the sea-shore are met with,—such as the *Salicornia*, the *Salsola kali*, the *Aster tripolium*, the *Glaux maritima*, &c.,—because in such situations they find food adapted to their habits. Liebig supposes that the seeds of these plants must have been carried by the wind or by birds, and scattered over the several hundred miles which separate the salt-works from the sea, but that they only germinated in those places where they found the conditions essential to their existence. Small fishes (*Gasterostens aculeatus*) are found in the salt reservoirs at Nidda in Hesse-Darmstadt.

There is yet another method of procuring salt, based upon the remarkable property of ice to exclude foreign substances from its composition, so that when brine is exposed to a low temperature it resolves itself into two portions,—one consisting of pure water, which crystallizes or freezes, and can be removed in the form of ice; the other portion or brine remaining liquid, and becoming intensely salt by the removal of the fresh water. The salt can be separated by the usual method of boiling. The product, however, is very impure, since the effect of low temperature, as already noticed, is to convert the sulphate of magnesia of the brine into sulphate of soda and chloride of magnesium at the expense of the salt. A portion of the brine formed in this way from the water of the sea of Okhotsk was found by Hess to contain—

Common salt	77.60
Sulphate of soda.....	13.60
Chloride of aluminum	6.20
Chloride of calcium	0.94
Chloride of magnesium	1.66

100.00

In places where the salt prepared from such brine is used, the people are subject to scorbutic diseases, which Hess attributes to the presence of these chlorides. Such brines should therefore in all cases be purified by means of lime. It is remarked by Dumas that this is the first analysis of bay salt in which chloride of aluminum occurs. (C. T.)

SALTA. See PLATA, *La*.

SALTASH, a market-town of England, in the county of Cornwall, 3½ miles N.W. of Davenport. The houses rise tier above tier on the steep bank of the Tamar, and present striking and picturesque contrasts; some being of brick, some of stone, some fronted with plaster, others with slates. There is a town-hall, an old church, and a grammar school. Most of the inhabitants are fishermen. Saltash was formerly a parliamentary burgh, returning two members, but was disfranchised by the Reform Act of 1832. Pop. 1621.

SALTCOATS, a seaport-town of Scotland, in the county of Ayr, 24 miles S.W. of Glasgow. It is built on the shore of the Bay of Ayr, and has some good houses, but it is in general a mean-looking place. There is a town-hall with an elegant spire, an Established church, a Free church, two belonging to the United Presbyterians, and one to the Roman Catholics. The inhabitants are supported chiefly by the weaving and sewing of muslin for the Glasgow market. Salt is manufactured, and at either end of the town there are large chemical works. Ship-building, which formerly formed an important branch of the industry of the place, has of late years much declined. Large quantities of coals are exported to Ireland. The harbour however is not good, and inferior to that of Ardrossan. Pop. 4338.

SALT LAKE, CITY OF THE GREAT, in the United States of North America, capital of the territory of Utah, in a beautiful and richly-cultivated plain, bounded on the E. by a range of snowy mountains bearing the name of Wahsatchan, and on the W. by the Jordan River, on the right bank of which the city stands, about 22 miles S. of the Great Salt Lake, and 4350 feet above the level of the

Salta
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Salt Lake.

Saltillo
||
Salvage.

sea; N. Lat. 40. 46., W. Long. 112. 6. It is laid out on a very regular and systematic plan, divided into 260 squares by streets, 130 feet broad, crossing each other at right angles. Each of these squares is 10 acres in extent, and occupied by eight houses standing 20 feet back from the street, and surrounded with extensive grounds planted with trees and shrubbery. The houses are built of bricks dried in the sun, and have in general only one storey. A perennial stream of water flows through the town, and is carried by channels to each house and garden. Of the public buildings the most important will be the great temple, the foundations of which have been laid, and to the construction of which each of the saints has to contribute his tithe in money and labour. In the large square where it stands are the house of the president or high priest, and other public buildings. The city has also a fine theatre, which cost more than L.4000. Salt Lake City was laid out in 1847 by a company of 143 Mormons. (See MORMONISM and UTAH.) Pop. (1853) estimated at 10,000.

SALTILLO. See MEXICO.

SALTPETRE, NITRE, or nitrate of potash, a compound of nitric acid and potash. It is generally obtained in the form of six-sided prismatic crystals, terminated by six-sided pyramids, joined by their bases. Its specific gravity is 1.933. (See CHEMISTRY.) It is used in the various arts, and is the principal ingredient in the manufacture of gunpowder. (See GUNPOWDER.)

SALUZZO, a town of Sardinia, Piedmont, capital of a province of the same name, in the division of Coni, at the foot of a branch of the Alps, which separates the valley of the Po from that of the Vraita, 31 miles S. by W. of Turin. It is a large cathedral town, consisting of two parts, an upper and a lower; the former, anciently fortified, has steep streets and many good houses, though it is somewhat more ancient than the widely-extended lower town. The cathedral in one of the suburbs is surmounted by a tall, elegant tower; two of the other churches are more remarkable for their monuments than for their architectural beauty, and there are several convents in the town. The ancient castle, once the residence of the marquises of Saluzzo, is now used as a prison. There are also an old town-house, a college and several schools, a theatre, and other buildings. Iron-ware, jewellery, hats, leather, and silk are manufactured here; and there is a considerable trade in cattle, corn, and wine. Chestnuts are grown in large quantities in the vicinity. Saluzzo was once the capital of a marquisate, which was for a long time in the possession of France. Pop. about 15,000. The province, which has an area of 511 square miles, is occupied in its western part by the Alps, the chief summit here being Monte Viso; and is watered by the Po and its affluents the Maira and Vraita. The soil being fertile, and the climate good, abundance of corn, wine, fruit, hemp, and silk is produced. Iron, copper, marble, and slate are the chief minerals obtained here. Pop. 160,608.

SALVADOR, St. See SAN SALVADOR.

SALVAGE, an allowance made to those persons, other than the crew, by whom ships or goods have been saved from the sea, fire, pirates, or enemies. 1. In fixing the rate of salvage upon losses by perils at sea, regard is usually had, not only to the labour and peril incurred by the salvors, but also to the degree of relationship to the property saved, the anxiety manifested by them, the value of the ship and cargo, and the danger from which they were rescued. Sometimes a *half*, sometimes a *tenth* of the property saved has gone to the salvors. 2. During a time of war, when British war-ships re-capture British merchantmen from the enemy, they are allowed a salvage of one-eighth part of the re-captured ships and cargoes (stat. 43 Geo. III., c. 160), and one-sixth part of their value on ships re-captured by privateers. An act of her Majesty's government (16 and

17 Vict., c. 131) lays down several regulations regarding the prosecution of such claims. (For further information regarding salvage, see the works of Abbot, and of Maude and Pollock, *On the Law of Shipping*; and M'Culloch's *Commercial Dictionary*.)

SALVANDY, NARCISSE ACHILLE, *Comte de*, a French writer and statesman, sprung from an Irish family, was born at Condom, in the department of Gers, on the 11th of June 1795. Having been sent at a very early age to Paris, he received his education at the Lycée Napoléon. The needy youth enrolled himself in a volunteer corps in 1812, and served with much distinction throughout the campaigns of 1813-14, and had the honour to receive the decoration of the Legion of Honour from the hands of the emperor on the 6th of April 1814. On the restoration of the Bourbons, Salvandy expressed his devotedness to the new regime in these words:—"After having shed my blood in an illegitimate cause," he wrote to the Duc d'Angoulême, "I would die for the Bourbons." Having accompanied Louis XVIII. to the Belgian frontier in 1815, he returned to Paris, and published his pamphlets, *Mémoire sur les Grièfs et les Vœux de la France*; and *Observations sur le Champ de Mai*. Next year he brought out *La Coalition et la France*, which produced a considerable sensation in the courts of Europe. In 1819 he was made a member of the Council of State, and appointed *Maitre des Requêtes*; but the French cabinet not acting according to his liking in the electoral system, he had the audacity, at the risk of place, to defend that system in his clever brochures *Vues Politiques* and *Dangers de la Situation présente*. In 1820, Salvandy having gone to Spain during the ministry of the Duc de Richelieu, studied with warm interest the liberal movement in that country. In 1823 appeared his celebrated romance *Don Alonzo, ou l'Espagne*, which has been frequently reprinted. In 1824 began his connection with the *Journal des Débats*, which was destined to continue at intervals for the next twenty years. In his political articles he pursued a bold yet steady course, scorning to fawn upon any potentate, and flattering no party. He never abandoned his fundamental principle, that there was no security for France but in constitutional monarchy—a maxim which he urged with all the warmth of language and energy of style competent to a man of a lively imagination and of perfect self-consciousness. Salvandy held the position of councillor of state during the ministry of Martignac, but resigned on the subsequent dissolution of the cabinet. During the reign of Louis Philippe, he continued to pursue his liberal policy, both in political leader and in pamphlet, with the same steady adherence which had hitherto characterised him. He held several offices of state, was made a member of the French Academy, and was created a count. On the *coup d'état* of December 1851, he went into retirement, and died on the 15th December 1856, in his sixty-second year.

SALWEEN, or SALUEN, a large river of Further India, rises on the eastern frontiers of Tibet, and flows southwards, forming, for a great part of its course, the eastern boundary of Burmah, and then entering the British dominions, and separating Pegu from the Tenasserim provinces. It falls into the Gulf of Mastaban by a broad mouth, between the towns of Moulmein and Mastaban. The whole length is estimated at 600 miles; and though the river has been very little explored, it is believed to flow through a fertile, well-wooded country, and to be navigable for a considerable distance from the sea.

SALZBURG, DUCHY OF, a crown-land of the Austrian empire, bounded on the N. and N.E. by Upper Austria, E. by Upper Austria and Styria, S. by Carinthia and the Tyrol, and W. by the Tyrol and Bavaria; area, 2757 square miles. It is almost entirely mountainous, being occupied by that chain of the Alps called the Salzburg

Salvandy
||
Salzburg.

Salzburg. Alps or the Tauern. These extend along the southern frontier, and send off many branches, forming glens and valleys of exquisite romantic beauty. The principal summits are the Wiesbach or Krummhorn, 11,297 feet high; and the Kitzsteinhorn, 10,106 feet. The Salzach rises on the borders of Tyrol, and flows at first eastwards down the romantic valley called Pinzgau; then turns suddenly to the north, and traversing the equally fine valley called by its name, leaves Salzburg to join the Inn on the frontiers of Bavaria and Upper Austria. Almost all the rivers of the country discharge their waters into this, which is by far the most important. There are a number of lakes and many exceedingly beautiful waterfalls in Salzburg. Notwithstanding the mountainous nature of the surface, the valleys are in general very fertile, and a large proportion of the soil is productive. Corn is raised in considerable quantities, and excellent vegetables may be grown in sheltered spots; but it is the rearing of cattle that forms the chief support of the inhabitants. Of minerals, gold, silver, copper, lead, iron, manganese, and arsenic are obtained; salt, too, is extensively worked, especially in the great salt-works at Hallein. In many places there are mineral springs. The manufacturing industry of the country is, on the whole, not very highly developed. The present duchy of Salzburg was formerly an archbishopric, immediately dependent on the German empire. Christianity was introduced here among the heathen inhabitants by a Scotchman named Rupert, afterwards canonized, who found the land nearly a desert, and became the first bishop of Salzburg in 716. The see was afterwards raised to the rank of an archbishopric, and its occupant became primate of Germany, and was the only archbishop, besides the spiritual electors, who had a seat and voice in the diet. The privileges of these prelates were numerous; their temporal possessions gradually became extensive, and their revenues enormous. The Reformed doctrines early found admission into Salzburg, but the utmost severity was used to suppress them, until at last, in 1732, the Protestant states obtained leave for their fellow Protestants to leave the country, on which more than 30,000 departed, and settled in Prussia, Würtemberg, and in the North American colony of Georgia. In 1801 the see was secularized, and given to the ex-Duke of Tuscany, with the title of Elector; but by the peace of Pressburg in 1806, it was annexed to Austria. From 1809 to 1815 Salzburg belonged to Bavaria; but in the latter year, with the exception of a small portion, it was restored to Austria. The inhabitants are almost all Germans, and of the Roman Catholic religion. Pop. (1854) 154,379.

SALZBURG, the capital of the above duchy, on both sides of the Salzach or Salza, just at the entrance of the hill country, where the river issues from its confined valley into the Bavarian plain, 156 miles W.S.W. of Vienna. Few German towns can rival this in the beauty of its situation: the stream, with grayish-white water, telling of distant glaciers, flows among meadows and waving corn-fields, between two castle-crowned cliffs, at the foot of which clusters the Italian-like town, with its flat roofs, numerous churches, and marble edifices; while in the background rise the slopes of hills darkly clothed in wood, and the scene is closed in by the snowy line of loftier mountains in the remote distance. The part of the town that lies to the left of the river is almost inclosed by the Castle Hill (*Schloss-berg*) and the Monk's Hill (*Monch-berg*); while a bridge 370 feet long leads to the other portion, on the slope of the Capuchin Hill (*Capuziner-berg*). On the summits of the two latter hills there are extensive plateaus, laid out in fine walks, and planted with trees. The ancient castle on the hill, to which it gives its name, has been long dismantled, and is now only used for barracks. Its towers rise 400 feet above the square below. Besides the natural strength of its position, Salzburg is defended by fortifications, and en-

tered by eight gates. One of the latter, called the New Gate, is formed by a tunnel cut through the Monk's Hill, constructed by Archbishop Sigismund in 1767. The cathedral is a large and splendid marble edifice in the Italian style, built in the seventeenth century. Near it is the former archbishop's palace, now occupied by public offices. In the square in front stands a beautiful marble fountain and a statue of Mozart, who was born here in a house that is still to be seen marked with an inscription. Among the many churches of the town, that of St Peter is remarkable for its monuments, and for a curious old churchyard attached to it. There are numerous convents, one of which, the Benedictine, is among the oldest in Germany, and has a fine library. The lyceum, formerly a university, has also a library of 36,000 volumes and 300 MSS. There are other schools, a theatre, several hospitals, &c., in the town. The manufactures comprise leather, iron wire, and pottery; the trade is considerable; and two annual markets are held. Salzburg is still the seat of an archbishop; also of the provincial government and courts of law. Pop. (1851), exclusive of the military, 17,009.

SAMAKOV, a town of European Turkey, Bulgaria, at the foot of the north slope of the Balkan hills, in the Sanjak, and 30 miles S.E. of Sophia. It is defended by an embattled wall, flanked with towers; and has manufactories of heavy iron goods, the materials for which are obtained from the mines in the vicinity. Pop. 5000.

SAMAR, one of the Philippine Islands, lying to the S.E. of Luzon, separated from it by a strait 20 miles wide, between N. Lat. 11. and 12. 48., E. Long. 24. 25. and 25. 55. Its form is triangular, with the apex pointing southwards: length, 150 miles; greatest breadth, 80; area, 5470 square miles. The northern position is occupied by rugged, lofty mountains; while the whole is densely wooded, and watered by numerous rivers, large and small. The climate is healthy, the soil moderately fertile, and the productions numerous, including many useful and valuable woods, palm oil, cocoa, rice, Manilla hemp, &c. Samar is inhabited by a mixed race, the offspring of Spaniards by Indian mothers; they manufacture mats and other articles, and carry on some trade. The island belongs to Spain; and the capital is Cabalunger, on the west coast. Pop. 99,635.

SAMARA, a government of European Russia, bounded on the N. by that of Kasan, E. by Orenburg and the Kirgheez territory, S. by Astrakhan, and W. by Saratov and Simbirsk; area, 51,588 square miles. It consists of a broad, open, slightly undulating plain, lying between the rivers Volga and Ural,—the former of which bounds the government on the west, and the latter on the east. By these rivers and their affluents, especially those of the Volga, the country is watered. The government was formed by an ukase in December 1850, from portions of those of Orenburg, Saratov, and Simbirsk, in the following proportions:—

	Sq. Miles.	Pop. (1846).
From Orenburg, 3 districts.....	21,393	514,014
„ Saratov, parts of 2 districts..	20,102	327,831
„ Simbirsk, 2 districts	10,093	274,118
Total.....	51,588	1,115,963

Thus, in the statistics given of these governments for 1849, those parts are included which now belong to Samara, as the new government had not then been formed. The great majority of the inhabitants belong to the Greek Church; but there were also, in 1851, 122,113 Mohammedans, 48,583 Protestants, 32,140 Roman Catholics, 3426 pagans, and a few Jews. The government is divided into seven circles, as follows:—

	Pop. (1851).		Pop. (1851).
Samara	146,293	Bugulma	146,880
Stavropol.....	163,534	Busuluk.....	257,510
Nicolajevsk.....	250,585		
Novyi Usen.....	133,984	Total.....	1,320,108
Buguruslan.....	221,322		

Samakov
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Samara.

Samara
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Samaritans

SAMARA, the capital of the above government, at the confluence of the river of the same name with the Volga, 550 miles E.S.E. of Moscow. It was originally built in 1591 as a defence against the incursions of the Bashkirs and the Kalmucks, and for that purpose was surrounded by an earthen wall and a deep moat. These fortifications were destroyed in 1703, and a citadel built in their stead, but of this only a few vestiges are now to be seen. The town contains two cathedrals and three other churches, a gymnasium and various other schools, several charitable institutions, cloth and silk factories, &c. Near the confluence of the rivers is a double row of warehouses built of pine wood, and supported by tarred pillars. These, as well as others in different parts of the town, are used in connection with the great fairs held here twice a year,—one in the second week of Lent, and the other on the 14th (26th) September. Each of the warehouses can contain from 25,000 to 30,000 cwt. of corn. For a long time Samara has been one of the principal markets for corn on the Volga; and in 1852 there were sold here 631,412 quarters of wheat, and 16,613 of lintseed. The value of goods brought to the first fair is generally about L.41,000, of which L.13,000 worth are sold; that of those brought to the second about L.66,000, of which L.20,000 worth are sold. Pop. 24,405.

SAMARANG, a seaport of Java, capital of a Dutch province, at the mouth of a river of the same name, on the north coast of the island, 240 E.S.E. of Batavia. It is pretty well built, and encircled with a wall and moat, sufficiently strong to resist any attacks of the natives. The river forms a harbour, which is rather shallow; but about 2 miles off there is a roadstead commanded by a fort. There are here a Protestant and a Roman Catholic church, several mosques, a school, observatory, theatre, court-house, town-hall, &c. Leather and cotton fabrics are manufactured, and an active trade with the interior is carried on, coffee, pepper, and rice being exported. Pop. about 50,000.

SAMARCAND, a fortified city of Turkestan, in the kingdom and 100 miles east of Bokhara, in the midst of a country exceedingly beautiful and fertile, on the Soy or Zer Afshan, once the splendid seat of the triumphs of Tamerlane, and inhabited then by 150,000 people. It is now in a very decayed condition, and many of its former streets are covered with ruins, or occupied by fields, gardens, or groves. The most conspicuous and interesting building is the mausoleum of Tamerlane and his family, a magnificently-ornamented octagonal building, surmounted by a dome. In the citadel stands the palace of the Emir or Khan of Bokhara. Under Tamerlane, Samarcand was a great seat of Mohammedan learning, and contained no less than forty medressas or colleges; but of these, three only remain,—square buildings with porcelain mosaic on the walls and minarets at the corners. Of the numerous mosques, too, many are quite in ruins. The only important modern buildings are the bazaar and caravansaries. Manufactures of cotton and silk cloth, silk paper, and other articles are carried on. The trade of the place has much declined, having been nearly all transferred to Bokhara, and comparatively little business is now done except when the caravans from various quarters visit the town. Pop. about 10,000.

SAMARIA. See PALESTINE.

SAMARITANS. In the books of Kings there are brief notices of the origin of the people called Samaritans. The ten tribes which revolted from Rehoboam, son of Solomon, chose Jeroboam for their king. After his elevation to the throne he set up golden calves at Dan and Bethel, lest repeated visits of his subjects to Jerusalem, for the purpose of worshipping the true God, should withdraw their allegiance from himself. Afterwards Samaria, built by Omri, became the metropolis of Israel, and thus the

Samarras.

separation between Judah and Israel was rendered complete. The people took the name *Samaritans* from the capital city. In the ninth year of Hosea, Samaria was taken by the Assyrians under Shalmaneser, who carried away the inhabitants into captivity, and introduced colonies into their place. The dregs of the populace, particularly those who appeared incapable of active service, were not taken away by the victors. With them, therefore, the heathen colonists became incorporated. But the latter were far more numerous than the former, and had all power in their own hands. The remnant of the Israelites was so inconsiderable and insignificant as not to affect, to any important extent, the opinions of the new inhabitants. As the people were a *mixed* race, their religion also assumed a *mixed* character. In it the worship of idols was associated with that of the true God. But apostasy from Jehovah was not universal. On the return of the Jews from the Babylonish captivity, the Samaritans wished to join them in rebuilding the Temple, saying, "Let us build with you; for we seek your God, as ye do; and we do sacrifice unto him since the days of Esarhaddon, king of Assur, which brought us up hither" (Ezra iv. 2). But the Jews declined the proffered assistance; and from this time the Samaritans threw every obstacle in their way. Hence arose that inveterate enmity between the two nations which afterwards increased to such a height as to become proverbial. In the reign of Darius Nothus, Manasses, son of the Jewish high-priest, married the daughter of Sanballat the Samaritan governor; and to avoid the necessity of repudiating her, as the law of Moses required, went over to the Samaritans, and became high-priest in the temple which his father-in-law built for him on Mount Gerizim. From this time Samaria became a refuge for all malcontent Jews; and the very name of each people became odious to the other. About the year B.C. 109 John Hyrcanus, high-priest of the Jews, destroyed the city and temple of the Samaritans; but Herod rebuilt them at great expense B.C. 25. In their new temple, however, the Samaritans could not be induced to offer sacrifices, but still continued to worship on Gerizim. At the present day they have dwindled down to a few families. Shechem, now called Nablus, is their place of abode. They still possess a copy of the Mosaic law.

A different account of the origin of this people has been given by Hengstenberg, whom Hävernack and Robinson follow. It has been ably combated by Kalkar (in Pelt's *Mitarbeiten* for 1840, *drittes Heft*, p. 24, &c.), to whom the reader is referred.

With the remnant above referred to, a correspondence was formerly maintained by several learned Europeans, but without leading to any important result. It was commenced by Joseph Scaliger in 1559; and resumed, after a century, by several learned men in England in 1675, and by the great Ethiopic scholar, Job Ludolf, in 1684. The illustrious orientalist De Sacy also held correspondence with them. All their letters to England and France, and all that was then known respecting them, he published in a work entitled, "*Correspondance des Samaritains*," &c., in *Notices et Extr. des MSS. de la Biblioth. du Roi*, tom. xii. The best accounts of them given by modern travellers are by Pliny Fisk (*American Missionary Herald* for 1824), who visited them in 1823; and by Robinson and Smith, who visited them in 1838 (see *Biblical Researches and Travels in Palestine*, iii. 113–116).

SAMARRAH, a town of Asiatic Turkey, on a cliff forming the left bank of the Tigris, in the pashalic and 65 miles N.N.W. of Bagdad. It is a miserable place, encircled by a wall, and only remarkable for two beautiful monuments to Moslem saints, both surmounted by domes, one of which, once covered with gold, is now quite white; while the other is beautifully enamelled with white and yellow flowers on a bluish ground. These attract pilgrims

Sambas
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Samos.

from all parts of Persia, to the number of 10,000 yearly; but the resident population does not exceed 1000.

SAMBAS, a town of Borneo, capital of a Mohammedan state of the same name, on the River Sambas, about 30 miles from its mouth, on the west coast of the island, 72 miles north of Pontianak. It lies in a low, swampy country, and the houses are generally raised on piles. There is here the residence of a native sultan, tributary to the Dutch, and of a Dutch resident. Pop. 9400. The country is fertile and populous, and contains the richest gold mines in Borneo. These are worked by Chinese. The River Sambas flows generally west, and after a course of 100 miles, falls into the Indian Ocean. It is navigable for boats as far as Sanbas, and has auriferous sands.

SAMBOR, a town of the Austrian empire, capital of a circle of the same name in Galicia, on the left bank of the Dniester, 46 miles S.W. of Lemberg. It contains an ancient Bernardine convent, a gymnasium and normal school, courts of justice, &c. Linen cloth is manufactured here; and an active trade is carried on. Pop. 10,682.

SAMNIUM, one of the principal districts of ancient Central Italy. The name was sometimes used in a more extensive, sometimes in a more restricted sense. In the more usual sense of the term, Samnium was an inland district, bounded on the N. by the Mursi, Peligni, and Fren-tani, E. by Apulia, S. by Lucania, S.W. and W. by Campania and Latium. The Samnites were a people of Sabine origin, who migrated into this country at a comparatively late period. The date either of their earlier or later migration is unknown. They became finally swallowed up by the Roman people, after having engaged in a long series of desperate struggles known as the Samnite Wars. (See ROMAN HISTORY.)

SAMOS, an island of the Grecian Archipelago, lying off the coast of Asia Minor, from which it is separated by the strait of Little Bosphorus, where narrowest, not more than a mile wide. The Great Bosphorus, which is about 10 miles in width, separates the other extremity of the island from Icaria. Samos is about 27 miles in length from E. to W., by about 12 in extreme breadth; and is between 37. 35. and 37. 48. N. Lat., and 26. 36. and 27. 8. E. Long. It is elevated and mountainous, being traversed by two lofty ranges of mountains stretching from E. to W.; but there are also many valleys of considerable size, especially towards the south. The highest summit, called Kerkis, the ancient Cercetius Mons, reaches the height of 4725 feet, and is covered with perpetual snow. The mountains are in some places steep and barren; but for the most part they are at present, as in the times of antiquity, covered with forests of oaks and pines, with vineyards, and with olive-grounds. A few small rivers water the island, and some traces have been discovered of artificial irrigation. The rocks consist mainly of white marble, which is the principal mineral production. Iron, lead, and silver are also obtained. In the valleys the soil is very rich, and the scenery beautiful. Celebrated in ancient times for its great fertility, Samos is still one of the most productive islands of the Archipelago, though it has not now the advantage of that careful system of cultivation which made use of all the available ground by means of terraces along the mountain-sides. Corn, wine, oil, figs, cotton, and silk are the principal articles of export. The Samian wine, which is now much esteemed, did not enjoy a favourable reputation in the ancient world. The chief town in the island is Chora or Khora, which stands near the site of Samos, the ancient capital, and has a population of 1000. It is defended by a castle, and has a good harbour. There are other small ports on different parts of the coast. Samos now belongs to the Turkish empire; but has enjoyed since 1835 a position of virtual independence, governed by a Greek with the title of "Prince of Samos," and paying a fixed annual tribute to

the Porte. In the earliest times the island bore several names besides the one which it ultimately retained, and which was given to it most probably on account of its elevated character. The original inhabitants are said to have been Carians and Leleges; but at the time of the Ionian emigration to Asia, Greek settlers established themselves, and Samos became an important member of the Ionian league. It was chiefly distinguished for commercial and maritime enterprise: its ships exhibited the earliest improvements in naval architecture; and one of its citizens was the first who passed the pillars of Hercules, and visited Tartessus. Several colonies were founded by Samos on the shores of the Ægean and the Propontis. During the short but prosperous reign of Polycrates (B.C. 532-522), the Samian navy was the most powerful in Greece; and the island maintained its independence of the Persian empire, being in alliance at first with Amasis of Egypt, and afterwards with his enemy Cambyses of Persia. The capital was at that time one of the finest cities in the world, and was encircled by many public works and buildings constructed by the monarch. He resided in a fortified palace; there was a large Ionic temple of Juno by a native architect, a harbour inclosed by two artificial moles, and a tunnel hewn out of the rock to convey water to the city. At this period, too, Samos was distinguished as the birth-place of Pythagoras; and Anacreon resided for some time at the court of Polycrates. The reign of that monarch, however, came to a disastrous end in 522, when he was treacherously put to death by a Persian satrap. Darius then appointed Syloson, the brother of Polycrates, to succeed him; but he could only be placed on the throne after a general massacre, which almost reduced the island to a desert. Samos was now virtually subject to Persia, and continued to be so, with a short interval at the time of the Ionian revolt, until the victory of the Greeks at Mycale, B.C. 479, obtained its freedom. It then became a member of the Athenian confederacy; but after a time revolted, and was in consequence reduced to complete subjection by the Athenians. This happened in 439, and from that period till 412 Samos had neither a fleet nor any fortifications; but at the latter date it became a place of importance, and was the head-quarters of the Athenian fleet in their final contest with Sparta. After this time few historical events are connected with Samos. It was celebrated for its school of statuary; and under the Roman empire was a free city, while the temple of Juno enjoyed the privileges of a sanctuary. It is unnecessary to enter minutely into the history of Samos during the middle ages, during which, after having been held for a long time by the Arabs, it was recovered by the Emperor Leo in the thirteenth century, and then successively fell into the hands of the Venetians, Genoese, and Turks. At the time of the Greek insurrection the Samians zealously embraced the side of liberty. They expelled the Turks from the island, which they put into a state of defence, establishing an independent government. Various attempts were made by the Turks to regain the island, but they were all foiled by the courage of the people and the vigilance of the Greek fleet. In the treaty, however, which secured the independence and defined the limits of Greece, Samos was still left to Turkey, and the subsequent efforts that she has made have only secured a partial freedom. The ancient remains in the island are very inconsiderable; they are all near the site of the capital, towards the S.W., and consist chiefly of some fragments of the city walls, some traces of a theatre, a single column of the great temple, and the moles of the harbour. The present population of Samos is estimated at 50,000.

SAMOTHRACE, called by the modern Greeks *Samo-thraki*, an island in the Ægean Sea, about 38 miles S. of the coast of Thrace, and 40 N.W. of the mouth of the Hellespont. It is oval in form, about 8 miles in length by

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thrace.

Samoyedes
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Samuel,
Books of.

6 in breadth, and has an area of 30 square miles. It is very lofty, the highest point, Mount Fingaree (anciently called *Saoce*), being the most conspicuous object, next to Mount Athos, in this part of the sea, and, except Mount Ida in Crete, the most elevated point in the whole Archipelago. Hence it is represented by Homer as the seat of Neptune when viewing the plains of Troy; and modern travellers have confirmed the accuracy of his description by observing from these plains the island towering up over the low intervening surface of Imbros. Corn, oil, honey, and wax are the principal productions of the island. It has no good harbours, but some anchorages on its coast. Samothrace was chiefly celebrated in ancient times as the seat of the mysteries of the Cahir, into which many celebrated men were initiated. No important event, either in ancient or in modern history, is connected with the island. Pop. about 15,000, partly Greeks and partly Turks.

SAMOYEDES, a race of people in the Russian empire, occupying the shores of the Arctic Ocean, from the peninsula of Kamin, in the government of Archangel, to the Gulf of Katanska, in the N.E. of that of Yeniseisk. Properly speaking, they are a branch of the Finnic race, but are so widely distinguished from that race that they may be considered a separate one. They are divided into three parts,—Samoyedes of the Great Land, inhabiting the country E. of the Petchora; those of the Little Land, farther west; and those of the Kamin peninsula, the most westerly of all. Their numbers are not great, and they lead a wandering life, subsisting chiefly by fishing and the chase.

SAMSOON, a seaport-town of Asiatic Turkey, pashalic of Sivas, on the shore of the Black Sea, 166 miles W.N.W. of Trebizond. It has mosques, khans, and a small bazaar; and is chiefly remarkable as a place of trade, whence the copper, timber, wheat, &c., of the surrounding country are conveyed to Constantinople. The commercial activity of the place received a great impulse during the Crimean war, on the opposite coast of the Black Sea; but after the peace it relapsed into its old state, and the difficulty of internal communication prevents any permanent advance. Pop. 2000.

SAMUEL. (See **SAMUEL**, **BOOKS OF**.)

SAMUEL, *Books of*. The two books of Samuel were anciently reckoned as but one among the Jews. That they form only one treatise is apparent from their structure. The present division into two books, common in our Hebrew Bibles since the editions of Bomberg, was derived from the Septuagint and Vulgate, in both which versions they are termed the First and Second Books of Kings. Thus Origen (*apud* Euseb. *Hist. Eccles.* vi. 25), in his famous catalogue of the Hebrew Scriptures, names the books of Samuel; so also does Jerome. It was desirable to have short names for the books of Scripture; and as Samuel was a prophet of such celebrity, and had such influence in changing the form of government under which the son of Kish and the son of Jesse became sovereigns, it was natural to name after him the biographical tracts in which the life and times of these royal chieftains are briefly sketched, especially as they at the same time contain striking descriptions of the miracle of his own birth, the oracles of his youth, and the impressive actions of his long career. The selection of this Jewish name might also be strengthened by the national belief of the authorship of a large portion of the work, founded on the language of 1 Chron. xxix. 29.

The contents of the books of Samuel belong to an interesting period of Jewish history. The first book of Samuel gives an account of the birth and early call of that prophet to the duties of a seer under Eli's pontificate; describes the low and degraded condition of the people, oppressed by foreign enemies; proceeds to narrate the election of Samuel as judge; his prosperous regency; the degeneracy of his sons; the clamour for a change in the civil constitution; the installa-

tion of Saul; his rash and reckless character; his neglect of, or opposition to, the theocratic elements of the government. Then the historian goes on to relate God's choice of David as king; his endurance of long and harassing persecution from the reigning sovereign; the melancholy defeat and death of Saul on the field of Gilboa; the gradual elevation of the man "according to God's own heart" to universal dominion; his earnest efforts to obey and follow out the principles of the theocracy; his formal establishment of religious worship at Jerusalem, now the capital of the nation; and his series of victories over all the enemies of Judea that were wont to molest its frontiers. The annalist records David's aberrations from the path of duty; the unnatural rebellion of his son Absalom, and its suppression; his carrying into effect a census of his dominions, and the Divine punishment which this act incurred; and concludes with a few characteristic sketches of his military staff. The second book of Samuel, while it relates the last words of David, yet stops short of his death. As David was the real founder of the monarchy and arranger of the religious economy; the great hero, legislator, and poet of his country; as his dynasty maintained itself on the throne of Judah till the Babylonian invasion; it is not a matter of wonder that the description of his life and government occupies so large a portion of early Jewish history. The books of Samuel thus consist of three interlaced biographies,—those of Samuel, Saul, and David.

The attempt to ascertain the authorship of this early history is attended with difficulty. Ancient opinion is in favour of the usual theory, that the first twenty-four chapters were written by Samuel, and the rest by Nathan and Gad. Abarbanel, however, and Grotius, suppose Jeremiah to be the author (*Grot. Pref. in 1 Sam.*) The peculiar theory of Jahn is, that the four books of Samuel and Kings were written by the same person, and at a date so recent as the thirtieth year of the Babylonish captivity. His arguments, however, are more ingenious than solid (*Introduction*, Turner's Translation, § 46). The fact of all the four treatises being named Books of Kings, Jahn insists upon as a proof that they were originally undivided and formed a single work—a mere hypothesis, since the similarity of their contents might easily give rise to this general title, while the more ancient appellation for the first two was *The Books of Samuel*. Jahn also lays great stress on the uniformity of method in all the books. But this uniformity by no means amounts to any proof of identity of authorship. It is nothing more than the same Hebrew historical style. The more minute and distinctive features, so far from being similar, are very different. The books of Samuel and Kings may be contrasted in many of those peculiarities which mark a different writer. The books of Samuel have an authorship of their own—an authorship belonging to a very early period. While their tone and style are very different from the later records of Chronicles, they are also dissimilar to the books of Kings. They bear the impress of a hoary age in their language, allusions, and mode of composition. The insertion of odes and snatches of poetry, to enliven and verify the narrative, is common to them with the Pentateuch. The minute sketches and vivid touches with which they abound prove that their author "speaks what he knows, and testifies what he has seen." As if the chapters had been extracted from a diary, some portions are more fully detailed and warmly coloured than others, according as the observer was himself impressed.

From public and acknowledged sources has the compiler fetched his materials, in the shape of connected excerpts. The last of the prophetic triumvirate might be the redactor or editor of the work, and we would not date its publication later than the death of Nathan, while the original biographies may have been finished at the period of David's decease. But certainty on such a subject is not to be attained.

Samuel.
Books of.

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Probability is all that we dare assert. The compiler has in all probability framed out of authoritative documents a consecutive history, not dwelling on all events with equal interest, but passing slightly over some, and formally detailing others with national relish and delight.

Credibility The authenticity of the history found in the books of Samuel rests on sufficient grounds. Portions of them are quoted in the New Testament (2 Sam. vii. 14, in Heb. i. 5; 1 Sam. xiii. 14, in Acts xiii. 22). References to them occur in other sections of Scripture, especially in the Psalms, to which they often afford historic illustration. It has been argued against them that they contain contradictory statements. The old objections of Hobbes, Spinoza, Simon, and Le Clerc are well disposed of by Carpzovius (*Introductio*, p. 215). Some of these supposed contradictions we have already referred to; and for a solution of others, especially of seeming contrariety between the books of Samuel and Chronicles, we refer with satisfaction to Davidson's *Sacred Hermeneutics*, p. 544, &c. Some of the objections of Vatke, in his *Bibl. Theol.*, are summarily disposed of by Hengstenberg (*Die Authentie des Pentat.*, vol. ii., p. 115), who usually chastises such adversaries with a whip of scorpions. Discrepancies in numbers, and sometimes in proper names, are the most common; and it is well known that textual errors in numeration are both most frequently and most easily committed.

Commen-
taries.

Victorini Strigclii *Comm. in quatuor Libr. Reg. et Paralipp.*, 1624, folio; N. Serrarii *Comm. in libr. Josue, Jud., Ruth, Reg., et Paralipp.*, 1609, folio; Seb. Schmidt, *In Lib. Sam. Comm.*, 1684-89, 4to; Jac. Bonfrerii *Comm. in libr. quat. Reg., &c.*, 1643; Clerici *Comm. in libr. Sam.*; Opera, T. ii.; Jo. Drusii *Annotat. in Locos diff. Jos., Jud., Sam.*, 1618; Hensler, *Erläuterungen des I. B. Sam. &c.*, 1795; Maurer, *Comment. Critic.* p. 1; *Exegetische Handbuch des A. T.*, st. iv. v.; Chandler's *Critical History of the Life of David*, 2 vols., 1786.

SANA, a town of Arabia, the capital of Yemen or Arahia Felix, 4000 feet above the sea, in a beautiful valley extending from N. to S., from 6 to 9 miles broad, and bounded on either side by mountains and table-lands, 110 miles N.N.E. of Hodeida; N. Lat. 15. 22., E. Long. 44. 31. The streets are in general narrow, and the principal one is crossed by a handsome bridge, as in rainy weather a stream of water runs through it. The houses are large, and those of the upper classes have windows filled with fine stained glass. A wall, about $5\frac{1}{2}$ miles in circuit, surrounds the town, and has a few guns; but it is in a very ruinous condition. There are about 20 mosques, in general very splendid, and many of them surmounted by gilt domes. Sana has also a bazaar, and baths similar to those of Egypt. But the principal buildings are the two large palaces of the imam, which have extensive gardens attached to them, the whole being surrounded with fortifications. The architecture of these edifices is Saracenic, with an intermixture of round and pointed arches, but they are devoid of all superfluous ornaments. Most of the artisans in Sana are Jews, who live in a separate quarter of the town, and are subject to much oppression, paying heavy taxes for permission to reside in the town, and for the possession of gardens or vineyards. They, as well as the Banians, who form a large proportion of the population, are obliged to conceal their wealth, and they live by the sale of jewellery, gunpowder, spirits, &c. The most important and wealthy class in Sana are the merchants. The principal article of export is the coffee grown in the vicinity; while tobacco, thread, silk, velvet, glass, dates, spices, sugar, &c., are imported. Sana has been governed by an imam ever since the Turks were expelled from this part of Arabia, in the reign of Solyman the Magnificent. Some ancient inscriptions have been discovered here. Pop. about 40,000.

SANADON, NOEL ETIENNE, a Jesuit, and professor of

Sanchez
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Sanchuniathon.

humanity at Caen, was born at Rouen in 1676. He became acquainted with Huet, Bishop of Avranches, whose taste for literature and poetry was similar to his own. Sanadon afterwards taught rhetoric at the university of Paris, and upon the death of Du Cerceau he was entrusted with the education of the Prince of Conti. In 1728 he was made librarian to Louis XIV., an office which he retained to his death, which took place on the 21st of September 1733, in the fifty-seventh year of his age.

His works are, *Poesies Latin*, in 12mo, 1715, reprinted by Barbou, in 8vo, 1754. These poems consist of odes, elegies, and epigrams on various subjects. A translation of Horace, with remarks, in two vols. 4to, printed at Paris in 1727. The best edition of this work was printed at Amsterdam in 1735 in 8 vols. 12mo, in which are also inserted the versions and notes of Madame Dacier, whose version of Horace is decidedly inferior to that of Sanadon, although his version is rather a paraphrase than a faithful translation, and possesses very few of the beauties of Horace. A collection of *Discours*, delivered at different times, afford strong proofs of his knowledge of oratory and poetry. A book entitled *Prières et Instructions Chrétiennes*, 1752, gives good evidence of genuine piety.

SANCHEZ, FRANCISCO, commonly called "El Brocense," the best classical scholar of his day in Spain, was born at Las Brozas in Estremadura in 1523. After taking his bachelor's degree at Valladolid, he went to Salamanca, where he obtained the chair of rhetoric in 1554. He likewise taught Greek and Latin, and had the honour to be spoken of in the highest terms by such learned men as Justus Lipsius and Sciooppius. Lipsius, after designating him the "divine" and the "admirable," calls him "the Mercury and the Apollo of Spain." Having edited several classical authors, and having taken his doctor's degree, he devoted all his time to the great work *Minerva, seu de Causis Linguae Latinae Commentarius*, which appeared in 1587, and which has frequently been reprinted. This work raised the author's reputation to the highest pitch. He resigned his chair of rhetoric into the hands of his son-in-law in 1593, and died on the 17th January 1601, aged 77.

Sanchez wrote a great many smaller works, which are contained in the 4-vol. edition of his minor writings of 1766. Prefixed to the first volume is a Life of the author by Mayans.

SANCHEZ, Francisco, a physician and sceptical philosopher, who is frequently confounded with the eminent classic of the same name, was born of Jewish parents during the latter half of the sixteenth century at Bracara, or, according to others, at Tuy, on the frontiers of Portugal. He pursued his studies for a time at Bordeaux, but his father having been exiled while he was still young, he completed his medical education at Rome. In 1573 he graduated in medicine at Montpellier, took up his residence at Toulouse, and professed philosophy for twenty-five years and medicine for eleven with remarkable success. He died in 1632.

Sanchez has left the following philosophical work, which assigns him a place beside his sceptical contemporaries, Montaigne and Charron, viz., *Tractatus de multum nobili et prima universali scientia, quod nihil scitur*, 4to, Lyons, 1581; Franc. 1628; Rotterdam, 1649. A complete edition of his writings, medical and philosophical, will be found under the title *Opera Medica*, Toulouse, 1636. Refutations of the scepticism of Sanchez were attempted by Ulrich Wild, Leipsic, 1664, and by Daniel Gartmarck, Stettin, 1665. (See *Dict. des Phil. Sciences*.)

SANCHUNIATHON (Σαχνυιάθων), a Phœnician philosopher and historian, who is said by some to have flourished about the time of the Trojan war, and according to others, about the time of Semiramis. Of this most ancient writer the only remains extant are various fragments of cosmogony, and of the history of the gods and

Sanchuniathon. first mortals, preserved by Eusebius and Theodoret, both of whom speak of Sanchuniathon as an accurate and faithful historian; and the former adds that his work, which was translated by Philo-Byblius from the Phœnician into the Greek language, contains many things relating to the history of the Jews which deserve great credit, both because they agree with the Jewish writers, and because the author received these particulars from the annals of Hierombalus, a priest of the god 'Ievó (? *Jehovah*).

Several modern writers of great learning, however, have called in question the very existence of Sanchuniathon, and have contended, with much plausibility, that the fragments which Eusebius adopted as genuine upon the authority of Porphyry were forged by that author or by the pretended translator Philo, from enmity to the Christians, and that the pagans might have something to show of equal antiquity with the books of Moses. These opposite opinions have produced a controversy that has filled volumes, and of which our limits would hardly admit of an abstract. We shall therefore in few words state what appears to us to be the truth, and refer such of our readers as are desirous of fuller information to the works of the authors mentioned below.¹

The controversy respecting Sanchuniathon resolves itself into two questions: *first*, Was there in reality such a writer? and, *second*, Was he of the very remote antiquity which his translator claims for him?

1. Now that there was really such a writer, and that the fragments preserved by Eusebius are indeed parts of his history, interpolated perhaps by the translator, we are compelled to believe.² Eusebius, who admitted them into his work as authentic, was one of the most learned men of his age, and a diligent searcher into antiquity. Father Simon of the oratory imagines (*Bib. Crit.*, vol. i., p. 140) that the purpose for which the history of Sanchuniathon was forged was to support paganism by taking from it its mythology and allegories, which were perpetually objected to it by the Christian writers. But this learned man totally mistakes the matter. The primitive Christians were too much attached to allegories themselves to rest their objections to paganism on such a foundation. What they objected to in that system was the immoral stories told of the priests. Is it conceivable that a writer so acute as Porphyry, or indeed that any man of common sense either in his age or in that of Philo, would forge a book filled with such stories as these in order to remove the Christian objections to the immoral characters of the pagan divinities? The very supposition is impossible to be made. Nor let any one imagine that Sanchuniathon is here writing allegorically, and by his tales of Ouranos, and Gé, and Kronus, is only personifying the heaven, the earth, and time. On the contrary, he assures us that Ouranos, or Epigeus, or Autochthon (for he gives him all these names), was the son of one Eliaun or Hypsistos, who dwelt about Byblus, and that from him the element which is over us was called heaven on account of its excellent beauty, as the earth was named Gé after his sister and wife. And his translator is very angry³ with the Neoteric Greeks, as he calls them, because that, "by a great deal of force and straining, they laboured to turn all the stories of the gods into allegories and physical discourses." This proves unanswerably that the author of this book, whoever he was, did not mean to veil the great truths of religion under the cloak of mythological allegories; and therefore, if it was forged by Porphyry in support of paganism, the forger so far mistook the state of the question

between him and his adversaries that he contrived a book, which, if admitted to be ancient, totally overthrew his own cause. Sanchuniathon.

2. The next thing to be inquired into with respect to Sanchuniathon is his antiquity. Did he really live and write at so early a period as Porphyry and Philo pretend? We think he did not; and what contributes not a little to confirm us in our opinion is that mark of national vanity and partiality common to after-times, in making the sacred mysteries of his own country original, and conveyed from Phœnicia into Egypt. This, however, furnishes an additional proof that Porphyry was not the forger of the work; for he well knew that the mysteries had their origin in Egypt (see MYSTERIES), and would not have fallen into such a blunder. He is guilty, indeed, of a very great anachronism when he makes Sanchuniathon contemporary with Semiramis, and yet pretends that what he writes of the Jews is compiled from the records of Hierombalus the priest of the god Jeuo; for Bochart has made it appear in the highest degree probable⁴ that Hierombalus or Jerombaal is the Jerub-baal or Gideon of Scripture. Between the reign of Semiramis and the Trojan war a period elapsed of near eight hundred years, whereas Gideon flourished not above seventy years before the destruction of Troy. But supposing Sanchuniathon to have really consulted the records of Gideon, it by no means follows that he flourished at the same period with that judge of Israel. He speaks of the building of Tyre as an ancient thing, while our best chronologers⁵ place it in the time of Gideon. Indeed, were we certain that any writings had been left by that holy man, we should be obliged to conclude that a large tract of time had intervened between the death of their author and their falling into the hands of Sanchuniathon; for surely they could not in a short period have been so completely corrupted as to give any countenance to his impious absurdities. His atheistic cosmogony he does not indeed pretend to have got from the annals of the priest of Jeuo, but from records which were deposited in his own town of Berytus by Thoth, a Phœnician philosopher, who was afterwards made king of Egypt. But surely the annals of Gideon, if written by himself, and preserved pure to the days of Sanchuniathon, must have contained so many truths of the Mosaic religion as must have prevented any man of sense from adopting so impossible a theory as Thoth's, although sanctioned by the greatest name of profane antiquity. Stillingfleet indeed thinks it most probable that Sanchuniathon became acquainted with the most remarkable passages of the life of Jerub-baal from annals written by a Phœnician pen. He observes, that immediately after the death of Gideon, the Israelites, with their usual proneness to idolatry, worshipped Baal-berith, or the idol of Berytus, the town in which Sanchuniathon lived; and from this circumstance he concludes that there must have been such an intercourse between the Hebrews and the Berytians, that in process of time the latter people might assume to themselves the Jerub-baal of the former, and hand down his actions to posterity as those of a priest instead of a great commander. All this may be true; but if so, it amounts to a demonstration that the antiquity of Sanchuniathon is not so high by many ages as that which is claimed for him by Philo and Porphyry; though he may still be more ancient, as we think Vossius has proved him to be, than any other profane historian whose writings have come down to us either entire or in fragments.

A useful edition of the fragments, said to be of Sanchu-

¹ Bochart, Scaliger, Vossius, Cumberland, Dodwell, Stillingfleet, Mosheim's Cudworth, and Warburton.

² Of these indeed there are several proofs. Philo makes Sanchuniathon speak of Byblus as the most ancient city of Phœnicia, which, in all probability, it was not. We read in the book of Judges of Berith or Berytus, the city where Sanchuniathon himself lived; but not of Byblus, which was the native city of Philo, and to which he is therefore partial. He makes him likewise talk of the Greeks at a period long before any of the Grecian states were known or probably peopled.

³ Apud Eusebium, *Præp. Evang.*, lib. i., cap. vi.

⁴ *Geogr. Sac.*, p. 2, book ii., lib. ii., cap. xvii.

⁵ J. J. Scaliger.

Sanicroft
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Sanctorius.

niathon, were published by J. C. Orelli, Leipzig, 1826; and in 1835 an MS. was said to have been discovered in Portugal of the nine books of Philo's translation of that ancient historian. This discovery caused immense squabbling among the German critics. The majority of them pronounced it to be spurious. Wagenfeld, the two Grotefends, Schmidt, and Movers, may be consulted regarding it. On the general subject the reader may refer to J. A. Fabricius, *Biblioth. Græc.*, vol. i. p. 222.

SANICROFT, WILLIAM, archbishop of Canterbury, was born at Fresingfield in Suffolk in 1616, and admitted into Emanuel College, Cambridge, in 1633. In 1642 he was elected a fellow; but was ejected from his fellowship for refusing to take the Solemn League and Covenant. In 1660 he was chosen one of the university preachers, and in 1663 was nominated to the deanery of York. In 1664 he was installed dean of St Paul's. In this situation he set himself with unwearied diligence to repair the cathedral, till the fire of London in 1666 employed his thoughts on the more noble undertaking of rebuilding it, to which he gave L.1400. He also rebuilt the deanery, and improved its revenue. In 1668 he was admitted archdeacon of Canterbury, upon the king's presentation. In 1677, being now prolocutor of the convocation, he was unexpectedly advanced to the archbishopric of Canterbury. In 1687 he was committed to the Tower, with six other bishops, for presenting a petition to the king against reading the declaration of indulgence. Upon King James II.'s withdrawing himself, he concurred with the lords in a declaration to the Prince of Orange for a free parliament, and due indulgence to the Protestant dissenters. But when that prince and his consort were declared king and queen, his grace refused to take the oath to their majesties, and was suspended and deprived. He retired to his birth-place, where he lived in a very private manner till his death, which took place in 1693. His learning, integrity, and piety made him an exalted ornament of the church. He published a volume in 12mo, entitled *Modern Politics*, taken from Machiavelli and other authors; and also *Familiar Letters* to Mr (afterwards Sir Henry) North. He is said by Lord Macaulay to have been "an honest, pious, narrow-minded man." (*History of England*, vol. ii. p. 7, 1858.)

SANCTORIUS, the ordinary name by which SANTORIO, a distinguished Italian physician is known, was born at Capo d'Istria in 1561. Having taken his medical degree at Padua, he subsequently settled at Venice, where he practised his profession with the greatest success. His reputation having travelled back to Padua, he was in 1611 recalled from Venice, and appointed professor of the theory of medicine in his parent university. Sanctorius continued to lecture here for the next thirteen years, but having been frequently called to Venice on important medical business during that time, and feeling the fatigue of travelling gradually become more and more irksome, he was induced to resign his professorship, for which he continued however to receive the salary. Settling in Venice, he continued his medical practice till his death in 1636, in his seventy-fifth year. He was interred in the cloister of the Servites, where a marble statue marks his tomb.

The observations of Santorio on insensible perspiration rendered his name famous throughout Europe. He was a man of true genius, alike devoid of the pompous medical ignorance of his co-temporaries, and of the blind reverence for opinion peculiar to his century. He was author of six separate works, some of them of great value, particularly *Methodus Vitandorum Errorum omnium qui in Arte Medicâ contingunt*, Libri xv., Ven. 1602; *Commentarius in Artem Medicinalem Galeni*, Venet. 1612; *Ars de Staticâ Medicinâ*, Venet. 1614. This work has been frequently translated. It has been done into Italian by Baglivi, Rome, 1704; by Cogrossi, Padua, 1724; by Chiari, Venice,

1720; into French by Le Breton, Paris, 1722; into German by Timmins, Bremen, 1736; and into English by J. D., London, 1696, and by Dr Quincy, London, 1712. *Commentarius in Primam Fen primi libri canonis Avicennæ*, Venet. 1626; another *Commentarius*, of little value, and a *Liber de Remediorum Inventione*, Venet. 1629, which contains a curious account of some post mortem examinations. The life of Sanctorius was written in Latin by A. Capelli, Venice, 1750; and his whole works appeared at Venice in 1660, in 4 vols. 4to.

SANDBACH, a market-town of England, in Cheshire, on a hill near the right bank of the Wheelock, 24 miles E.S.E. of Chester. There is an old parish church in the perpendicular style, which has been partially rebuilt; also Methodist and Baptist churches; a grammar-school founded in 1577, national and other schools, &c. Shoes and silk are manufactured here. Pop. (1851) 2752.

SANDBY, PAUL, founder of the English school of water-colour painting, was sprung from a branch of the Sandbys of Babworth, and was born at Nottingham in 1725. After commencing his artistic studies in London, in 1746 he was appointed by the Duke of Cumberland draughtsman to the survey of the Highlands. His skill as an engraver brought him under the notice of Sir Joseph Banks, who gave him his patronage, and subsequently commissioned him to bring out in aquatinta (a method of engraving then peculiar to Sandby) forty-eight plates drawn during a tour in Wales. Sandby displayed considerable power as a caricaturist in his attempt to ridicule the opposition of Hogarth to the plan for creating a public academy for the arts. Having been a member of various artistic societies, he was chosen a foundation-member of the Royal Academy in 1768, and during the same year was appointed chief drawing-master to the Royal Military Academy at Woolwich. He held this situation till his death, and during that time he brought forth many artists, who afterwards gained a name in their profession. Sandby will be best remembered, however, by his water-colour painting. While it wanted the richness and brilliancy of modern water-colour, he nevertheless impressed upon his art the originality of his mind; and in his later pieces, in particular, decided progress is observable in richness and in harmony of tinting. His etchings, such as "Cries of London" and Ramsay's "Gentle Shepherd," and his plates, such as Tasso's "Jerusalem Delivered," are both numerous and carefully executed. He died in London on the 9th November 1809.

SANDEMANIANS. See GLASSITES.

SANDERSON, ROBERT, bishop of Lincoln, was born at Rotherham, in Yorkshire, on the 19th of September 1587. He was descended of an ancient family, and attended the grammar-school at Rotherham, where he made such wonderful proficiency in the languages that at thirteen it was judged proper to send him to Lincoln College, Oxford. In 1608 he was appointed logic-reader in the same college. He took orders in 1611, and was promoted successively to several benefices. Archbishop Laud recommended him to Charles I. as a profound casuist; and that monarch, who seems to have been a great admirer of casuistical learning, appointed him one of his chaplains in 1631. The king regularly attended his sermons, and was wont to say that he "carried his ears to hear other preachers, but his conscience to hear Mr Sanderson." Chancing to be with the king at Oxford in 1636 he was made a D.D. In 1642 Charles created him regius professor of divinity at Oxford, with the canonry of Christ Church annexed. But the civil wars prevented him until 1646 from entering on the office; and in 1648 he was ejected by the visitors which the Parliament had commissioned. When the parliament proposed the abolition of the episcopal form of church government, as incompatible with monarchy,

Sandbach
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Sanderson.

Sandoval. Charles desired him to take the subject under his consideration, and deliver his opinion. He accordingly wrote a treatise entitled *Episcopacy, as established by Law in England, not prejudicial to Regal Power*, 1661. The king afterwards advised him to publish cases of conscience. He replied that "he was now grown old, and unfit to write cases of conscience." The king said, "It was the simplest thing he had ever heard from him; for no young man was fit to be a judge, or write cases of conscience." Izaak Walton, who wrote the life of Dr Sanderson, informs us, that in one of these conferences the king told Sanderson, or one of the rest who was then in company, that "the remembrance of two errors did much affect him, which were his assent to the Earl of Strafford's death, and the abolishing of episcopacy in Scotland; and that if God ever restored him to the peaceable possession of his crown, he would prove his repentance by a public confession and a voluntary penance, by walking barefoot from the Tower of London, or Whitehall, to St Paul's Church, and would desire the people to intercede with God for his pardon." Boyle, having read a work of Dr Sanderson's, entitled *De Juramenti Obligatione*, 1661, was so much pleased that he requested the author to write his *Cases of Conscience*, with which Sanderson complied, 1678. When Charles II. was reinstated on the throne, he recovered his professorship and canonry, and soon afterwards was promoted to the bishopric of Lincoln. During the two years and a half in which he possessed this new office, he spent a considerable sum in augmenting poor vicarages, and in repairing the palace at Budgen. He died on the 29th of January 1662-63, in his seventy-sixth year. His works not already mentioned are as follows:—In 1615 he published *Logicæ Artis Compendium*, which was the system of lectures he had delivered in the university when he was logic-reader; *Sermons*, amounting in number to thirty-six, printed in 1681, folio, with the author's Life by Walton; *De Obligatione Conscientiæ*; *Censure of Mr Antony Ascham his book of the Confusions and Revolutions of Government*; *Pax Ecclesiæ*, concerning Predestination, or the five points. Besides these he wrote two *Discourses* in defence of Usher's writings. (See *The Works of Robert Sanderson*, D.D., now first collected by Dr William Jacobson, in 6 vols., Oxford, 1854.)

SANDOVAL, FRAY PRUDENCIO DE, a bishop and historian of Spain of considerable merit, was born according to some at Valladolid, according to others at Monterey, in Galicia, in 1560. Having been educated for the church he took monastic orders, and passed several years in the constant study of the antiquities of Spain. Sandoval was soon after made abbot of San Isidore and historiographer to Philip III., when he responded to a royal request to continue the *Cronica General* of Morales, by carrying down that history from 1037 to the death of Alfonso VII. in 1097, published in 1600. But by far the most valuable work which Sandoval wrote is his history of Charles V., entitled *Historia de la Vida y Hechos del Emperador Carlos V.*, Valladolid, 1604 and 1605; Pamplona, 1614; Antw. 1681. Of this work there are two abridgments in English,—one by James Wandsworth, London, 1652; the other by Captain John Stevens, London, 1703. Sandoval was rewarded for his labour by the bishopric of Tuy, and shortly after by that of Pamplona in 1612. The whole of his life almost was spent in the exploration of the public archives and libraries of his native country. He died at Pamplona on the 17th of March 1621, aged sixty-one years. Bishop Sandoval, besides other works, edited a number of chronicles of the twelfth century, which will be found in *Las Cronicas de los Quatro Obispos*, fol. 1615 and 1634. Ticknor (*History of Spanish Literature*, vol. iii. 139, 1849), in speaking of the greatest work of Sandoval, characterizes it as too long. "It fills," he says, "as many pages as the

entire work of Mariana, and, though written with simplicity, is not attractive in its style. His prejudices are strong and obvious. Not only the monk, for he was a Benedictine, and enjoyed successively two very rich bishoprics, but the courtier of Philip III. is constantly apparent. . . . Still, the history of Sandoval is a documentary work of authority much relied on by Robertson, and one that, on the whole, by its ample and minute details, gives a more satisfactory account of the reign of Charles V. than any other single history extant."

SANDRART, JOACHIM VON, a painter and artistic biographer, was born of an ancient and noble family at Franckfurt-on-the-Main in 1606. He devoted himself early to the arts, and received his first lessons from Théodore de Bry. At the age of fifteen he set out for Prague to learn the art of engraving from Sadeler; but that artist advising him to apply himself to painting, he went to Utrecht, where he entered the school of Gerhard Honthorst. Here he made rapid progress, and was soon able to assist his master in his more important paintings. Descamps and Pilkington both say that Sandrart accompanied his master to England, but Bryan can find no evidence of this. At all events, he proceeded to Italy in 1627, and spent some time at Venice, copying the paintings of Titian and Paul Veronese. He afterwards visited Bologna, Florence, and Rome, studying as he went the works of the great Italian masters. Cardinal Barberini was commissioned by the king of Spain to procure for him twelve paintings by the best masters then living, when Sandrart had the honour to be chosen, together with Guido, Guercino, Dominichino, N. Poussin, &c., to execute those pictures for the Escorial. After visiting Naples, Sicily, and Malta, Sandrart returned to Germany, whither his fame had preceded him. The plague which then raged in that country drove him to seek an asylum elsewhere, and he accordingly settled in Amsterdam, where he executed many of his largest paintings, and among others the entry of Mary de Medicis into that town. Sandrart had held by heritage a piece of landed property at Stockau, near Ingoldstadt, which had been much devastated by the late wars. This circumstance led him to part with his land, and settle at Augsburg. He established himself at Nürnberg in 1672, where he was held in great esteem by the emperor and many of the minor princes of Germany. He was engaged on his picture of the "Last Judgment" when he died at Nürnberg in 1688. Here he published five works in all, of which the best known and most esteemed is his *Academia Artis Pictoriæ*, 1683. His paintings are not now much sought after; but his *Lives of the Painters*, ancient and modern, is still admired.

SANDUSKY, a town of the United States of North America, capital of Erie county, Ohio, on the south shore of Sandusky Bay, an inlet of Lake Erie, 110 miles N. by E. of Columbus. It is built on ground rising gradually from the bay, which forms an excellent harbour, 20 miles long and 5 or 6 across. Close to the town are inexhaustible quarries of the best limestone, of which many of the handsome edifices that adorn the town are built. There are numerous churches, banks, and newspaper offices, a court-house, jail, and several schools. The wharves of Sandusky are commodious and well built, and during the most part of the year they are thronged with vessels arriving and departing. Iron and machinery are the principal manufactures of the place. It is also one of the chief emporiums for the lake commerce, and has communication by railway both with the west and the east. The imports in 1852 amounted in value to L.8,520,014, and the exports to L.3,934,540; while the shipping of the port in the same year had a tonnage of 5887. Pop. (1850) 5087, (1853) about 10,000.

SANDWICH, a market-town, cinque port, municipal and parliamentary borough of England, in the county of Kent, on the right bank of the Stour, about 3 miles from

Sandrart
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Sandwich.

Sandwich
Islands
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San Felipe.

the sea, 12 E. of Canterbury, and 68 E. by S. of London. It stands in a sandy, marshy region, occupied chiefly with market-gardens, and has narrow, well-paved streets, lined with old irregular houses. Part of the ancient town walls, and one of the gates, still remain. There are several conspicuous public buildings in the town. Among these is the massive old church of St Clement, with a square Norman tower, the Elizabethan guild-hall, modern jail, almshouses, national schools, hospitals, and places of worship, besides three belonging to the Established church, for Baptists, Independents, and Wesleyans. A grammar-school was founded here in the time of Queen Elizabeth, with exhibitions to Oxford, but it has at present no scholars. Breweries, malt-houses, and tan-yards are the principal manufacturing establishments; and felt, coarse towellings, and sackcloth are also made. Sandwich was formerly an important seaport, but has decayed since the harbour began to be choked up with sand. There is still some trade with Norway, Sweden, and the Baltic in timber and iron; while wool, malt, leather, and agricultural produce are likewise exported. Only small vessels can now come up to the town. Sandwich is governed by a mayor, four aldermen, and twelve councillors; and the borough, which includes Deal and Walmer, returns two members to Parliament. It was early a place of importance, and probably rose after the decline of the Roman Rhutupium, or Richborough. Several times Sandwich has been taken and plundered by the French. In the reign of Elizabeth a number of Flemish refugees settled here. Pop. (1851) of the town 2966, of the parliamentary borough 12,710.

SANDWICH ISLANDS. See POLYNESIA.

SANDYS, GEORGE, an elegant English poet, the youngest son of Dr Edwin Sandys (Sandes or Sands he also wrote it), archbishop of York, was born at the palace of Bishopsthorpe in 1577. In 1589, the year after his father's death, he entered St Mary Hall, Oxford, and afterwards, as Wood supposes, he became a member of Corpus Christi, where his elder brother Edwin was educated under Dr Hooker. Izaak Walton, in his life of Hooker, tells us that "this Edwin was afterwards Sir Edwin Sandys, and as famous for his *Speculum Europæ* as his brother George for making posterity beholden to his pen by a learned relation and comment on his dangerous and remarkable *Travels*, and for his harmonious translation of the *Psalms of David*, the *Book of Job*, and other poetical parts of Holy Writ, into most high and elegant verse." His *Travels*, which were published in 1615, were dedicated to Charles, Prince of Wales, and bore the title of *A Relation of a Journey begun in 1610, in Four Books, containing a Description of the Turkish Empire, of Egypt, of the Holy Land, and of the remote parts of Italy and Islands adjoining*. Sandys appears to have succeeded his brother as treasurer to the English colony of Virginia, where he prepared his translation of the *Metamorphoses* of Ovid. In 1636-8 appeared his poetical version of the books of Psalms, Job, Ecclesiastes, &c.; and in 1639 his *Christ's Passion*, a tragedy by Grotius. His last work, the poetical translation of the *Song of Solomon*, was published in 1642. He died at Braxley Abbey in Kent, in March 1643-44.

The merits of George Sandys as a poetical translator stand very high. Although now fallen considerably into neglect, he seems to have been duly appreciated by the more discerning of his contemporaries. Waller describes him as having enriched our vulgar tongue; and Dryden, the best judge of his day in matters relating to poetry, pronounced him "the best versifier of the former age." This judgment has been recently confirmed by Warton and Lisle Bowles. *Selections from Sandys's Metrical Paraphrases* have been published, with a Life of the Poet by the Rev. H. J. Todd, London, 1839.

SAN FELIPE, a town of Venezuela, in the depart-

ment of Caraccas, near the left bank of the Yuracuy, 60 miles W.N.W. of Valencia. It is well built, but lies in a low, unhealthy region, liable to inundations. Coffee, cacao, and rice are produced here, and there is an active trade. Pop. 7000.

San Felipe
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San Francisco.

SAN FELIPE DE ACONCAGUA, capital of the province of Aconcagua in Chili, on the right bank of the river of the same name, 40 miles north of Santiago. It is well built, and is considered one of the finest towns in the interior. There are here three convents, and in the vicinity copper and gold mines. Pop. 8000.

SAN FRANCISCO, the capital of a county of the same name, and chief commercial city of California, in the United States of North America, at the mouth of the splendid bay of San Francisco, through which the river Sacramento issues into the sea, N. Lat. 37. 48., W. Long. 122. 26. It occupies the northern extremity of a tongue of land that encloses the bay on the west; and its site consists of a sandy plain, gently sloping from the hills behind down to the bay. The city was originally built round a semi-circular cove facing the north-east, but this is now covered with warehouses erected on piles, and the rapidly increasing buildings are extending backwards from the water and climbing the hills behind, which are only about half a mile from the shore. From Telegraph Hill to the north, a magnificent view is obtained over the city and surrounding country. To the west lies the ocean and the entrance of the bay; to the north its northern arm, leading up the Sacramento river, and ever studded with steamers; to the east, beyond the broad sheet of water, a panorama of wooded hills, with the cone of Monte Diabolo in the distance; and to the south the city itself, with its perpetual bustle and activity, its wharves crowded with shipping from all parts of the world. The streets are all regularly laid out, crossing one another at right angles; but the buildings exhibit the utmost variety in the form and materials of their construction, though brick is now beginning to be most generally used. Some of the public buildings, such as the churches, schools, hospitals, theatres, &c., are equal to any in the United States; and many of the hotels and shops are large and splendid. But the rapidity of the changes that come over the appearance of San Francisco renders it vain to give any detailed description. Many important manufactures are carried on in the town. There are two sugar-houses, a paper mill, two steam barrel factories, oil-works, and shipbuilding yards; while agricultural implements, furniture, carriages, tubs, pails, musical instruments, &c., are also made here.

The history of the place, especially its recent rapid rise, is not a little remarkable. Its original name was *Yerba Buena*, and it first rose in connection with one of the Spanish mission settlements, called San Francisco, founded in 1776. From that period till 1831 the settlement continued to flourish under the Spanish, and latterly under the Mexican, government; but the disturbances which then agitated the country drove away the Indians, and reduced the settlement to ruins. A new city was founded in 1839, but the population in 1845 did not exceed 150. Numerous settlers from the United States began to flock hither, even before California was ceded to that country in 1848. But in the December of the previous year a new era opened for San Francisco with the discovery of gold. No sooner was the fact generally known, in the next spring, than the city was almost deserted for the diggings; trade was at an end, and all business seemed to have ceased. But this did not last long, for in the month of August eager crowds of emigrants began to arrive, the harbour was thronged with ships, and the city far more than before alive with bustle and din. Building was soon commenced with vigour, the value of property rose rapidly, and in little more than a year the population had risen to more than 15,000. De-

San Francisco. — destructive fires broke out on several occasions, and laid large portions of the city in ashes; but these injuries were speedily repaired. By these calamities, as well as by a reckless expenditure, the financial affairs of the city were reduced to a very low state; but by the imposition of heavy taxes the credit was restored from a state of almost hopeless bankruptcy. So much gold poured into the town as to render it necessary in 1853 to establish a mint in San Francisco. Its operations since it commenced in 1854 have been as follows:—

Years.	GOLD.			SILVER.	
	Bars.	Fine Bars.	Bars and Coin.	Bars.	Total.
	L.	L.	L.	L.	L.
1854..	1,187,811	1,232	2,027,408	...	...
1855...	681,371	18,493	4,366,303	...	34,180
1856...	634,790	25,442	5,899,066	4915	41,793
1857...	...	...	2,602,081	...	10,416
1858...	170,058	...	4,015,849	4112	30,728
Total...	2,674,030	45,167	18,910,707	9027	117,117

There are, however, other articles besides gold received from the interior of California, as is exhibited in the following table:—

Articles.	Aug. 1st 1855, to July 1st 1856.	July 1st 1856, to July 1st 1857.	July 1st 1857, to July 1st 1858.	July 1st to Dec. 25th 1858.
Flour....(sacks)	178,644	152,509	141,825	179,690
Wheat... "	463,672	340,030	243,052	337,179
Barley... "	297,599	455,823	667,568	576,219
Oats..... "	148,906	157,344	186,039	241,328
Potatoes... "	390,759	343,681	330,307	159,280
Corn..... "	7,142	10,821	9,096	3,430
Rye..... "	770	3,526	2,899	1,191
Buck wht. "	1,662	1,536	2,635	1,738
Beans... "	30,976	55,286	65,076	43,037
Bran..... "	31,951	38,169	36,044	30,690
Hay.....(bales)	...	95,185	70,361	53,554

The number of the vessels that entered the port in 1855 was 1520; tonnage, 517,919; in 1856, number 1455; tonnage, 444,015; in 1857, number 1583; tonnage, 427,566; and in 1858, number 1441; tonnage, 467,529. The total for the last year was made up as follows:—

From	No.	Tonnage.
United States on the Pacific Ocean...	988	158,336
" " " Atlantic Ocean.	104	114,321
Panama.....	28	54,565
Vancouver's Island.....	103	53,098
China.....	26	20,379
Great Britain.....	18	14,737
Chile.....	18	8,164
Mexico.....	48	6,835
Australia.....	15	6,362
Sandwich Islands.....	22	5,585
France.....	9	4,468
Asiatic and American Russia.....	9	4,402
Manilla.....	4	2,605
Batavia.....	5	1,913
Calcutta.....	4	1,902
Siam (Bangkok).....	4	1,715
Society Islands.....	10	1,573
Whale fishery.....	8	1,330
Hamburg.....	4	1,280
Callao.....	5	1,235
Rio de Janeiro.....	3	1,157
Central America.....	4	754
Other ports.....	2	813
Total.....	1441	467,529

The imports from different countries vary considerably in different years: those from the whale fishery have regularly fallen off for the last four years; those from Australia have remained stationary; those from Mexico, China, the East Indies, and South America have increased; and

those from Vancouver's Island have been almost entirely created since the discovery of gold there. The imports from foreign countries to San Francisco were in 1856 valued at L.1,520,795; in 1857 at L.1,903,624; and in 1858 at L.1,872,856. The most important articles of import are rice, coffee, sugar, wine and spirits, timber, and coal. The following table exhibits the tonnage of vessels that left San Francisco in the last three years for various ports, exclusive of the Pacific states of the Union.

For	1856, Tons.	1857, Tons.	1858, Tons.
Atlantic ports of the U. S.....	6,002	16,814	12,456
Europe.....	900	...	3,248
China.....	72,734	38,313	48,809
East Indies.....	46,425	23,361	19,241
South America.....	60,075	63,813	28,347
Mexico.....	8,373	23,977	31,809
Australia.....	12,588	10,188	20,733
Vancouver's Island.....	638	2,032	65,120
Polynesia.....	17,526	9,086	27,387
Whale fishery.....	3,855	1,333	2,076

The value of the exports for the same year is exhibited in the following table:—

To	1856, L.	1857, L.	1858, L.
Vancouver's Island.....	4,867	6,278	294,418
New York, &c.....	231,977	449,581	267,598
Mexico.....	162,829	154,010	146,271
Australia.....	234,031	65,539	79,184
Sandwich Islands.....	51,935	61,497	56,984
China.....	49,984	65,391	44,699
Chile.....	24,327	32,850	28,897
Peru.....	70,348	29,101	28,720
Asiatic and American Russia	26,646	21,904	11,880
Other countries	25,402	20,222	32,750
Total.....	882,346	906,383	991,401

In these numbers the quantity of gold exported is not included, but the principal articles are timber, hides, wool, quicksilver, and marble. The value of gold exported in these years from San Francisco is as follows:—

To	1856.	1857.	1858.	1859—up to April 1st.
	L.	L.	L.	L.
New York.....	8,284,410	7,351,615	7,412,128	1,515,704
England	1,805,471	1,947,443	1,930,375	458,083
China.....	272,674	623,591	399,165	178,028
New Orleans.....	27,082	50,832	65,206	44,998
Panama	52,760	85,608	62,343	14,703
Sandwich Islands	50,195	18,081	20,136	8,507
Manilla.....	27,760	58,102	10,410	...
Other ports	41,460	68,179	6,066	...
Total.....	10,561,812	10,203,451	9,905,829	2,222,023

San Francisco is now rapidly rising above its former condition of being a mere landing-place for the gold-diggers; the population is becoming more settled; the turbulence and reckless speculation of the first miners have given place to order and security; the agricultural wealth of the country is being developed, and the trade in gold is every year forming a smaller proportion of the whole trade of the place. The population of San Francisco, which according to the State census of 1852 was 34,776, was estimated in 1853 to be from 50,000 to 60,000.

SANGA, a town of Japan, in the island of Kioo Sioo, in a fertile plain at the head of the bay of Simbara, 55 miles N.E. of Nangasaki. It is large and populous, and encircled by fortifications. Its broad, straight streets are traversed by streams and canals. There are here important manufactures of porcelain.

SANGALLO, properly GIAMBERTI, a family of distinguished architects, of whom the eldest was GIULIANO GIAMBERTI, who was born at Florence in 1443. Having been early sent, with his brother Antonio, to an ingenious carver

Sanga
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Sangallo.

Sanger-
hausen.

in wood, he afterwards renounced this profession for that of military engineer to Lorenzo de' Medici. Giuliano now resolved to pursue architecture, and had an early opportunity of displaying his skill on the cloister of the Church of Santa Maddalena de' Pazzi at Florence, which he ornamented with a row of Ionic pillars of peculiar capitals, such as were not then known. Being afterwards commissioned by Lorenzo to erect a convent near the gate of San Gallo, the architect received the title of *Da' San Gallo* at first in jest from his master, but subsequently he adopted it, together with his whole family. Among his numerous works was a palace erected at Savona, now the convent of Santa Chiara, for his patron the Cardinal della Rovere. On the death of Bramante, he was offered the appointment of architect of St Peter's, which he was obliged to decline from growing infirmities. He died at Florence in 1517, aged seventy-four.

ANTONIO, brother of Giuliano, attracted by his success, likewise became an architect. Besides converting Hadrian's mausoleum at Rome into its present form of the Castle of St Angelo, and erecting several fortresses for Pope Alexander VI., he likewise built several churches, of which that of the Madonna at Montepulciano is considered the best specimen of his art. He died in 1534, and was interred beside his brother Giuliano, in the burying-ground of the Giamberti family, in the church of Santa Maria Novella.

ANTONIO, the most noted architect of the family of SANGALLO, was a nephew, on his mother's side, to the two preceding, but whose father was Bartolomeo Picconi, a cooper of Mugello. He was born in 148—, but what precise year in the decade cannot now be ascertained. Originally a carpenter, he was subsequently led to visit Rome, whither he had been drawn by the fame of his uncles. As those noted architects left the capital shortly after his arrival, he had the good fortune to find a protector in Bramante, then a man well advanced in years. He soon drew upon himself the notice of Cardinal Farnese, afterwards Paul III., for whom he built a splendid mansion in the Campo de' Fiori, which would have been sufficient to have established his reputation. He subsequently erected numerous private palazzi, and among others his own house in the Strada Giulia, now the Palazzo Sacchetti. He was employed on military architecture for a number of years at Città Vecchia, Parma, Piacenza, Ancona, &c.; when he was, on the death of Peruzzi, chosen sole architect for the completion of St Peter's. He modelled a design of this splendid edifice, nearly 20 English feet in length, which, although broken into a multiplicity of parts, are yet agreeably proportioned, and the *tout ensemble* is decidedly picturesque; but the fabric of Sangallo was entirely abandoned after his death. (See Wood's *Letters of an Architect*.) Sangallo's greatest work is undoubtedly the Palazzo Farnese; but he must share the fame of the design with Michel Angelo, who drew the magnificent and majestic cornice which distinguishes this building from every other of the kind in Rome. The style and manner of this ancient building has been reproduced in the Reform Club-house, Pall Mall, London. Antonio Sangallo died at Terni, in the month of October 1546, leaving behind him a wide reputation of having been, according to Vasari, "a most excellent architect." (Vasari's *Lives of Painters, Sculptors, and Architects*, by Mrs Foster, vol. iv., 1851.)

SANGERHAUSEN, a town of Prussia, province of Saxony, circle and 33 miles W.N.W. of Merseburg, near the foot of the Harz Mountains, and at the lower end of the fertile valley called *Goldene Aue*. The church of St Ulrich here is said to have been founded by Louis, Landgrave of Thuringia, in 1079. According to the legend, when a prisoner in the castle of Giebichstein, near Halle, he vowed a church to the saint, if he should escape, which

he did by a bold leap into the Saale. From this feat he was known among men as Louis the Leaper. Sangerhausen has two castles, churches, hospitals, law courts, and offices. Woollen and linen cloth are manufactured, and many of the people are employed in the neighbouring copper mines. Pop. 6386.

SANGORA, a seaport-town of Siam, on the shore of a bay on the east coast of the Malay peninsula, 90 miles S.E. of Ligor; N. Lat. 7. 15., E. Long. 101. It is partly built of brick; and on the heights around it stand many pagodas, which have an imposing appearance. The town is divided into several quarters, occupied by Siamese, Chinese, and Malays respectively. The commerce of the port is chiefly carried on by vessels trading between Siam and Singapore.

SANHEDRIM, or SANHEDRIN (*Συνέδριον*, a council or assembly of persons sitting together), was the name by which the Jews called the great council of the nation, assembled in an apartment of the temple of Jerusalem to determine the most important affairs of their church and state. This council consisted of seventy senators. The room they met in was a rotunda, half of which was built without the temple, and half within; that is, one semicircle was within the compass of the temple, the other semicircle was built without, for the senators to sit in, it being unlawful for any one to sit down in the temple. The Nasi, or prince of the sanhedrim, sat upon a throne at the end of the hall, having his deputy at his right hand, and his sub-deputy at his left. The other senators were ranged in order on each side.

The rabbin pretend, that the sanhedrim has always subsisted in their nation from the time of Moses down to the destruction of the temple by the Romans. They date the establishment of it from what happened in the wilderness, some time after the people departed from Sinai, in the year of the world 2514. Moses, being discouraged by the continual murmurings of the Israelites, addressed himself to God, and desired to be relieved at least from some part of the burden of the government. Then the Lord said to him, "Gather unto me seventy men of the elders of Israel, whom thou knowest to be the elders of the people, and officers over them; and bring them unto the tabernacle of the congregation, that they may stand there with thee: And I will come down and talk with thee there; and I will take of the spirit which is upon thee, and will put it upon them; and they shall bear the burden of the people with thee, that thou bear it not thyself alone." The Lord, therefore, poured out his spirit upon these men, who began at that time to prophesy, and have not ceased ever since. The sanhedrim was composed of seventy councillors, or rather seventy-two, being six out of each tribe; and Moses, as president, made up the number to seventy-three. To prove the uninterrupted succession of the judges of the sanhedrim, there is nothing unattempted by the partisans of this opinion. They find a proof where others cannot so much as perceive any appearance or shadow of it. Grotius may be consulted in many places of his commentaries, and in his first book *De jure belli et pacis* (c. iii. art. 20), and Selden *De Synedriis veterum Hebræorum*; also Calmet's *Dissertation concerning the Polity of the ancient Hebrews*, printed before his *Commentary upon the Book of Numbers*.

As to the personal qualifications of the judges of this bench, their birth was to be untainted. They were often taken from the race of the priests or Levites, or out of the number of the inferior judges, or from the lesser sanhedrim, which consisted only of twenty-three judges. They were to be skilful in the law, as well traditional as written. They were obliged to study magic, divination, fortune-telling, physic, astrology, arithmetic, and languages. The Jews say they were to know seventy tongues; that is, they were to know all the tongues, for the Hebrews acknowledged but seventy in all, and perhaps this is too

Sangora
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Sanhedrim.

Sanhedrim. great a number. Eunuchs were excluded from the sanhedrim because of their cruelty, usurers, deerepid persons, players at games of ehanee, such as had any bodily deformities, those that had brought up pigeons to decoy others to their pigeon-houses, and those that made a gain of their fruits in the sabbatical year. Some also exclude the high priest and the king, because of their power; but others will have it that the kings always presided in the sanhedrim whilst there were any kings in Israel. Lastly, it was required that the members of the sanhedrim should be of a mature age, of a handsome person, and of considerable fortune. We speak now according to the notions of the rabbin, without pretending to warrant their opinions.

The authority of the great sanhedrim was very extensive. This council decided such causes as were brought before it by way of appeal from the inferior courts. The king, the high priest, and the prophets, were under its jurisdiction. If the king offended against the law, for example, if he married above eighteen wives, if he kept too many horses, if he hoarded up too much gold and silver, the sanhedrim had him stripped and whipped in their presenee. But whipping, they say, among the Hebrews was not at all ignominious; and the king bore this correction by way of penance, and himself made choice of the person that was to exercise this discipline over him. The general affairs of the nation were also brought before the sanhedrim. The right of judging in capital cases belonged to this court, and the sentence could not be pronounced in any other place, but in the hall called *Laschat-haggazith*, or the *hall paved with stones*. Hence it came to pass, that the Jews were forced to quit this hall when the power of life and death was taken out of their hands, forty years before the destruction of their temple, and three years before the death of Jesus Christ. In the time of Moses this council was held at the door of the tabernacle of the testimony. As soon as the people were in possession of the land of promise, the sanhedrim followed the tabernacle. It was kept successively at Gilgal, at Shiloh, at Kirjath-jearim, at Nob, at Gibeon in the house of Obed-edom; and, lastly, it was settled at Jerusalem until the Babylonish captivity. During the captivity it was kept up at Babylon. After the return from Babylon, it continued at Jerusalem until the time of the Sicarii or Assassins. Then finding that these profligate wretches, whose number increased every day, sometimes escaped punishment by favour of the president or judges, it was removed to Hanoth, which were certain abodes situated, as the rabbin tell us, upon the mountain of the temple. From thence they came down into the city of Jerusalem, withdrawing themselves by degrees from the temple. Afterwards they removed to Jamia, thence to Jerieho, to Uzzah, to Sepharvaim, to Bcthsanim, to Sephoris, last of all to Tiberias, where they continued till the time of their utter extinction. And this is the account the Jews themselves give us of the sanhedrim.

Father Petau fixes the beginning of the sanhedrim not till Gabinus was governor of Judæa, who, according to Josephus, erected tribunals in the five principal cities of Judæa; at Jerusalem, at Gadara, at Amathus, at Jerieho, and at Sephora or Sephoris, a city of Galilee. Grotius places the origin of the sanhedrim under Moses, as the rabbin do; but he makes it terminate at the beginning of Herod's reign. Basnage at first thought that the sanhedrim began under Gabinus; but afterwards he places it under Judas Maccabæus, or under his brother Jonathan. We see, in-

deed, under Jonathan Maccabæus, in the year 3860, that *Sanhedrim.* the senate, along with the high priest, sent an embassy to the Romans. The rabbin say, that Alexander Jannæus, king of the Jews, of the race of the Asmonæans, appeared before the sanhedrim, and claimed a right of sitting there, whether the senators would or not. Josephus informs us, that when Herod was but yet governor of Galilee, he was summoned before the senate, where he appeared. It must be therefore acknowledged that the sanhedrim was in being before the reign of Herod. It was probably in being afterwards, as we find from the Gospel, and from the Acts. Jesus Christ, in St Matthew (v. 22), distinguishes two tribunals. "Whosoever is angry with his brother without a cause shall be in danger of the judgment;" this, they say, is the tribunal of the twenty-three judges. "And whosoever shall say to his brother, Raca, shall be in danger of the council;" that is, of the great sanhedrim, which had the right of life and death, at least generally, and before this right was taken away by the Romans. Some think that the jurisdiction of the council of twenty-three extended to life and death also; but it is certain that the sanhedrim was superior to this council.

The Talmudical writers tell us, that besides the sanhedrim, properly so called, there was in every town, containing not fewer than one hundred and twenty inhabitants, a smaller sanhedrim, consisting of twenty-three members, before which lesser causes were tried, and from the decisions of which an appeal lay to the supreme council. Two such smaller councils are said to have existed at Jerusalem. It is to this class of tribunals that our Lord is supposed to allude in the passage just quoted in Matthew v. 22. Where the number of inhabitants was under one hundred and twenty, a council of three adjudicated in all civil questions. What brings insuperable doubt upon this tradition is, that Josephus, who must from his position have been intimately acquainted with all the judicial institutions of his nation, not only does not mention these smaller councils, but says that the court next below the sanhedrim was composed of seven members. Attempts have been made to reconcile the two accounts, but without success; and it seems now very generally agreed that the account of Josephus is to be preferred to that of the Mishna, and that consequently it is to the tribunal of the seven judges that our Lord applies the term *κρίσις* in the passage referred to.

The origin of the sanhedrim is involved in uncertainty; for the council of the seventy elders established by Moses was not what the Hebrews understand by the name of sanhedrim. Besides, we cannot perceive that this establishment subsisted either under Joshua, the judges, or the kings. We find nothing of it after the captivity till the time of Jonathan Maccabæus. The tribunals erected by Gabinus were very different from the sanhedrim, which was the supreme court of judicature, and fixed at Jerusalem, whereas Gabinus established five at five different cities. Lastly, it is certain that this tribunal of the judges was in being in the time of Jesus Christ. A Jewish sanhedrim is said to have been summoned by Napoleon at Paris, on July 23, 1806, and it assembled on the 20th January 1807. Compare Otho, *Lexicon Rabbinico-Philolog.* in voce; Selden, *De Synedriis Veterum Ebraiorum*, ii. 95, sq.; Reland, *Antiq.* ii. 7; Jahn, *Archæologie*, ii. 2, § 186; Pareau, *Antiq. Heb.* iii. 1, 4.; Lightfoot, *Works*, plur. locis; Hartmann, *Enge Verbindung des Alten Test. mit dem Neuen*, s. 166, ff., &c.; and Milman's *History of Latin Christianity*, i.

SANITARY SCIENCE.

History. SANITARY SCIENCE is that department of human knowledge which contemplates those laws of the human body, and of the agents by which it is surrounded, which tend to preserve life and ward off disease and death. The practical application of these laws results in the art of preserving health, which is called *hygiene*. Hygiene is sometimes defined as the art of preventing disease, in contradistinction to medicine, which is the art of curing disease. The general subject of hygiene has been treated variously by different writers. It is sometimes divided into public and private hygiene, and this is a common division amongst French writers on the subject. Public hygiene comprises the consideration of the healthy conditions and arrangements of all places in which human beings are collected together, as camps, barracks, ships, hospitals, prisons, workhouses, churches, manufactories, schoolhouses, &c. Private hygiene embraces the laws which regulate the health, life, and age of the individual. We have divided the subject of sanitary science in this article into *general* hygiene and *special* hygiene. These divisions correspond in some measure to the above; general hygiene embracing the laws which regulate the health of the human body and determine disease, whilst special hygiene embraces the application of these laws to the sanitary wants of a community and the hygienic demands of industry.

It was an early experience of mankind that certain external agencies produce disease and death, and amongst the earliest nations of antiquity certain practices were inculcated for the prevention of disease, and securing health. In the books of Moses we have a surprising instance of the care which was taken to prevent disease by the inculcation of hygienic precepts, and the adoption of sanitary laws. Although these laws and precepts were part and parcel of the great religious system under which the Jews lived, and were superintended and enforced by the priests of that religion, there can be no doubt that one great end which they secured was the health of the people. Burdensome and unnecessary as some parts of the sanitary code of Moses might be regarded in countries like our own, they nevertheless, as a whole, comprise great principles of action, which it is somewhat astonishing should have been so entirely overlooked by the modern nations of Europe, who have for centuries regarded the mission and laws of Moses as divine. In the distinction between clean and unclean beasts and birds we see those selected for food whose flesh was less likely to corrupt and putrefy, and thus to engender disease. In the forbidding the eating of blood, the most putrescible part of the animal was got rid of from the ordinary diet of the people. The regulations with regard to those who had leprosy and other cutaneous diseases were such as would prevent the spread of many of the forms of contagious disease with which we are acquainted at the present day. These precautions extended to the clothes and houses of those infected, and involve an amount of attention to the spread of infectious diseases that, if adopted with the modifications necessary for climate, and in accordance with modern science, would go far to suppress a large class of our zymotic diseases. Even the distinctive religious ordinance of circumcision seems to have had reference to sanitary requirements. In the practice inculcated of removing human excretions on to the soil, and using them as manure, we witness a procedure, and even obedience to a natural law, the neglect of which is now visiting with disease every city of Europe. The practice of burying the dead away from all human habitations, of embalming the body immediately after death, and even of burning, were all adopted by the Jews, and is indicative of the sanitary law under which those remarkable people lived.

Many of these practices, however, are not exclusively Jewish, and many of the oriental nations have carried into effect similar methods of securing the health of their teeming populations. We do not, however, find any sanitary code equally explicit with that of Moses amongst the nations of antiquity, unless we except the laws of Lycurgus, under which the Spartans lived, but which were peculiar, and especially adapted to the development of the military spirit amongst this nation of warriors.

The culture of the Greeks early led to the establishment of medicine as an art in the hands of the Asclepiadæ, who gave general directions for the prevention of disease to all who resorted to their temples of health for their advice. Amongst this class of men arose the great Hippocrates, whose works must be regarded as the first attempt to reduce to law the facts on which the art of preventing disease is founded. His great treatise on *Airs, Waters, and Places* embraces a consideration of many of the questions which relate to public health, and may be read with advantage even by those who are acquainted with the facts and laws which modern science has made known. Amongst the institutions of the Greeks which seem to have had the health and strength of the community in view, we may specially refer to their gymnastic exercises, which were practised in schools especially devoted to the purpose.

Amongst Roman writers who referred to the subject of public health, we may especially refer to Celsus, whose excellent treatise on medicine contains a large number of hygienic precepts, and a philosophical perception of the importance of the subject. In the conduct of their great armies, the Romans on some points paid great attention to the rules of public health. The sites of their camps have always been regarded as examples of the care that was taken to secure localities free from the influence of injurious exhalations from the soil. They were also particular about the supply of water to their soldiers, and inculcated the practice of bathing.

The remains of Roman architecture also show that the supply of pure water to towns was regarded as essential to the welfare of their inhabitants. The practice of bathing amongst them, which undoubtedly originated in the conviction of its value in relation to public health, became converted, in the later periods of the empire, into a luxurious indulgence, to which has been traced in some measure the effeminacy which characterised the race during its decadence.

Amongst modern European nations, the subject of public health, as a branch of state action, seems to have attracted but little attention. When pestilences swept over the face of the earth, efforts were occasionally made to prevent their recurrence. The recognition and general spread of syphilitic disease in the sixteenth and seventeenth centuries led, in many countries of Europe, to legal measures for its suppression and control. Most countries in Europe adopted various quarantine regulations for the prevention of the introduction of this and other diseases. But it is said, with regard to the greater proportion of this kind of legislation, that the lack of intelligence it displayed was frequently so great as to lead to the doubt whether it did not do more harm than good.

In the conduct of the ships, camps, prisons, and hospitals in Europe, during the last century, many great and salutary improvements have been made, depending on the application of the laws of sanitary science. Previous to the time of the great circumnavigator Cook, the ships of Europe were floating lazaret-houses. The shortest voyage involved a loss of life which, at the present moment, would be regarded as frightful in the longest voyages. Captain Cook

History.

History. claims not so much the admiration of mankind for his brilliant geographical discoveries, as their gratitude for first applying the knowledge of the laws of life to its preservation on board his ships. He first demonstrated that a ship's crew might be taken round the world without the loss of a single sailor. That curse of our navies, the scurvy, found its remedy, at the latter end of the last century, in the application of a knowledge of the dietetical necessity of fresh vegetables for its prevention. The diseases of our armies attracted the attention of medical writers to their prevention during the last century; whilst the exposure of the horrors of prisons by John Howard led to the general introduction of sanitary arrangements in their structure and discipline.

Moreover, we cannot deny to the municipalities of many of the cities of Europe an anxiety to secure, in many of their public arrangements, the health of the communities in which they lived. Many instances might be given of great works executed for the supply of water, the erection of markets, the construction of sewers, &c., with the public health in view. We owe it, however, more particularly to France that the health of the people should become a part of the care of the government. It is indeed wonderful that a subject so truly within the sphere of civil government should have been neglected so long, and that at the present no government of Europe should be able to present a consistent code of legislation on this important subject. At the latter end of the last century the Royal Society of Medicine of Paris appointed a Committee of Health, to which was referred certain subjects connected with injurious emanations from manufactories, the condition of hospitals, prisons, and other sanitary measures. In 1802 the government of France constituted a Council of Health, for the purpose of superintending sanitary operations in Paris. This council has had its numbers increased and its powers extended, and at the present day consists of eighteen members. Its function is to inquire into all matters concerning public health. It examines into the sanitary condition of markets, cemeteries, slaughter-houses, sewers, dissecting-rooms, water-closets, pumps, wells and fountains, public baths, and prisons. It prepares tables of the statistics of mortality, of the sanitary condition of workshops, &c.; and suggests remedies for the prevention of inundations, and the utilizing and deodorizing injurious industrial products. It also undertakes the suppression of medical impositions of all kinds, and the analysis of foods and drinks suspected of adulteration or injurious properties. This body has published several volumes of valuable reports, which have been edited by MM. Parent Du Chatelet and Marc. The cities of Lyons, Marseilles, Lille, Rouen, Bourdeaux, and Nantes followed the example of Paris, and had their councils of public health. In 1851 a law was introduced by which the whole of France was placed under the control of the central Council of Health, with departmental coun-

History. cils. This plan has not hitherto produced the results hoped for, arising apparently from the too complicated nature of the machinery.

We now turn to England, where both the government and municipal bodies have been remarkably slow to recognise the importance of public measures for securing public health. There are two causes for this: first, an ignorance of the real causes of disease, and the means by which they may be prevented; and second, a religiousness of feeling which ascribes disease and death to the hand of Providence, and which leads to the impression, that human efforts are unavailing against these decreed visitations of the hand of God. It was not until the year 1831, when the cholera visited this country, that the public mind became awakened to the fact, that much of its destructive effect was the result of circumstances which could have been prevented by human foresight; and that such pestilences could only be avoided in future by greater attention to the conditions by which the life of the community is regulated. It is to the writings and labours more especially of Dr Southwood Smith that we are indebted to the sanitary legislation which commenced in this country after the first alarming outbreak of cholera in 1831. It was not, however, till the history of this disease pointed to the probability of its recurring again in this country that legislation commenced. In the year 1845 the "Nuisances Removal Act" was passed. This was, however, only a temporary measure, and intended to meet the exigencies of an immediate outbreak of cholera. This disease did not reach England till 1848, and then the Nuisances Removal Act became permanent. This act, although very defective, acknowledged the right of the magistrate to interfere in all cases where the circumstances of property or individuals, either alone or combined, led to the development of conditions which could produce disease. It awakened the public mind to the fact, that there existed in all our large towns preventible causes of disease; and much sanitary activity was the result.

Between the temporary and permanent passing of the Nuisances Removal Act, an act of great importance, in a sanitary point of view, was passed, and this was the Baths and Wash-houses Act. By this act vestries and local boards were empowered to erect baths and wash-houses, and to obtain funds for this purpose from public rates and funds. The poor were by this means supplied with one of the greatest necessities of our large towns,—water for washing purposes at a rate which enabled them to use it as extensively as their circumstances required. Upwards of twenty institutions of this kind have been established in London. The following table, drawn up for the use of the vestry of St James's, Westminster, will give an idea of the extent to which these institutions have been employed, and the sums received for their use:—

Table showing the Bathing and Washing at the Establishments in London, which are conducted under or in accordance with the Acts 9 and 10 Vict., cap. 74, and 10 and 11 Vict., cap 61, for the Year 1858.

Number of Baths taken.	Number of times Women have availed themselves of the Wash-houses.	Name and Title of the Establishment.	Receipts from Bathers.	Receipts from Washers.	Gross Receipts.
184,700	58,042	St George and St Giles, Bloomsbury	L.2,423 2 11	L.1132 7 9	L.3,555 10 8
136,381	24,045	St Mary-le-bone.....	1,883 4 8	631 12 1½	2,514 16 9½
124,693	38,680	Goulston Square, Whitechapel.....	1,677 0 0	771 0 0	2,448 0 0
100,133	40,900	St James, Westminster.....	1,450 1 10½	899 6 2½	2,049 8 1
90,471	24,577	St Martin-in-the-Fields.....	1,507 8 8	434 17 1	1,942 5 9
89,524	27,063	Bermondsey	1,232 3 6	707 3 11½	1,939 7 5½
68,023	48,795	St Margaret and St John, Westminster.....	830 0 4	988 12 11	1,818 13 3
82,882	27,424	St George, Hanover Square, Belgrave Place.....	1,069 13 0	738 7 10	1,808 0 10
81,943	22,503	Do. Davies Street, Oxford Street.....	1,097 6 1	627 9 4	1,724 15 5
42,291	9,449	All Saints, Poplar.....	504 11 4	333 6 8	837 18 0
1,001,041	321,474	Totals.....	L.13,369 12 4	L.7264 3 10	L.20,633 16 2

History.

We may notice that the general conviction of the necessity of sanitary measures increased, and led to the introduction of powers for making provision for public health into acts which otherwise might have passed without these provisions. Among the Consolidation Acts of 1847 was the Towns Improvement Clauses Act, many of the provisions of which have since been embodied in other acts, and which contain a variety of clauses relating to the sanitary question. The great act, however, which forms the most distinguishing feature of the sanitary legislation of England, was the Public Health Act, which was passed in 1848. By this act a General Board of Health was constituted, at the head of which was a president appointed by the government. Under this act power was given to local authorities to construct public works of various kinds, but more especially for improving the drainage and water supply. Since the passing of this act, 236 towns have placed themselves under its provisions. These towns contain populations varying from 500 to 200,000. These are exclusive of places which have put in force various sanitary regulations under powers given them by local acts. The expenditure upon the works thus executed has been calculated to be not less than L.3,500,000. Although this statement shows that a vast amount of sanitary activity has been called forth by the public health, it nevertheless gives but an imperfect idea of the indirect benefits which have resulted by the fixing public attention on the importance of the prevention of disease and death. The diminution of the mortality consequent upon the introduction of sanitary improvements in some of the towns of England will be seen from the following table:—

Names of Towns.	Death Rate in 1000.		Number of of lives saved in 1000 per annum.
	Before Sanitary Measures.	After Sanitary Measures.	
Alnwick.....	35.2	28.3	6.9
Barnard Castle.....	33.3	25.9	7.4
Berwick.....	28.5	21.2	7.3
Bangor.....	35.1	30.9	4.2
Durham.....	26.0	22.7	3.3
Ely.....	25.6	19.3	6.3
Salisbury.....	32.2	27.0	5.2
St Thomas.....	26.9	23.0	3.9

It must not, however, be supposed that anything like a perfect system of public sanitary exertion exists even in the improved towns; and a large number of small towns and villages exist where the prevalence of fever and the high mortality indicates that little or nothing has been done for the improvement of the public health.

After ten years of successful operation, the Public Health Act was repealed in 1858, and the General Board of Health abolished. This arose partly from the nature of its operations being misunderstood, and partly from the activity of the board offending those who wished things to remain as they were, or wished to act for themselves. The Board of Health was really a board of works; and as they repudiated interfering actively in matters relating exclusively to hygienic arrangements, the name misled. The powers, however, granted under this act are still continued by the operation of the Local Government Act, and are still to be exercised by local bodies, and no cessation of the benefits of previous legislation is contemplated.

It was, however, considered necessary to give to some central body power to act in cases where disease reached a certain amount of fatality, or where fevers or other conta-

History.

gious diseases broke out with great violence; and a new "Public Health Act" was passed in 1858, which placed this power in the hands of the Privy Council. To this office is now given the power possessed by the General Board of Health under the act of 1848 and subsequent acts. This act, which was originally passed for one year, was made permanent in 1859.

Besides this great sanitary act, other measures have passed through the legislature which demand notice here. The Common Lodging-Houses Acts were passed in 1851 and 1853. Under the Public Health Act powers were given to local boards of health to register houses which were let out as common lodgings, and to inspect them, and regulate the number of their inhabitants. These powers soon brought to light the existence of a state of filthiness, indecency, and iniquity that led at once to the passing of the strongest possible measures for suppressing such sources of disease and moral degradation. Of the two measures referred to, one relates to the regulation of common lodging-houses, and the other is a permissive act, to enable public authorities to erect common lodging-houses. Under the first act, the commissioners of police in towns, and the justices of the peace in the country, have the power of regulating these places. The good that has been effected under this act has been very considerable in London and many large towns, although it is to be feared that not sufficient attention has yet been given to the overcrowding of private lodging-houses as the result of the supervision of the common or nightly lodging-houses.¹ Some idea may be formed of the magnitude of the evil which the act was intended to counteract, when it is known that upwards of 100,000 people were lodged in the common nightly lodging-houses of London when the police first entered upon their duties under this act. This act has only been enforced in a few towns in the country; but where it has been put in force, it has been shown that, in proportion to their population, many of the towns of England are quite as bad as London. It is, however, an acknowledged fact, that wherever this act has been put in force, a great and manifest improvement has taken place in the character of the population affected by the provisions of this act.

The object of the second act, The Labouring Classes Lodging-Houses Act, was to encourage the building and establishment of lodging-houses properly constructed and carried on for the accommodation of the working-classes. This act was intended to supply decent and proper accommodation for those who were displaced by the provisions of the first act. At present, however, the local authorities have not availed themselves of the provisions of this act, except in a very few instances. It is to be hoped that this will not long be the case, and that when it comes to be better understood how much more expensive to the community are dirt, squalor, and moral degradation, than cleanliness, health, and morality, that the provisions of this act will be extensively put in force.

The next sanitary acts in point of date are those relating to the burial of the dead. In 1851 and 1852 acts were passed, the object of which was to prevent the burial of the dead in churches and chapels, and in burial-grounds surrounded by a dense population. The Metropolitan Interments Act, which not only interdicted interment in London, but provided a complicated system for the removal of the dead, and their burial in a large cemetery in the neighbourhood of London, was never carried into effect. But the evils of burying the dead in the midst of the living had become so notorious, and the practices of extortion on the

¹ In the city of London the powers given to the Commissioners of Sewers for the regulation of common and nightly lodging-houses are very extensive; for by the Sewers Acts of 1848 and 1851, the commissioners have control over all houses occupied by more than one family, any room of which is let for less than 3s. 6d. per week. This, indeed, is the definition of a common lodging-house in the City Acts of Parliament.

History.

part of those who undertook the management of funerals, that the Burial Act, simply forbidding the burial in towns and places of worship, has led to the most extensive reforms. Within the last ten years upwards of ten new cemeteries have been opened in the neighbourhood of London; and in almost every large town in the country similar provision has been made for the interment of the dead.

Amongst the individual sanitary evils against which the sanitary legislation of England has been directed is that of smoke. It is well known that smoke is composed of unconsumed particles of carbon, which, entering the atmosphere, fall down again, producing great uncleanness, and leading to a practice of closing doors and windows, to the injury of health. Power was given to local bodies to diminish this evil in large towns under the Towns Improvement Clauses Consolidation Act. In some towns this power has been taken advantage of, whilst in others the principal manufacturers and producers of smoke have adopted the practical methods suggested for abating this nuisance. In 1813 a special act was passed, under the title of the Smoke Nuisance Abatement Act, in which powers were given to magistrates to fine those whose manufactories were complained of as producing smoke amounting to a nuisance. The application of this act to London has been attended with an immense improvement, although the smoke generated in private houses still produces a comparatively impure and murky atmosphere. Under the Local Government Act, it is competent for the local authorities in any town to introduce the Smoke Nuisance Abatement Act. A general introduction of this act, and the extension of its powers to the construction of fireplaces in private dwellings and workshops in towns, would be undoubtedly attended with increased cleanliness, and a greater attention to the ventilation of houses.

In 1855 the Nuisances Removal Acts of 1845 and 1848 were repealed, and the Nuisances Removal and Diseases Prevention Act was passed. This act, which is now in force, gives a legal definition of nuisances, which is as follows:—"Any premises in such a state as to be a nuisance or injurious to health." "Any pool, ditch, gutter, water-course, privy, urinal cesspool, drain, or ashpit, so foul as to be a nuisance or injurious to health." "Any animal so kept as to be a nuisance or injurious to health." "Any accumulation or deposit which is a nuisance or injurious to health."

By means of these stringent definitions, a variety of causes of diseases are brought within the operation of the law. The local authorities can give notices for the removal of any nuisance; and if this is not attended to, a summons can be issued, and the offending parties brought before a magistrate. In certain cases also, where works are necessary to be done, the local bodies can do the work, and charge the person on whose premises the nuisance has existed. The duties of a medical officer of health and of a sanitary officer are also recognised; and these officers have power given them to inspect premises in cases where they suspect a nuisance to exist. The medical officers of health and sanitary inspectors have also powers given them under this act to inspect all articles of food exposed for sale which are suspected to be unfit for use as human food, and to seize the same, and bring the offender before the magistrate, who has power to inflict a fine upon the owner of the provisions thus seized.

A clause also, in the same act, gives power to the sanitary officers to inspect the premises of persons carrying on offensive and noxious trades, and to point out the best means of preventing any injurious influence being exercised upon the neighbourhood, and of appealing to the magistrate if their suggestions are not carried into effect.

A clause in this act goes so far to avert the evils which

History.

might arise from the operation of the Common Lodging-House Act, in driving people to private houses for their nightly lodging, as it regards the overcrowding of dwelling-rooms as a nuisance. In many parts of London, any room not allowing a space of 400 cubic feet to each individual habitually residing or sleeping in it is regarded as a nuisance, and brought under the operation of this act.

This act also contemplates the suppression of the unhealthy practice of dwelling in cellars or kitchens, and defines the conditions on which any room under the ground shall be allowed to be let as a residence. This act, though occasionally found too slow in its operations to remove an immediate and pressing cause of disease, has been found one of the most effectual of the various measures of English sanitary legislation for the permanent improvement of the health of towns. When it is considered that it deals with all those small causes of disease which are so constantly occurring in a civilized community, it is wonderful that its provisions are not more generally enforced. In any town or country district it would only be an act of benevolence on the part of the clergyman, the magistrate, the lawyer, or the medical man, to insist on its provisions being carried out in all cases where the manifest causes of disease exist.

Comprehensive and sufficient as the preceding legislative measures may appear to be, they are not based upon any comprehensive principle, and are deficient of any common basis of action. There are consequently constantly arising cases which require special legislation. London is an instance of this. The entire management of the sanitary condition of the city is confided to the corporation, whose acts date back to 1848; but as the city includes not more than a twentieth part of the metropolis, the health of the surrounding population had to be cared for in very various ways. It is not necessary here to enter into any account of the sanitary measures adopted in the metropolis under the various local boards and vestries. It will be sufficient to allude to the fact, that the city of London possesses local sanitary powers, which were put in force, under the control of a medical officer of health and sanitary inspectors, several years before the rest of London.

In 1857 the Metropolis Local Management Act was passed, which gave to all the parishes of London, with the exception of the City, the power of action in relation to sanitary matters. The management of the sewers, and various other powers in relation to the general condition of the metropolis, was vested in a metropolitan board of works, whose members were elected by the various vestries or local boards to whom the parochial management was confided. To the vestries or local boards are given powers to enforce all regulations connected with sanitary matters. One of the most important provisions of this act is the appointment of medical officers of health. Each vestry or board is required to appoint a duly-qualified medical man to fill this office. It is his duty to direct the operations of an inspector or inspectors of nuisances, who visit houses, workshops, manufactories, and other places where nuisances are either reported or suspected to exist. He sees to the ventilation of public buildings,—as churches, chapels, theatres, courts of law,—and obtains the sanction of the local board for all proceedings connected with the removal of nuisances. He receives from the registrar-general the weekly report of births and deaths in his parish; and by the latter he is guided to the existence of disease in his locality, which may require on that account special attention. The improvement that has taken place in London under the powers of this act has been very great; and the amount of negligence, with regard to the sources of disease, that has thus been revealed, is perfectly astonishing. At the same time, the local boards are not yet alive to the immense advantages to be derived from carrying out the provisions of

History. this act. In many instances the medical officer of health meets with no encouragement in the performance of his duties, and no regular system of inspection is prescribed to the inspectors of nuisances.

In this bill, no provision was made for dealing with the sanitary condition of the Thames. This great river, like other rivers flowing through towns, had been used from time immemorial as a receptacle for the refuse of the inhabitants on its banks. Moved by the daily access of the tide from the sea, and receiving upwards of 100 millions of gallons of water daily, for centuries the refuse poured into it produced little effect upon its purity. It was not till the extensive introduction of the water-closet system in London, and the abolition of cess-pools, with also the increase of gas and other manufactories on its banks, that the river began to give indications that it was receiving a larger quantity of decomposing matter than it could purify, or get rid of by its tidal movements. In 1856 it became apparent in the summer months that the river emitted a disagreeable stench. This became still more evident in 1857, and was obviously dependent on increased attention paid to the removal of all refuse from houses by the aid of drainage. In 1858 the stench again appeared with increased intensity, and was especially nauseous in the neighbourhood of the new houses of Parliament. Every one felt that special legislation was necessary to meet so gigantic an evil. This great river had become an elongated cess-pool, and the effect upon the teeming population of its banks might be, in the course of a short time, of the most disastrous kind. Accordingly, an act was passed in 1858, giving power to the Metropolitan Board of Works to commence works for the main drainage of the metropolis, and for preventing, as far as practicable, the sewage from passing into the Thames within the metropolis. It also gives them power to construct works on the shores and bed of the Thames; and empowers them to borrow for these purposes a sum of money not exceeding three millions. The works thus sanctioned are now in the progress of construction, and comprehend the complete drainage of an area of 117 square miles, and of houses calculated for the residence of a population of 3,500,000 people. These works are intended to carry separately the sewage of London down to a point of the Thames so far below the metropolis as not to interfere with the health or comfort of its inhabitants. The questions of deodorizing the sewage, or utilizing it, are purposely left open for the present. This improvement of the condition of the river will necessarily be followed by other arrangements. One of these is the embankment of the Thames, by which the scour of the river will be increased through London, a very necessary plan when it is remembered that 80,000,000 of gallons of sewage, which is now poured into the Thames above Blackwall, will be emptied into it at a much lower point. In connection with the completion of the system of main drainage, a plan has been proposed by Captain Fowke, by which any regurgitation of the sewage into the Thames passing through London would be effectually prevented. This consists in throwing a weir over the Thames below Greenwich, and cutting a canal with locks through the Isle of Dogs, so as to enable the traffic above the river to be carried on. This would relieve London of all difficulties from the tide, and give it a river of pure water, constantly at high-tide mark. If such a plan is not really open to objection, it would restore to London the river in more than its ancient purity, and which for bathing purposes and aquatic amusements would contribute greatly to the health of the metropolis.

Before closing this sketch of the sanitary legislation of

England, we would refer to some of the minor acts which have been passed on subjects involving the public health.

From the time of the first discovery of vaccination as a means of preventing small-pox, enactments have been passed to secure the extension of the practice of vaccination. Obvious as is the benefit to be derived from this practice it has been greatly neglected, and recently a Vaccination Extension Act has been passed. By this act, all persons are required to have their children vaccinated within three months of their birth, under a penalty of ten pounds for neglect. It is, nevertheless, found that large numbers of persons allow their children to grow up without vaccination; and the result is, that there is always a fraction of the people susceptible of the ravages of this disease, and sufficient to keep it always smouldering and ready to break forth into a flame in all our city populations.

The slaughtering of animals in private houses, where there exists little or no proper accommodation, has always been regarded as a great nuisance, and an act has been passed for the better regulation of slaughter-houses, by which the local magistracy have power to refuse a license to persons slaughtering on their own premises. Although under this act licenses have been refused by the magistrates, yet, such is its deficiency, that it is well known in London that slaughtering takes place extensively without the granting of any license. It is hoped, however, that this act will lead local authorities to see the propriety of erecting abattoirs, or public slaughter-houses, for the accommodation of butchers, in which neither the food thus prepared nor the population of the neighbourhood will be in any way injured.

There are many other measures which have been adopted from time to time with a sanitary object in view; such as the introduction of lemon-juice into the navy as a preventive of scurvy, and the requiring the captains of merchant ships undertaking voyages of a certain length to have this article of diet on board for the use of the sailors. Since the revelations made by the Crimean war of the utter deficiency of all our military arrangements to secure the proper health of our soldiers, the whole subject of the sanitary condition of the army has been inquired into by a commission appointed by Parliament, whose report has revealed a deficiency of sanitary arrangements in our barracks, and in the management of our soldiers, that could be equalled only in the most neglected and miserable parts of the population of our large towns. The same evils have been found to exist in our Indian army, and amongst the regiments in our colonies. Almost all arrangements, whether of food, clothing, or shelter, have been found to have been made in ignorance of vital laws, and in defiance of the experience of civilians.

In this brief sketch of English legislation in relation to sanitary science it will be seen that, although much has been done, much more remains to be done. The subject of public health has been treated piecemeal, and no general organization for sanitary purposes exists. The subject, though one lying at the very foundation of human society, has not attracted public attention to the extent which its importance demands. Neither the legislator nor the lawyer, the magistrate nor the medical man, are instructed in the principles of sanitary science. Although professorships of hygiene exist in the universities of the Continent, no public recognition of this subject as a branch of education has taken place in Great Britain. It is still an object worthy the attention of our legislature, to place sanitary science in such a position that it may confer on the community all the advantages which a knowledge of its principles, and their practical application in daily life, is calculated to confer.

History.

PART I.—GENERAL HYGIENE.

The department of general hygiene embraces a knowledge of the laws which regulate the existence of the human being, and may be divided into three sections: *first*, the consideration of individual differences and peculiarities; *second*, of those external agents and internal functions on which the life of the individual depends; and *third*, the influence of especial morbid agents, as the poisons of infectious and contagious diseases.

1. INDIVIDUAL PECULIARITY.

When mankind is regarded as a whole, we find that the external agents by which man is surrounded act very differently on different groups of the human family; and on a closer investigation of the causes of this difference, we find it can be referred to individual peculiarity. In any application of hygienic rules, it is of the utmost importance to keep these peculiarities and differences in view. The conditions which would ensure the health of the Englishman are not applicable to the Esquimaux or the Hindu; and the varying temperaments, ages, idiosyncrasies, hereditary tendencies, habits, and constitutions of individuals must always be considered.

Race.—The question of whether the races of men have been produced as the result of circumstances, or whether they have been born with their peculiarities stamped upon them, is still perhaps an open one with ethnologists; but for the hygienist the great fact is evident, that there are different races of men, on whom external agents act very differently. This is a question of considerable importance, and has not hitherto obtained the attention to which it is entitled. The races inhabiting the central and northern parts of Europe will not bear the heat of tropical climates with the same impunity as the Asiatic and African races, born and nurtured within the tropics; whilst the inhabitants of these countries require much warmer clothing for their health when in the temperate or colder regions of the earth than the natives of the same districts. How far this is connected with the special susceptibilities of particular tribes is a matter of highly interesting inquiry.

Temperament.—Next to race, we may reckon the influence of what is called temperament. Three well-marked forms of temperament have been recognised by all medical and physiological writers. These are respectively called the nervous, the sanguine, and the lymphatic. To these some add a bilious or melancholic temperament; whilst medical writers recognise diatheses as the scrofulous and rheumatic. At any rate, persons with the distinguishing features of these temperaments exhibit very different tendencies with respect to disease. The circumstances that would quickly produce special forms of disease in one class will not affect another at all. Thus, taking the two latter conditions of the system, the scrofulous and rheumatic, as examples, it is found that a variety of circumstances will produce an outbreak of scrofula or rheumatism in these two general conditions of the system which will not in those conditions of the system where their signs are not present. In the application, then, of hygienic rules, it should always be remembered that what will produce disease in persons of one temperament will not in another. And, again, the same cause may in two persons of different temperaments produce different kinds of disease.

Idiosyncrasy.—Persons of all temperaments may have peculiar relations to external circumstances. Thus, where the tendency is to the production of the same disease under the same circumstances, it is called an idiosyncrasy. Some persons faint at the sight of blood. Others vomit under peculiar odours. Some contract febrile disorders wherever exposed to their special contagions. These cases

require consideration in the application of hygienic rules, and care should be taken not to draw a general inference from the experience of individuals thus constituted.

Age.—This is a most important element in all hygienic considerations. The infant is much more susceptible of injurious agencies than the youth or the adult. Nearly half the population of our large towns dies before it is five years old. This death is, however, unnatural. Much of it might be prevented by a knowledge on the part of the community of the laws which regulate the life of children, as compared with that of adults. Children are improperly fed, nursed, housed, and clothed; and the consequence is, they die. They require different food from adults; they are more susceptible of cold, of the action of poisons, and of a variety of morbid agencies; and until greater attention is paid to their special relations to external agencies, the sad tale of our annual bills of mortality will be told. The injurious effect of this mortality is not limited to the destruction of life. Where one child dies, ten are taken ill from the same causes, and recover. The cost of illness is thus added to that of death. But the evil does not end here. Half of the life thus lost is lost before it is twelve months old. The mother, instead of healthfully nursing her offspring, becomes again pregnant; and in this way a permanent effect is produced on the age of the whole population, as those who struggle through become a younger population than if their elder brothers and sisters had lived. Where the mortality amongst children is greatest, there the average age of the population is least. This reduces the working power of a population, and renders it less able to enter upon those occupations by which food is produced, money realized, and wealth accumulated.

What is true of infancy is also true to a limited extent of childhood and youth. In the period from three to fifteen and twenty years of age, young persons are not able to resist the causes of disease so well as those who are older. The young men in our armies suffer more than the middle-aged from exposure and fatigue.

Whilst the young from twenty to the middle age at forty-five are best able to resist the external causes of disease, it should be remembered that the poison of typhus and typhoid fevers seems to act more vigorously on those of middle age than at any other period of life.

The peculiarities of old age are almost as marked as those of infancy. Diseases of deficient or decayed nutrition come on; and the circumstances of the aged require especial consideration in the adaptation of hygienic rules.

In the special applications of the laws of sanitary science to the prevention of disease, *sex*, *hereditary tendencies*, *acquired habits*, and *morbid dispositions*, must always enter into consideration.

2. AGENTS INFLUENCING LIFE.

(A.) *External Agents.*

The distinction between external agents which influence life, and the organs by which the functions of life are performed, is not easily made. When we examine a vegetable or animal body, with a view to ascertain the nature of its vital processes, it is difficult to say where the chemical and physical forces end, and the vital ones commence. For practical purposes, however, we may speak of certain chemical and physical agencies as external to the human body, as the air, the soil, and water; and of certain others as acting more intimately on the organs of the body, and undergoing changes in them as internal agencies, as the food from which is formed the blood, and of the secretions which are got rid of from the blood by the aid of the various glands of the body. It is obvious that the consideration of these subjects belongs to physiology; and all that the writer on hygiene has to do is to point out the

General
Hygiene.

practical bearing of these subjects on the preservation of health.

Light.—Of the great forces which are continually in action in nature, light is one of the most important. By its chemical action on the vegetable cell, it converts the elements of carbonic acid and ammonia into the various compounds which form the great variety of vegetable products, and more especially those which yield food to man and the animal kingdom. In proportion as light is withdrawn, vegetation dwindles; and as light acts, it is profusely developed. This is seen as we proceed from the poles to the equator on the surface of the earth. The direct action of light on man and animals has not been so well ascertained. There can be no doubt, however, that light exercises a favourable action on human health. We may, indeed, infer that, to a limited extent, the same changes go on in certain of the animal tissues which are so characteristic of the vegetable, and that these may contribute to the healthy development of the organs of the body. No definite conclusions can be arrived at from the experience of those who live in mines and caverns, away from the light of day, as so many other unhealthy circumstances prevail in such places. But of the cheerful influence of light on the mind there can be no doubt; and in all cases as much light should be admitted into buildings as should enable persons to feel its exhilarating influence.

Heat.—This force, which in a large number of instances is co-existent with light, exerts a powerful influence on vegetation, but is still more remarkable in its effects on animals and man. Without heat, light would not act beneficially on plants. Without certain degrees of heat, animals and man cannot exist. The tissues of most plants are destroyed at a temperature below 32° Fahr.; and although the germs of both plants and animals will for a certain time resist a temperature much below this, no growth takes place at such temperature. The vegetable world disappears as it were as the temperature passes from below 60° to the freezing-point. This also is the case with the great mass of the lower animals. But in the higher animals, provision is made for the maintenance of their temperature independent of that of the atmosphere. Thus man, under all circumstances, has a temperature of 98°. It is the due maintenance of this temperature that makes his relation to external heat an object of hygienic rules. If the external temperature is low, then the object must be to prevent such an amount of diminution of the internal heat as would lead to disease. This is done in two ways: first, by increasing the heat-producing food which is daily consumed; and second, by diminishing the loss of heat from the surface by warm clothing or the production of an artificially-warmed atmosphere. It is not often that the external temperature rises to the height of that of the body; but in proportion as it rises above 60° or 65° an impression of warmth is produced on the body, and the necessity for cooling processes is produced. Clothing needs to be reduced in quantity; a moving atmosphere must be substituted for an artificially-warmed one; and as the heat increases, the application of cold to the surface should be had recourse to. This latter object is best effected by means of cold bathing.

Electricity.—The electrical force is frequently disturbed in the atmosphere and on the surface of the earth. Plants and animals partake of this disturbance, and in the case of the manifestation of free electricity, present the usual signs of positive or negative electricity. Although many elaborate efforts have been made to connect morbid tendencies, diseases, and even the outbreak of epidemic diseases, to the action of electricity, at present the evidence is wanting to show that any condition of terrestrial electricity acts as a cause of general disease. In those states of the atmosphere where electricity is developed, other phenomena are generally present, to which may be ascribed the effects

usually attributed to electricity. It is sufficient to say here, that at present we know little or nothing of the agency of electricity in the production of disease. The only subject in connection with electricity which demands attention on the ground of public safety is that of preserving life and property from destruction by the aid of lightning-conductors.

The Atmosphere.—The great aerial ocean which surrounds the world is necessary to the existence of both animals and plants. It is subject to considerable chemical and physical variations, which affect more or less the health of man. It is also the medium for the diffusion of those poisons which, either arising from decomposing animal or vegetable matter, or the diseased body of man, produce those forms of zymotic disease which are most destructive of human life.

* Atmospheric air consists principally of oxygen and nitrogen; with these are mixed aqueous vapour and carbonic acid. Of these constituents, oxygen is the most important, as by its agency many of the functions of animal life are carried on. The oxygen unites with the carbon of the food in the blood of animals, and the result is the formation of carbonic acid and the evolution of heat. Where atmospheres have their composition altered by artificial means, as in overcrowded rooms, the reduction of the quantity of oxygen acts injuriously on the system, by diminishing the oxidating processes which are going on in the system.

Oxygen assumes two forms in the atmosphere, one of which is called ozone. This latter form, of ozone, is not always present, but is sometimes very abundant. Ozone is a more active form of oxygen gas. It readily unites with the combustible elements, and appears to be the great agent for reducing those compounds arising from decomposing vegetable and animal matters in the air which would otherwise be injurious to health. In the same way, it acts beneficially on the human system, by quickening those processes of oxidation which are essential to health.

Ozone is tested for by the property it possesses of decomposing iodide of potassium, uniting with the potassium and setting free the iodine, the presence of which may be detected by the agency of starch. Thus, test-papers saturated with a solution of iodide of potassium and starch are employed to denote the presence of ozone. Ozone is found abundantly in air coming from the ocean, and in mountainous and rural districts free from vegetable and animal decomposition. It is seldom found in the air of London or our large towns. When found, it is in the suburbs, and when the wind is blowing from the sea or the country towards the city. The consideration of the presence and agency of ozone is one demanding further consideration.

The quantity of moisture contained in the atmosphere varies, and exercises an important influence on the functions of life. The quantity of moisture that can be taken up into the atmosphere depends upon the temperature. As a rule, the higher the temperature the larger the quantity of moisture. At the same time, the quantity of moisture in the atmosphere varies with a number of circumstances, as the time of the day and the year, height above the sea-level, prevailing winds, &c. The quantity of moisture in the air affects considerably the transpiration of water from the human body through the skin and lungs. When the atmosphere is moist, the rapidity with which transpiration is performed in the human body is much less than in a dry atmosphere.

The quantity of moisture in the atmosphere differs much in different places; and it becomes frequently a matter of practical importance, in the location of houses, for families to ascertain what is the prevailing amount of moisture in the atmosphere. There is abundant evidence to show that an excess of moisture in the atmosphere above the average is injurious to health. It diminishes the changes which go

General
Hygiene.

General Hygiene.

General Hygiene.

on in the body, and leads to diseases of low vitality. On the other hand, a very dry atmosphere is found to stimulate the action of the skin and lungs, and to bring with it a train of disorders, which are removed or relieved by a change to a humid atmosphere.

The influence of heat and moisture combined requires consideration; a moist atmosphere with a low temperature produces different effects from a moist atmosphere with a high heat. The latter conditions are especially productive of disease amongst the European nations, whilst the former conditions are destructive of the life of those races of people who live in tropical climates.

In England the hottest months of the year are the most unhealthy, and this unhealthiness is increased if the atmosphere is unusually moist. The next most unhealthy portion of the year is the cold months; and the public health suffers more if an unusually moist atmosphere prevails.

The carbonic acid naturally contained in the atmosphere is the result of the oxidating processes that go on on the earth's surface, as the respiration of animals, the decomposition of dead animal and vegetable tissues, the combustion of carbon, and the evolution of gases from springs and volcanoes in the bowels of the earth. In this quantity it is the food of plants, and is perfectly uninjurious to man and the animal kingdom. This gas, however, is constantly liable to increase in the atmosphere, when the products of combustion or respiration are prevented from finding their way into the great bulk of the air. This is the case in houses and places of public assemblage, rendering ventilation necessary. The evidence of the injurious effects of an increased quantity of carbonic acid in the atmosphere is very decisive. Not only have we proof that life may be destroyed by its presence, as in the case of the prisoners in the Black Hole of Calcutta, but also proof that an atmosphere vitiated with it to an extent in which no immediate injurious effects are produced will produce the most destructive effects on the system. A large amount of scrofula and phthisis is dependent simply on the depressing agency of this gas in sleeping and other apartments, where people spend a great portion of their lives. A great social sanitary work has yet to be done, in calling the attention of the public to the danger of living in rooms in which the carbonic acid from respiration and combustion is not freely got rid of.

The pressure of the atmosphere exercises an influence on the life and health of man. The dwellers in valleys, or in districts on a level with the sea, experience a greater amount of atmospheric pressure than those who live on hills and mountains, or at heights above the level of the sea. The pressure of the atmosphere differs also in the same place, and at different seasons of the year and times of the day. It has been observed that epidemic and pestilential diseases are connected with an unusually dense condition of the atmosphere. During the prevalence of cholera in this country in 1832, in 1849, and 1854, the barometer indicated the highest amount of pressure in the atmosphere during the period.

A diminution in the pressure of the atmosphere is attended with congestion of the capillaries, and copious perspiration and apoplectic seizures; and sudden deaths occur as the result of this condition of the capillary circulation.

A rapid movement of the atmosphere is attended with a diminution of its pressure. In this way, winds act mechanically on the health.

Winds also act on the health according to the direction in which they blow. They are hot and cold, moist and dry. In this country they exercise a very marked influence on health and life. The north is dry and cold, and prevails in the middle of winter. Wet northerly winds give rise to diarrhœa and disturbance of the digestive organs. The north-east wind is cold, and sharp, and dry. It is attended

with little moisture in the atmosphere, and accompanies the driest weather. The east wind is dry and cold. The prevalence of these winds produces great fatality amongst phthisical patients. They are accompanied with a peculiar form of dyspepsia, which tends to develop rheumatism and gout. The east wind seldom gives any indications of the presence of ozone.

The south-east wind is a moist and cold wind, and is almost invariably accompanied with rain in this climate. It contains a considerable amount of ozone. Diarrhœa, cholera, cynanche, dysentery, and bronchitis prevail with this wind.

The south wind is generally accompanied with rain and an elevated temperature. It affords the greatest quantity of ozone; and although highly favourable to the longevity of phthisical persons, produces catarrhs and bronchitis.

The south-west, west, and north-west winds are all more or less favourable to health. They come to this country more or less charged with the pure air of the Atlantic; and although accompanied with rains and storms, do not appear to act injuriously on man.

It will be seen that it is an important thing, in fixing on the localities of towns and houses, to regard protection from prevailing winds. In other parts of the world particular winds prevail, as the *simoom* and the *sirocco*, whose effects on life and health are very destructive.

An absence of wind is a state of the atmosphere in which the greatest pressure of the barometer is likely to occur, and in which the influence of corrupting and putrefying agents in the atmosphere is most likely to be felt. During the prevalence and preceding the breaking out of great epidemics, unusual stillness of the atmosphere has prevailed. This was observed in the great plague of London in 1665, and also during the prevalence of the three great cholera epidemics in England.

The atmosphere also requires study from the sanitarian, on account of its being the medium through which poisons are frequently introduced to the human body. Mineral particles of all kinds may be conveyed through the air. Thus, in trades producing dense powders, such substances are conveyed through the air, and introduced into the lungs, thus becoming sources of disease; as in the steel-dust of the knife-grinder, the coal-dust of the miner, &c. The fumes of mercury, phosphorus, sulphur, arsenic, and other substances used in the arts, are thus conveyed to the artisan; so also injurious gases, as sulphuretted hydrogen, carbonic acid, carbonic oxide, &c. It is the law of vegetable and animal compounds that their elements shall return to their simpler compounds by putrescence and decay. The elements thus combining and forming compounds which escape into the atmosphere are carbon, hydrogen, nitrogen, oxygen, sulphur, and phosphorus. Many of the gases thus formed are very injurious to human health. The form, however, in which animal and vegetable matters appear to be most injurious in the atmosphere is that of a tendency to change before the ultimate compounds are formed. In this state vegetable and animal matter is capable of establishing in living bodies states of change in their tissues similar to that in which they themselves are. These bodies thus act as ferments. In some states of the atmosphere these substances, of whatever nature they may be, are much more readily conveyed than in others. As a rule, hot, moist, and still conditions of the atmosphere favour the conveyance of these particles of matter. Hence it is, when all these conditions combine, that zymotic diseases prevail most.

Water.—In the form of vapour, water has most important relations to life, as we have seen in the preceding section; but in the condition of liquid water it sustains other relations of equal importance. Water is necessary to man as a civilized being, but naturally he uses it for cleaning and

General
Hygiene.

washing, and takes it internally with his food. In all these relations it is of great importance that the water he uses should be free from impurities which are likely to engender disease. The first great source of water is the ocean, which being carried into the air in the form of vapour, is again precipitated on the earth in the form of snow, or rain, or dew. The water that falls on the earth is, part of it, carried off in the form of rivers back to the sea, and another portion enters the earth, and comes again to the surface in the form of springs. Thus we have naturally sea-water, river-water, and spring-water. The latter is constantly impregnated with mineral constituents; and when these are very obvious, the waters are called mineral. If the water comes to the surface of the earth with a greater heat than natural, it is called thermal. Sea-water is unfitted for dietetical purposes, on account of the large quantity of salt it contains. This does not, however, prevent its being used for the purpose of bathing, in which the object is the application of cold to the skin. The exercise of swimming is more easily performed in salt than fresh water, and the stimulant effect of the salt appears to exercise a healthy influence on the capillary circulation. In cases where it is desirable, it should be known that pure water can be obtained from the distillation of sea-water.

River and spring waters are those which are mostly employed for washing and dietetical purposes. These waters seldom contain so large a quantity of saline matter as sea-water. The saline matters may, however, be in quantities to render them unfitted for either washing or drinking. Where the saline constituents interfere with the action of soap, they are objectionable for washing purposes. When the saline constituents are similar to those found in the blood, they do not appear to exercise an injurious influence for dietetical purposes, unless they are in great excess.

All waters are liable to contamination, from the presence of decomposing animal and vegetable matters. The existence of large bodies of water containing such matters is frequently prejudicial to health. Lakes, ponds, bogs, and stagnant waters generally, are liable to this contamination, and the effluvia they give off produce diseases of various kinds, more especially intermittent and remittent fevers. Rivers into which the refuse of towns is poured are liable to this contamination, and are thus not only rendered injurious for drinking purposes, but detrimental to those who live on their banks.

Spring or well waters are exposed to these contaminations. In towns, where the soil is permeated with the contents of cesspools or the leakage of drains, the wells may be contaminated, and the water thus rendered entirely unfit for use. Extensive evidence has been brought forward to show that attacks of epidemic cholera have been connected with the contamination of well and river waters used for dietetical purposes. Such waters may be rendered comparatively sweet by boiling, filtering, and other cleansing processes.

Soil.—The geological strata under the soil exercise a considerable influence on the life of plants and animals. These strata frequently determine the composition of the waters which are drunk and used. They vary in chemical composition and physical properties, and have varying relations to heat and moisture. Some soils absorb heat, and keep up the temperature of a district. This is the case more or less with sandy, gravelly soils. Such soils do not retain moisture; and as moisture is necessary to animal and vegetable growth and decomposition, they are more free from malarious and continued fevers, and neuralgiæ, than other soils.

A clay soil retains moisture, and is always damp. On this account it encourages animal and vegetable growth and decomposition. It is drained with difficulty, and is rendered colder by the amount of moisture it contains. Mists

and fogs are more likely to occur on moist clay soils than on dry gravelly ones.

Limestone and sandstone soils heat or cool very rapidly. At the same time, they do not allow water to pass off very rapidly; and by retaining animal and vegetable matter, they are liable to generate poisonous miasmata during the heat of summer.

Chalk, like gravel, allows the free percolation of water, and does not rapidly absorb heat. It absorbs moisture, and the atmosphere is dry over it. Next to a gravelly soil, a chalk soil may be regarded as most healthy. There are many combinations of soil which need to be looked to in providing for the sanitary welfare of those who live upon them.

(B.) *Internal Agents.*

Another set of agencies are those which act more directly on the functions of the body, and which may be generally included under the heads of food, clothing, exercise, and mental and moral culture.

Food.—The human body, like other organisms, is composed of material elements. These are about eighteen in number. Four of these—carbon, hydrogen, nitrogen, and oxygen—are called *organic* elements, on account of their universal presence in living organized bodies. Two—sulphur and phosphorus—are very generally present, and are called *pseudorganic* elements. The rest are inorganic, elements, and consist of the non-metallic elements, chlorine, iodine, and silicon; and the metals, potassium, calcium, sodium, magnesium, iron, and three or four others occasionally present.

These elements exist in compounds which form the tissues of the body. They are generally introduced into the body in the form in which they are found there. These compounds are found in the mineral, vegetable, and animal world; and when consumed by the animal, are called food. Food subserves two principal purposes in the system of animals: 1. It builds up the fabric of the body; 2. It maintains its special animal heat.

For the performance of these two great functions, special compounds are adapted. Thus, water, the compounds of the inorganic elements, and the nitrogenous compounds of plants, are employed for the performance of the first function; and starch, oils, and sugar for the second. There are, however, certain compounds consumed especially by man which act more particularly on the nervous system, as tea, coffee, alcohol, and tobacco, which may be called medicinal or auxiliary food. The food of man, with the exception of water and salt, is mostly derived from the vegetable kingdom. It is the plant which acts upon the organic elements in such a manner as to form fit compounds for the tissues of animals. The following outline of the food of man will afford an idea of its nature and relations to his life:—

I. *Alimentary or necessary*, which may be divided into three principal groups.

1. *Mineral.*

a. *Water.* Taken pure and in various beverages, and also contained largely in solid food.

b. *Salts.* Found largely in the ashes of all vegetable and animal food, and includes also common salt.

2. *Nitrogenous: nutritious or flesh-forming food.*

a. *Albumen.* Found in eggs, blood, and nervous tissue of animals, and in the juices of many plants.

b. *Fibrine*, also known as *gluten*. Found in the muscles of animals, and in the grains of the various cereal plants, as wheat, barley, maize, rice, &c.

c. *Caseine or legumine.* Found in the milk of the Mammalia, and separated as cheese, and also in the seeds of leguminous plants.

3. *Carbonaceous: respiratory or combustible foods.*

a. *Starch.* Found in almost all vegetable foods; and is pure in sago, tapioca, and arrow-root.

General
Hygiene.

General
Hygiene.

- b. Sugar.* Found in the milk and liver of animals, and in the juices and fruits of plants.
- c. Oil.* Found in the milk and fat of all animals, and in the seeds of many plants.
- II. *Medicinal and Auxiliary Foods.*
4. *Accessory Foods.* These, though constantly taken, are not digested, or appropriated, as,—
- a. Gum.* Found extensively in vegetable food.
- b. Cellulose.* The substance from which the walls of vegetable cells are formed.
- c. Gelatine.* The substance from which animal cells are formed, and constituting the basis of all animal soups and jellies.
5. *Alteratives.* To this group are assigned—
- a. Acids,* as vinegar, citric, malic, tartaric, and oxalic acids.
- b. Alkaloids.* The active principles of tea, coffee, and chocolate.
6. *Stimulants.* These act on the nervous system.
- a. Alcohol.* The active agent in beers, wines, and spirits.
- b. Volatile oils.* These give flavour to condiments and spices, as mustard, horse-radish, pepper, nutmegs, cinnamon, cloves, &c.
7. *Narcotics.* To this category is referred tobacco, opium, Indian hemp, and other narcotics indulged in by man.

The influence of food on health is most important. Man, left to himself, instinctively discovers what and how much he ought to take. But he is constantly placed in circumstances in which one group of these foods is abundant, and another is deficient. He is also, especially in childhood, dependent on others; and it is only by a knowledge of the requirements of the system that disease and death can be prevented. Food requires to be adapted to age, to seasons, to employment, to habits and conditions of the system.

The child, the youth, the adult, and the aged, all demand modifications of the diet. In hot countries and hot seasons, the heat-giving food, in proportion to the nutritious, requires to be diminished; whilst in cold climates and seasons, it needs to be increased. The hard-working man requires more nutrition than the man whose pursuits are sedentary. Some foods are particularly adapted to states of the system; thus oils and fats are beneficial in those conditions where there is a tendency to wasting from an undue absorption of fatty matter, or an insufficient supply of it. Water in large quantities frequently acts as a depurant, and its beneficial effects in certain states of the system have led to the folly of administering it in large quantities in all cases of disease.

The saline matters of the food may be deficient in the blood, and can be supplied by the administration of fresh vegetables, as seen in the case of scurvy. The alkaloids of tea and coffee act manifestly as retarders of the wasting processes of the body. Alcohol, in all its forms, produces most pernicious effects upon the body when taken in excess,—in fact, is the greatest dietetical curse of man; but in small quantities it excites the languid heart to action, and suspends those changes which might go on to the destruction of life and health.

Closely connected with the subject of food is that of cookery. Not only should food be of a proper kind, and given in due quantities, but it should be cooked in such a way as to insure its digestion and its ultimate action on the system. How little this is attended to, the least inquiry will make manifest. Those who professionally prepare or vend food know little of its properties and qualities; and the wealthy only secure a due supply of sustenance by an expenditure which is in the highest degree wasteful to themselves and injurious to the community in which they live. Our army, navy, schools, workhouses, prisons, and hospitals are supplied with food on no principle whatever; and disease and death are frequently the result.

The question of the relative digestibility of food, the action of the bile and the pancreatic fluid, the secretion from the mucous membranes of the intestines, and the evacuation of the undigested mass after the chyle is absorbed,—all demand study, in order to secure the sanitary action of food.

General
Hygiene.

Another important practical question in relation to public health is the adulteration and sale of impure food. This question has recently received the attention of the legislature, and more stringent measures are likely to be taken for the suppression of these practices. That the adulteration of food is carried to an injurious extent has been sufficiently proved; whilst through ignorance persons frequently sell food in a state likely to produce disease.

Clothing.—In a civilized state, man clothes himself, and by this means saves a large amount of wear and tear in the system. In cold and temperate climates, exposure naked to cold would destroy a vast amount of young life at once, and lead to the early destruction of mature life. At the same time, the surface of the body requires a certain amount of cooling in the hotter seasons of the year; so that the subject of clothing is one of considerable importance in a sanitary point of view.

Children are more influenced by cold than adults, and should be warmly clothed whenever the temperature is below 60° Fahrenheit. To a neglect of this rule may be traced the destruction of a large amount of infant life in this country. Neither the chest nor the legs of young children are sufficiently clothed in winter. Women also dress too lightly about the chest in the winter of these climates. Hence their liability to bronchitic attacks. In dressing, it should be remembered that all clothing made of animal substances is warmer than that made of vegetable fabrics. The head is naturally clothed, and needs perhaps less attention than it receives. If warm clothing is needed in cold climates and weather, it becomes oppressive in hot climates and weather. As the temperature rises above 65°, woollen clothing of all kinds may be exchanged for cotton and linen. The custom of clothing European troops in their woollen dresses, and hot and heavy head-dresses, in hot and tropical climates, is opposed to reason, and exceedingly destructive of health. The colour of clothes is also of importance. Economy dictates dark colours as showing the dirt less; but dark colours absorb heat in the summer when it is not wanted, and radiate heat in the winter when it needs to be husbanded. White and light-coloured clothing is that which is best adapted for clothing at all seasons and in all climates of the world.

Exercise.—The calling into play the action of the voluntary is called exercise. The contraction of the muscular tissue is attended with the destruction of a certain amount of the particles of which it is composed. This renders a restorative necessary, the blood is drawn upon for new matters, the capillary circulation is increased in the muscles moving, a corresponding increase of action takes place in the capillaries of the lungs, the inspiration becomes deeper and more frequent, the heart is stimulated to action, and the circulation of the blood is more rapid in every part of the body; the secreting surfaces are more active, the skin perspires, the exhalation of carbonic acid and moisture from the lungs is greater, and the whole system sustains an increase of activity. Of course such effects are more or less extensive according to the nature of the exercise. It may be of so violent a kind as to embarrass the heart and lungs, and where these organs are weak or damaged death may ensue. Health is, however, connected with a due exercise of all the muscles. In many trades, particular sets of muscles are called into action to the exclusion of others. The want of exercise in the latter may be productive of disease. The excessive exertion of the voluntary muscles in laborious occupations tends to waste the system and destroy life; whilst a life of freedom from muscular exertion permits the degradation of the tissues of the body, and an accumulation of fatty matter, which invites the attacks of disease or ends in sudden death.

To diminish the destruction of life by over-exertion, and to supply such exercises as will maintain health, are the

General Hygiene.

objects of the sanitarian. When the occupation does not involve a sufficient amount of exercise, the movements of the body involved in walking, running, jumping, riding, driving, rowing, swimming, fencing, declaiming, and reading aloud, may be recommended. A regular system of gymnastic exercises may be adopted with advantage in schools. For the sedentary classes of our artisans and commercial population public play-grounds are strongly to be recommended, in which games and exercises might be engaged in and adapted to the special wants of those using them.

Connected with exercise is the subject of *rest*. The voluntary muscular system, and the nervous system through which it acts, need rest. Continuous voluntary exertion exhausts more than the same amount of labour with rest. Periods of hard work and exercise should be intermitted with periods of cessation from exertion. This applies also to mental labour. Nature secures a certain amount of rest during meals; but the grand rest of the system is *sleep*. During the period of infantile and youthful excitability, sleep needs to be of longer duration than with the adult. For man in his vigour a certain amount of sleep is essential to his well-being. Thousands die for want of sleep, produced either by anxiety or a determination to shorten the hours of repose. As a rule, it may be said that the healthy hard-working man requires, in every twenty-four hours, *eight hours in bed*. Many can do with less, but none will ever repent securing this amount of rest. Some even require nine. Persons may go on for years despising this rule, but in the end the nervous system exacts from those who over-work it a fearful penalty.

Mental and Moral Culture.—The special functions of the brain and nervous system require attention from those who would preserve the health of the human body. What is true of any other general function is true here; a partial or excessive culture of the functions of the nervous system is likely to engender disease. Unless there is a harmonious development of the perceptive and reflective powers, and a proper development of the will, the human being is subject to the control of passions and feelings which lead to the most destructive effects upon the rest of the system. The neglect of the rules of sanitary science, seen in the destruction of thousands and tens of thousands of lives annually, points to the necessity of intellectual culture for the safety of the race; whilst the records of insanity and crime show how painfully society pays for the neglect of a proper culture of the moral and emotional nature of man.

3. SPECIAL MORBID AGENCIES.

The human body is liable to certain specific forms of disease, arising from the introduction into the blood from without of certain substances which act as poisons. As a rule, mineral substances, which are not naturally contained in the human body, act as poisons. These substances are often used for the purposes of suicide and murder. They are not, however, placed in the category of substances producing specific diseases. Such substances are produced either in the living tissues of plants and animals, or result from their decomposition. Such poisons may be divided into those generated in the bodies of living animals and plants, and those produced by vegetable and animal decomposition. Those generated in the living animal body may be divided into those produced in the human body, and those produced in the lower animals. Amongst the latter poisons may be enumerated those produced in the dog in hydrophobia, and in the horse in glanders.

Amongst the poisons generated in the human body may be mentioned those of syphilis, small-pox, scarlet fever, measles, diphtheria, typhus fever, typhoid fever, plague, hooping-cough, and cholera. In these instances the system

has the power of generating a poison which, when brought in contact with another human body, is capable of inducing in it the same form of disease as that in which itself was produced.

We may here pass over the consideration of poisons produced in living plants, as they are only accidentally or designedly introduced into the system.

Dead animal and vegetable matters are capable of entering into a state of decomposition, in which they may be taken into the body as food, or in which their particles may be diffused through the air, and thus introduced by the agency of the lungs into the blood. Such poisons, under the names of malaria and miasmata, are known to be capable of inducing disease in the human body.

All these poisons are more or less under the control of human agency. Where the poisons generated in the human body prevail, there strict quarantine, or measures for diluting the poison, do not fail to prevent the spread of disease. In the case of the putrid poisons, the removal of the cause, or the removal of persons from their influence, is known to avert disease.

In considering the action of these poisons, and the best means of rendering them inert, three things should be borne in mind: 1. The body attacked, or likely to be attacked; 2. The medium through which the poison is transmitted; 3. The poison itself.

With regard to the human being, it should always be recollected, with regard to all these poisons, that some persons are highly susceptible of their action, or predisposed to receive them, whilst others present none of this susceptibility or predisposition. A person vaccinated, or who has had the small-pox, will not contract small-pox on exposure to the contagion. It is no proof of the non-contagiousness of a disease that all persons exposed to its action do not acquire the disease. The subject of the causes that render some persons liable to take certain diseases, and others not, is worthy all attention, as tending to throw light on the spread and propagation of contagious diseases. Some of the diseases referred to are only propagated by contact with the diseased body, as syphilis and hydrophobia; but the majority of them are propagated by the poisonous matters passing through the atmosphere. This is a point of great practical importance. Still and moist states of the atmosphere are those which most favour the passage of poisonous gases. Currents of air will, however, convey the poison to a distance. The more concentrated the poison is in the atmosphere, the more likely it is to communicate disease. Infection may be avoided by the current being carried away from an exposed body; and the poison may be so diluted as not to produce an impression on even a predisposed body.

The nature of the poison differs. In some instances it is so intense that a small quantity will reproduce the disease in a predisposed body, whilst in others free exposure is required. As instances of intense poison, those of scarlet fever and small-pox may be given; whilst the poison of cholera and typhoid fever are of a much less intense kind.

Poisons seem to differ at different times and seasons. They are much more vigorous at the breaking out of an epidemic than at its close. They sometimes are so feeble that individual cases occur, and no spread of the disease results; at other times it would appear that diseases become epidemic from assuming a poisonous activity that ordinarily do not present this phenomenon. Thus, under some circumstances erysipelas and dysentery become highly contagious, whilst in their ordinary forms they exhibit no tendency to spread. It would even appear that diseased germs are susceptible of transformation; that at one period they shall produce one form of disease, and at another time another. These points are most important to bear in mind in dealing

General Hygiene.

Special Hygiene. with the outbreak of various forms of contagious and epidemic diseases.

PART II.—SPECIAL OR PARTICULAR HYGIENE.

It is not enough to inquire into the general laws of vitality, or to ascertain what are the necessary conditions of health and comfort, but an application of this knowledge must be made to the various sanitary wants of a community, and to the hygienic demands of industry. This is the aim of practical and especial hygiene. It has for its objects a minute acquaintance with the habits and occupations of the people, a particular knowledge of all the circumstances affecting the health of a community, and the application of rules and remedies to the many unwholesome influences that spring out of a social existence. It takes cognisance of the geographical situation of towns, the arrangement of streets, the construction of houses, the cleansing of the public way, the supply of pure water, the burial of the dead, and the removal of all corrupting refuse. It also concerns itself with the adulterations of food, the unwholesome influences of trade, and the injuries to which labour is exposed. All these, therefore, will form the subjects of consideration.

CHAP. I.—THE SITUATION AND CONSTRUCTION OF HOUSES.

Although these are matters of great importance, in a sanitary point of view, yet they receive but little attention from builders and architects; in fact, the condition of our towns, and the way in which cities are enlarged and remodelled, show that hardly a thought is bestowed on the advantages of situation, or on the general arrangement of streets; and in respect of the houses themselves, they are characterised by a showy exterior rather than by any design for internal comfort. In most cases the rooms are low and badly constructed for warmth and ventilation; the walls are composed of materials that offer but slight resistance to damp and cold; the windows are small, and so badly situated as to give no facilities for the admission of light and air; the passages are dark and narrow; and the whole fabric is cheerless and uncomfortable. Besides which, the houses are crowded together, and tower up to an unnecessary height. They thus darken the narrow and crooked thoroughfares; and are arranged without regard to the direction of the light or the course of the wind: in fact, it would almost seem as if every effort had been made to bar out the wholesome influences of nature. All this tells upon the vigour of the population; for it not only shortens life and engenders diseases of a low type, but it also saps the strength of the community, and more than decimates the infant population.

Again, it too often happens that the poor are lodged in the dilapidated houses of the rich, where it is impossible to secure for them the appliances which are necessary for health and comfort. A large share of the immorality and disease of our large cities is due to this, and to the indiscriminate association of the sexes which such a condition of things is sure to encourage.

It is not possible, however, to discuss in this place the several details of such an inquiry; and therefore we must be content with an exposition of the general principles of the subject. That which should be aimed at in the construction of our dwellings is—

1. The selection of a locality which is not in itself unwholesome, as from the proximity of marshy ground or stagnant water. It should not be so elevated as to be exposed to undue cold, nor so low as to be deprived of the salutary influences of a dry and bracing atmosphere.

2. The ground should be firm, dry, and porous; and it should permit of easy and natural drainage. A damp clay

soil is especially objectionable; and so also is a wet and peaty humus; for both of them provoke diseases of a malarious type.

3. The aspect of the building should allow a free access of air and light; and the principal windows should be so placed as to receive the direct rays of the sun, and to transmit a current of air that may sweep through the house when it is needed.

4. The walls should be constructed of materials that do not retain damp or organic impurity.

5. The houses should stand apart whenever it is possible. And

6. The streets should be arranged so as to receive the sun's light, and be open to a free current of air.

CHAP. II.—ON THE WARMING OF BUILDINGS, &c.

Warming of Buildings.—As the ventilation of buildings will be found treated in another place in this work (see VENTILATION), nothing requires to be said of it here. This chapter shall therefore be devoted to the warming of buildings, &c. The circumstances which render this necessary are the entrance of cold air by the doors and windows, the conducting power of the walls, and the radiation of heat from the glass of the windows. The walls are generally from two to four degrees below the mean temperature of the room, and they absorb and conduct a large amount of heat. The cooling effect of glass is also very great; for a square foot of glass will generally cool about 1·3 cubic feet of air per minute from the mean temperature of the room to that of the external air, and the cooling effect of metal or corrugated iron is nearly the same. Taking these facts into consideration, the rule which is generally adopted for maintaining the warmth of a room or public building at a genial temperature of from 60° to 65° is, that the supply in cubic feet of warm air at this temperature should be equal to four times the number of people the room is intended to contain, added to eleven times the number of external doors and windows, added to 1·3 times the area of the exposed glass. If the windows are double, the radiations may be neglected; and if they are tight, there is no necessity to multiply them by eleven; for in these cases the provision or supply is simply for ventilation.

The means which have been adopted for effecting this are the open fire, the close stove, the system of flues for hot air, and the closed pipes for a current of steam or hot water.

Although the *open fire* is not an economical way of warming a room, yet it is generally adopted in this country because of its cheerful appearance and because of the abundance of fuel. In early times the fire was placed in the centre of the room, and there was a hole in the roof above to let out the smoke. Then came the first improvement of setting the fire against the wall, and of ornamenting the outlet with a turret and with louvre openings. After a time there was a further improvement of stone-screens over the fire to shut out the smoke; and in the fourteenth century the channel for the smoke was entirely enclosed; and thus were chimneys first designed. But for more than 200 years they were not generally used except in the houses of the wealthy; and even there the large fireplace, with its cramped seats within the chimney breast, and the high-back settle which acted as a screen to keep off the wind, were but imperfect methods of warming. As soon, however, as coal began to be used as the common fuel, attention was directed to the discharge of the offensive smoke from it, and the best means of economizing the heat. Then it was that the great improvements began to be effected in the construction of fire-places. The earliest of these were by Keslar of Frankfort (1614), Savot (1625), Glauber (1669), Delesme (1686), and the Cardinal de Polignac (1715). The last-named writer, under

Special Hygiene.

Special
Hygiene.

the name of M. Gauger, published the first philosophical treatise on the subject, and it contains the germs of almost every modern improvement. He showed the advantage of having the sides and back of the stove placed at such an angle as to reflect the radiant heat into the room; and he also recommended that the chimney should be contracted immediately over the fire, so as to prevent the too rapid ascent of the heated air. These suggestions were still further improved by Franklin (1774), and by Count Rumford (1796); and since then the chief improvements have been in the methods of supplying the fuel, as from below or at the sides of the fire, and in directing the current of air upon it or through it. These improvements are countless, but the rules to be deduced from them are,—

1. That the fire-place should be in the situation which commands all parts of the room, and is as nearly as possible at equal distances from the confines of it; so that the radiant heat may be equally diffused.
2. It should be raised to about 10 inches from the floor, so that the feet may be warmed and the face not scorched.
3. The grate should have a large frontage, of a semicircular form.
4. The back and sides should be composed of bad conductors (as of fire-brick), so that the heat may be stored as well as steadily radiated.
5. The bars should be as small as possible, in order that the fire may burn clear, and the heat be freely radiated.
6. The aperture for carrying off the smoke should be narrowed to the minimum size, in order that the heat may be retained, and the fire made to burn steadily.
7. The chimney should be as perpendicular as possible beyond the gathering.
8. The coverings or sides of the grate should be placed obliquely at an angle of 45° to the front, and they should be well polished.
9. The distribution of warm air into the apartment should be promoted by air chambers around the grate and flues, and the supply of air to the grate should be under the floor, as in the contrivances of Mr Boyd.

With all these arrangements, however, there is a great loss of heat, and there are many strong objections to the open fire-place. Thus:—

The waste of fuel and of heat is enormous, for at least seven-eighths of the heat of the fire passes up the chimney, and is lost (Dr Arnott). Count Rumford estimated it at fourteen-fifteenths. Then, again, there is a very unequal effect in the distribution of the heat. Those who are near to the fire are too warm, and those who are away from it are not warmed at all; the law of radiation being, that the effects are inversely as the squares of the distances.

Another objection is, that the fire causes an uncomfortable draught along the floor of the room, and does not ventilate those parts which are above the level of the chimney breast.

And, lastly, there is a great deal of dirt and smoke, and there is danger of fire.

With all these disadvantages, however, our national habits have confirmed us in the choice of an open fire.

The close stove is used where fuel is scarce, or where the open fire is not admissible. It is a very ancient mode of warming, and is still commonly practised on the Continent.

The several varieties of stoves are,—Those which warm the air of the room by simple contact with the heated surface of the stove; those which supply a continuous current of hot air into the room; and those which deliver the warm products of combustion into the apartment. Of all these, the two former alone deserve consideration; for the latter are dangerous and unwholesome. Of the first, the simplest is the Dutch stove, which consists of an iron

chamber in which the fuel is burnt. The stove is raised a little above the floor, and the products of combustion are carried off by a flue. In France, Germany, Sweden, and Russia, the stove is made of brick-tiles or porcelain. The fire-place is small, but there is a circuitous disposition of the flue, and this makes the stove a large and inelegant structure. The materials, however, retain the heat for a long time, and therefore the stove requires but little attention, and is very economical.

When the warm products of combustion are conveyed into the room, as is the case with the common brazier, with Harper and Joyce's stoves, and with the various gas furnaces which have lately been contrived, there is great danger to health; for not only is the atmosphere made dry and hot, but it contains the poisonous products of combustion, which have on several occasions been fatal: in fact, the objections to most of the close stoves, whether they throw the products into the room or not, are, that they burn or overheat the atmosphere, and make it dry and uncomfortable. Besides which, they do not generally permit of a very complete renovation of the air, but merely cause a continual circulation of it within the room. To guard against these objections, the stove should be constructed so as to deliver the products of combustion entirely out of the room, and it should not be composed of materials that will soon become hot. The fire should never be so intense as to scorch the air, for that will produce a sensation of dryness and oppression. The supply of fresh air should be continuous, and the vitiated atmosphere should be removed by special contrivances at a higher level. A proper degree of humidity should be given to the air by means of evaporating vessels or wet surfaces, and there should be perfect and easy control over all the arrangements. When this is the case, the close stove has advantages over the open fire, in the circumstance of its being more economical and more uniform in its action.

A system of flues for hot air has been a common mode of warming among the wealthy from very early times. The Roman *hypocaustum* was but a set of flues running beneath the flooring, and conveying the smoke and hot air from a furnace outside the room. Exactly the same kind of arrangement is the ancient *kang* of the Chinese; and the modern invention of Mr Beaumont is also an example of it. Judging from the effects of these stoves, and the economy with which they may be maintained, they appear to have many advantages; but they require especial attention, and are not always under control; besides which, there is danger of the soot firing in the flues, and so becoming unmanageable; and, above all, they cannot be made the means of constant ventilation.

A closed pipe conveying steam or hot water is a modern invention. The effects are much more genial than those produced by a higher temperature, but the apparatus is expensive, and in the case of steam it requires constant attention; nevertheless, it is used with advantage in large public buildings, as in hospitals, prisons, barracks, &c.

The hot-water apparatus, in its simplest form (Kewley's), is on the principle of a syphon. It consists of a long pipe coiled about in the rooms to be heated, and having two legs of unequal length passing down into an open kitchen boiler; the short leg dips just under the surface of the water, and the long leg passes to the bottom of the boiler. As the water becomes hot, it rises in the short leg and circulates to the coils in the upper level, where it parts with its heat, and then descends in the long leg to the boiler. The apparatus is not adapted for any great height (not above 14 feet), and the water cannot be heated above 180° because of the tendency to a vacuum.

The second form of the apparatus is that contrived by the Marquis de Chabannes. It consists of a closed boiler, with the two legs of the syphon communica-

Special
Hygiene.

Special
Hygiene.

ting with a cistern at a high level. These are filled with water, and when the fire heats the contents of the boiler, the hot water rises at once to the cistern, whence it is distributed by coils to the rooms to be heated, and then it descends to the boiler. By this arrangement the temperature may be raised to 212°, and the water conveyed to any distance.

The third and only other form of the apparatus is the invention of Mr Perkins. It is a closed circuit of comparatively small pipes filled with water. About one-eleventh part of the whole tube is coiled in a suitable manner, and placed in a furnace at the lowest level. From this a straight tube passes to the top of the building, and thence the pipe descends to the several rooms to be warmed, where it is coiled so as to expose a large radiating surface; from these it returns to the coil in the furnace. An expansion or safety tube is placed at the uppermost part of the apparatus, to guard against danger from the too great expansion of the heated water. The temperature of the water in the furnace coil may be raised to 400°, but the circulation and cooling in the return coils is so great that the water soon falls to 200°; in fact, when the return coils have a radiating surface about ten times as great as that of the furnace coil, it is hardly possible to maintain a temperature above 200°.

The quantity of heat given out by these contrivances is somewhat variable; but a cubic foot of steam at 212°

ought to give out enough heat to raise 130 cubic feet of air 10°, and a cubic foot of water will raise the temperature of about 3000 cubic feet of air one degree for every degree of heat it loses. Tredgold, Hood, and others, have given the rules for ascertaining the length and surface-measurement of pipe which is necessary for heating given quantities of air, and have also determined the amounts of the different kinds of fuel which are required for the purpose; but this is not the place for the consideration of such facts.

Artificial Illumination.—In a sanitary point of view, this is a subject of great importance, for all the combustible bodies employed for the production of artificial light appropriate the oxygen of the air and form carbonic acid. They therefore vitiate the atmosphere to a large extent, and some of them also produce sulphurous acid, which by subsequent oxidation becomes sulphuric acid, and this exerts a corrosive action on metals and textile fabrics.

The principal illuminating agents are oil, tallow, stearic acid, spermaceti, wax, camphine, benzole, and coal-gas. The extent to which these several agents appropriate the atmospheric oxygen, evolve heat, and vitiate the air for the same amount of light, may be seen in the following table. The light evolved in each case is that of 26 sperm candles, each burning at the rate of 120 grains per hour; and the vitiating effect is calculated at the rate of 3 parts of carbonic acid in 1000 of air.

Special
Hygiene.

Illuminating Agent.	Consumption of each Burner or Candle per hour.	Number of Burners or Candles required.	Heating Power in Cubic Feet of Air raised 10 Degrees.	Quantity of Oxygen consumed in cubic feet.	Quantity of Carbonic Acid produced in cubic feet.	Quantity of Air vitiated and consumed per hour in cubic feet.
Cannel gas	3.5 cub. ft.	2	22,500	7.92	3.91	1307
Benzole	285 grs.	5	19,340	7.35	5.89	1970
Camphine	376 "	4	20,530	8.37	6.02	2016
Common coal-gas	5 cub. ft.	2	32,400	12.87	6.40	2146
Sperm-oil in Argand	686 grs.	3	31,200	10.10	7.10	2371
Colza-oil in Do.	756 "	3	27,150	11.08	7.80	2608
Sperm-candles, 6 to the lb.....	136 "	23	37,800	16.29	11.40	3811
Oil in a common lamp	133 "	27	43,600	17.62	12.39	4142
Wax candles, 6 to the lb.....	168 "	21	40,800	17.91	12.60	4212
Stearic acid, do.	140 "	26	44,100	18.00	12.92	4318
Yellow moulds, do.	143 "	30	44,200	21.05	15.27	5108

From this it will be seen that, for the same amount of light obtained, the heating and vitiating effects of tallow candles are nearly four times as great as those of cannel gas; but then gas is not consumed economically; for the light is placed at a great altitude, and more gas is therefore burnt than is necessary to produce the required amount of illumination. This it is which has created so great a prejudice against gas, and which has caused it to be consumed in a wasteful manner, so as to heat and vitiate the atmosphere to a serious extent. In every case, however, it is manifest that the products of combustion should be discharged from the room, and that there should be a large supply of atmospheric air to provide for the heating effects of the illuminating agent.

The difference in the illuminating power and the vitiating effects of the same body (sperm-oil for example) is dependent on the way in which it is burnt, and it shows how necessary it is that combustion should always be maintained at the fullest point; indeed, the differences in the vitiating effects of the several fatty bodies are caused, not so much by differences of chemical composition, as by the vigour with which the combustion is maintained. It is therefore advisable that the supply of air to the combustible should be such as to maintain it in the most active state of combustion. This is the object of glass chimneys, of the various contrivances named oxydaters, of the thin and plaited wicks of candles, and of the expanded or sheet-like flames of gas. When the combustion is very feeble,

a number of acrid compounds are produced which are very offensive. The fatty bodies, for example, when burnt with a smouldering wick, or a large snuff, produce acrolein, empyreumatic vapour, and irritating fatty acids; coal-gas, when slowly burning, produces aldehyde, formic acid, &c.; and the half-burnt vapours of turpentine and benzole are equally offensive.

Coal-gas is a very complex mixture; it consists of about 40 per cent. of hydrogen, nearly the same quantity of light carbonated hydrogen, from 5 to 10 per cent. of condensable hydro-carbons, with variable proportions of carbonic oxide, carbonic acid, bisulphuret of carbon, nitrogen, ammonia, and sometimes traces of sulphuretted hydrogen. Many of these gases are poisonous; and therefore it is that coal-gas exerts an injurious action on the animal economy. If it is inhaled in a concentrated state, it quickly produces insensibility, which is followed by coma and death. An atmosphere containing from 7 to 12 per cent. of coal-gas will kill small animals in a very short time; and this proportion acting on man, causes headache and nausea, with great depression of the vital powers.

A mixture of gas and atmospheric air is explosive; and it would seem from experiment that the greatest danger is when there is 1 part of common gas to from 6 to 7 of air, or 1 part of cannel gas to about 10 of air. The force of the explosion under these circumstances is equal to that of about 30 atmospheres. These circumstances call for especial care in the use of gas, and in many continental cities there are

Special
Hygiene.

authorized rules for the management of it. In Hamburg, for example, the gas-fitters are obliged to perform their work in an appointed manner. They must use tubes of wrought iron, or of brass, or copper; and in cases where these are not easily adapted, tubes of drawn tin must be employed. The joining must be made in a durable and solid way, either by means of sockets ground in and cemented with iron cement, or by screwing up, or by soldering. Any other kind of connection is forbidden. The tubes must be placed in localities where they are accessible, so that in case of leakage the mischief may be easily repaired. The cock must be constructed so as to make only a fourth part of a turn, and they must be fixed so as not to be removable from the tubes. All the pipes of one inch or more in diameter must be provided with stop-cocks, so as to shut off the gas in case of fire; and no one is permitted to use or alter the fittings without having them tested by means of a pressure of 1 inch of mercury or 14 inches of water. All the gas-fitters are sworn to adhere to these instructions; and in case of any damage from negligence, compensation can be claimed from the gas-fitter in a civil court of justice.

The sulphur which is contained in coal-gas is objectionable, because of its forming sulphurous acid, which soon absorbs oxygen from the air, and becomes sulphuric acid. This exerts a corrosive action on all kinds of textile fabrics, and has caused much mischief in libraries and warehouses; in fact, the amount of sulphur in 100 cubic feet of coal-gas is sufficient to produce from 30 to 50 grains of sulphuric acid. It is proper, therefore, to guard against the destructive effects of this acid by burning the gas in a closed chamber, so that the products of combustion may be carried entirely away; and there are many contrivances for accomplishing this.

A dangerous compound, called water-gas, has on several occasions been proposed for illuminating purposes. It consists of hydrogen, carbonic oxide, and carbonic acid, in various proportions; and to give it an illuminating power, it is naphthalized with benzole, or the volatile hydro-carbons of coal-tar. The gas is obtained by passing steam over ignited carbon, and the carbonic oxide which is so produced is a deadly poison; so much so, that the governments of France and Germany have interdicted its use.

There are two illuminating agents—namely, the oxy-hydrogen, or Drummond light, and the electric light—which do not vitiate the atmosphere; but they are so costly, and are so difficult to manage, that they are not used for domestic purposes.

Water Supply.—An abundant supply of wholesome water is one of the first essentials of health and comfort.

Pure water cannot be obtained from natural sources; even that which distils from the earth, and falls as rain or snow, is charged with volatile matters which are often highly offensive; and the water which flows from the soil contains saline impurities which have been derived from the strata through which it has percolated. These are the earthy carbonates of lime and magnesia, the chlorides of the alkalies, the earthy and alkaline sulphates, with silica, alumina, organic matter, and frequently the nitrates of potash, soda, and lime. The proportions of these constituents vary with the nature of the soil through which the water has filtered; for example, the amount of carbonate of lime and magnesia may range from less than a grain per gallon to more than 20 grains, the former being the proportion in the water from the shallow sands of the tertiary strata, and the latter in the water from the chalk formation. So also with respect to sulphate of lime: in most of the streams of England, and in the water-bearing strata, the proportion does not exceed 5 grains per gallon; but in the hard selenitic waters of the London clay the proportion is from 20 to 30 grains. The existence of nitrates in water

is generally a sign of putrid contamination. All the shallow wells of our large towns and cities are charged to a considerable extent with this salt, the acid of which is produced by the oxidation of organic matters which have drained from the sewers, and cesspools, and graveyards, and from the soakage of surface filth. While the soil is capable of producing this salutary kind of oxidation, the danger is kept in abeyance; but no one can say when this power may cease or be overtaxed, and then the danger is imminent. Water which has flowed from well-manured land is charged in the same way with alkaline nitrates; and that which has drained from a soil covered with peat, or has stood upon decaying vegetable matter, as the water of ponds and marshes, is commonly impregnated with organic compounds to a serious extent. As a rule, it is found that the water from the surface of the soil is not wholesome unless it has been collected in a sandy district which is not in cultivation. Those from the upper sands of the tertiary strata are generally excessively hard, from the presence of sulphate of lime. Those from the lowermost sands of that strata, as the deep well waters of London, are free from this impurity, and are frequently alkaline, from the presence of carbonate of soda. The water from the upper and middle layers of chalk is characterised by the existence of much carbonate of lime; and that from the upper greensands which lie upon the gault is not much charged with calcareous salts, but contains a rather large proportion of alkaline nitrates, with traces of phosphates. In the summer-time such water is soon covered with *Conferva* and *Diatomaceae*, which feed upon the nitro-phosphates, and form a thick scum upon its surface. The water from the sands below the gault is commonly the purest of all; but even this is occasionally impregnated with sulphate of iron that has been produced by the oxidation of iron pyrites. River waters have generally lost a great portion of their calcareous matter, from the escape of carbonic acid. A water which contains about 20 grains of saline matter in the gallon, of which about 12 or 13 are carbonate of lime, from 2 to 3 sulphate of lime, from 2 to 3 common salt, and with not more than 2 grains of organic matter, is generally well suited for domestic purposes. If it contain a larger proportion of carbonate of lime, it is unpleasantly hard, and causes a waste of soap, besides depositing a crust upon the interior of the vessels in which it is boiled. Every grain of carbonate of lime that remains in solution in the water destroys about 10 grains of soap; and therefore a calcareous water is wasteful for domestic purposes. When the calcareous salt is in the form of sulphate of lime, it is still more objectionable, because this salt is not precipitated from the water by boiling or by the addition of an alkali. The hardness is therefore said to be permanent, in contradistinction of the fugitive hardness of a carbonated salt. Such water not only destroys soap to the extent of about $7\frac{1}{2}$ times the weight of the sulphate contained in it, but it is unfit for vegetable infusions, and for extracting albuminous matters. There are occasions, however, when this is desirable, as in the brewing of pale ales, when the object is to extract the saccharine matter of the malt, without much of the colour or the albumen. The water of Burton-upon-Trent, for example, which is so celebrated for the production of pale ale, contains about 28 grains of sulphate of lime in the gallon.

In consequence of the objections which have been raised to the hardness of calcareous waters, several processes have been suggested for the purpose of softening them. None of these processes, however, are applicable to the selenitic waters, which derive their hardness from sulphate of lime. In other cases they owe their action to the removal of the carbonic acid which holds the carbonate of lime in solution. Exposure to the air in a running stream, or boiling the water for a few minutes, or the addition of caustic lime,

Special
Hygiene.

Special Hygiene.

Special Hygiene.

which is Dr Clark's process, will have this effect, and then the carbonate of lime is thrown down as a white insoluble powder. The latter process, which was suggested by Dr Clark in 1841, is generally thought to be the most effectual, but it has not yet been practised with success; for there is much difficulty in removing the precipitate from the water, and the suspended lime is apt to form concretions in the service-pipes. The quantity of lime which is necessary for the purpose will depend upon the hardness of the water; but it rarely exceeds 10 grains per gallon, and with this proportion the hardness of a chalk water may be reduced from 19 or 20 degrees to 6 or 7.

A water which contains but little carbonate or sulphate of lime, although soft and agreeable for domestic purposes, is apt to be dangerous, from its action on the lead of the cisterns or service-pipes. Experiments have shown that pure distilled water rapidly corrodes lead, and so does rain and snow water, and the water which has fallen upon sandy districts, and has not received much mineral impregnation. The corrosion of the lead, which is due to the combined influence of water and atmospheric oxygen, leads to the formation of the white hydrated oxide of the metal; and this, by combining with carbonic acid, becomes a hydrated carbonate. Part of this is thrown down as a white precipitate; part of it is also suspended in the water, and gives it a milky appearance; and a still smaller part, amounting to about 7 grains in the gallon in the case of the hydrated oxide, and $1\frac{1}{2}$ grain in the gallon with the hydrated carbonate, are dissolved. These proportions of lead are quite sufficient to give to the water a poisonous action: indeed, as little as 1 grain of oxide of lead in 7 gallons of water has been known to act injuriously (Herepath); and 1 grain in the gallon has often produced lead-poisoning. The proportion which is thought to be harmless is 1 grain of lead in 20 gallons of water (Smith); and when it rises to about 1 grain in 10 gallons, it is approaching a dangerous quantity.

The facts which have been made out in respect of the action of water on lead are these:—That water which contains less than 2 grains of saline matter in the gallon cannot be safely stored in lead vessels or distributed through lead pipes. That a proportion of 6 grains of saline matter (chiefly carbonate and sulphate) may be distributed through lead pipes, but cannot be stored in lead vessels; and that when the proportion of sulphates and carbonates amounts to from 10 to 20 grains per gallon, the water is not affected by the lead to any appreciable extent. These facts show that there is danger in seeking for a too pure supply, or in softening the water to a very great extent.

Again, the presence of nitrates or chlorides, or an excess of carbonic acid, will also cause an injurious action on lead; and so will the falling in of leaves or dirt into a lead cistern, or the joining of iron pipes to the lead. The former in their decay produce a vegetable acid which dissolves the lead, and the latter sets up galvanic action, which corrodes it. Cases of lead-poisoning have occurred where lead pipes have been joined to iron ones; and it has sometimes happened, that although the water which flows through the pipe is wholesome, that which has stood in it for some hours is poisonous. This explains the fact, that in a large household the domestics who make their morning tea of the water which has stood in the pipes all night, will show symptoms of lead-poisoning, while the rest of the family are free from them.

In seeking for a supply of water, therefore, it is necessary to guard, on the one hand, against the existence of too large a quantity of saline matter, and on the other, to avoid that degree of softness or purity which will lead to an injurious action on the lead of the cistern or service-pipe. Water which contains nitrate or chloride in excess or solid vegetable matter, should always be rejected.

VOL. XIX.

The *mode of supply* is likewise a matter of importance. Whenever it is practicable, the water should be conveyed to the storing places in covered channels, so as to prevent as far as possible the contamination of the water with filth. The reservoirs should also be covered; and the water should remain in them a sufficient time to deposit the grosser impurities. It should then be filtered through sand-beds into the reservoirs from which it is supplied to the public. As to the question of an intermittent or constant supply, there are many arguments of great weight which bear upon both sides of it. The advantages of a constant supply are, that the necessity for large cisterns, and the consequent exposure of the water to fouling, is greatly diminished; the water comes to the house cool and well aerated; and it is always ready for use. The disadvantages are, that the necessity for cisterns cannot be entirely obviated; that there is a great waste of water in the continuous flow of it; that it is delivered at so slow a rate that there is a needless loss of time in collecting it; that it cannot be supplied at a high pressure; that the pipes are apt to freeze; that when repairs are going on there is a total shutting off of the supply; and that the continuous flow is never sufficient to clean the drains or to flush the sewers. Besides which, in almost every case where the constant supply has been generally used, there have been practical difficulties, chiefly on the score of excessive waste, which have interfered with its continual action. The truth is, that in the houses of the wealthy and the careful it is a matter of little or no importance whether the supply is constant or intermittent; for, with proper attention to the state of the cistern, the supply is always sufficient and unpolluted; but in the dwellings of the poor, where the receptacle for the water is generally an open butt, receiving all the chance filth which may drop into it, and becoming tainted with the disgusting exhalations from the neighbouring closet, to say nothing of the insufficient capacity of the receptacle, it is a matter of serious moment whether there cannot be a perpetual flow. At any rate, there is some better system required than that which prevails in all the crowded localities of our great cities, where it is hard for the poor to obtain even that modicum of water which is required for their physiological wants, and where it is vain to expect from them those habits of cleanliness which are necessary for health, and for their social advancement.

As to the *quantity* of supply, it is manifest that it should be sufficient not only for the domestic wants of a population, but also for the purposes of trade and luxury. In the city of London it amounts to nearly 25 gallons per head per day; and in the cities and towns of Glasgow, Aberdeen, Nottingham, Preston, Oldham, Liverpool, Paisley, and some other places which are regarded as models in this respect, the daily supply is from 15 to 20 gallons per head. Looking, therefore, at the requirements of a population, and at the practical facts which have been ascertained concerning them, it may be concluded that a supply of from 12 to 15 gallons per head is required for purely domestic purposes, and that an addition of from 5 to 8 gallons per head is required for the purposes of trade and general cleanliness. This makes a total daily supply of 20 gallons per head; and this may be regarded as sufficient for domestic wants, for public baths and wash-houses, for the flushing of sewers, for the cleansing and watering of streets, for the extinction of fires, and for the supply of trades and manufactures.

The chief conditions of a water supply are:—

That the water should be of such purity and quality as to be fit for domestic purposes, without, on the one hand, being wasteful on the score of hardness, and on the other dangerous from its softness.

That it should be conveyed from its source in covered channels.

Special
Hygiene.Special
Hygiene.

That it should be stored in reservoirs that will permit of sedimentation, and be filtered through fine sand.

That the daily supply should be not less than 20 gallons per head of the population.

That it should be supplied at high pressure, so as to reach the uppermost storeys of the houses.

That the cisterns of every house should be constructed of harmless and durable materials; that they should be covered so as to exclude dirt and other impurities; and that they should have a capacity of at least 12 gallons per head, or 24 gallons per room.

That every closet should have a distinct supply, so as to guard against offensive impregnation.

That every court should have a separate stand-cock that may be used for flushing and cleansing.

That there should be a street supply sufficient for the accidents and emergencies of fire.

And lastly, that there should be a proper distribution for street fountains, for public urinals, and for the flushing and cleansing of sewers.

Cleansing, Draining, and Sewering.—In providing for the sanitary wants of a community, it is not sufficient merely to procure and distribute an adequate supply of good and wholesome water, but means must be taken for the removal of that water after it has become foul in the services of life and industry. Provision must also be made for the drainage of the soil, and for the quick disposal of all the refuse matters which are apt to accumulate in every large city. The cleansing of the streets, and the removal of common refuse, are usually provided for in every town and hamlet, and are generally enforced with the utmost care and regularity; but the drainage of the soil, and the disposal of sewage and liquid waste, have yet to be dealt with, so as to be inoffensive and technically useful. This is a problem which has hitherto baffled the science of the chemist and the skill of the engineer; and the experience of the past, as well as the lamentable errors of the present, have left it doubtful whether the old system of cesspools, with the appliances of modern science, would not have been preferable to the wasteful and dangerous methods of modern sewerage; for the fact is dawning upon us, that every river in the country is being fouled by the reckless discharge into it of matters which are due to the soil. Not that we can go back to the careless habits of our forefathers, when every house incorporated its own stink, and stood upon an oozing cesspool; but it is a question of serious importance, whether, if as much attention and engineering skill had been bestowed upon the improvement of that system, and the perfection of the cesspool arrangements, a more profitable result would not have been obtained than the present; for, however great may appear to be the improvement of the public health through the adoption of the modern system of sewerage, we must not forget that the experiment is only in the first stage of its development, and that we have yet to learn what will be the ultimate effect of the pollution of every watercourse in the kingdom.

Judging from the facts which are before us, it appears evident that the surface and subsoil drainage of every town and city should be altogether distinct from the sewers and cesspools, and that while the drainage may be safely discharged into the nearest stream, the sewage of the population must be dealt with in an independent manner. That which must be provided for is the collection and disposal of about 40 ounces of excrementitious matter daily for each member of the community. Of this from 2 to 2½ ounces are dry solid, and with the present arrangements it is mixed with from 20 to 25 gallons of water, and is thus rendered unfit for every useful purpose; in fact, the matters contained in the public sewers consist not only of the solid and liquid ejecta of the population, but also of the fluid refuse of

every branch of industry. They are composed of the filth of kitchens, laundries, and dye-houses; the drainage of stables, slaughter-houses, and the public markets; the various liquid impurities of trade and manufacture; the washings of streets and alleys; and the whole water supply of the district. Each of these constituents has an influence on the composition of the general mass of sewage, and on the putrefaction to which it is subject. Analysis shows that the sewage of large towns contains from 15 to 80 grains per gallon of suspended matter, and from 35 to 76 of dissolved. Of the former about 35 per cent. is organic, and of the latter about 28 per cent. The mineral constituents are chiefly carbonate of lime and common salt, with small proportions of alkaline sulphate and earthy phosphate, together with the insoluble debris of the roads and the detritus of wheels and horse-shoes. The organic matter consists of the remains of vegetable and animal fibre, with a soluble extractive in a high state of decomposition. None of these can be utilized; and the organic constituents give off such an abundance of foul gases that they are a constant source of annoyance. The gases consist of about 73 per cent. of light carburetted hydrogen, 16 per cent. of carbonic acid, 10 of nitrogen, and traces of sulphuretted hydrogen, ammonia, and a putrid organic vapour that is in the highest degree offensive. Every gallon of sewage will discharge from 1¼ to 1½ cubic inch of the gas every hour, and the fermentation continues for weeks. The effect of this in the atmosphere of the sewer is extremely dangerous, for wheresoever it escapes, like the emanations from cesspools and privies, it causes disease; in fact, it lowers the vital powers, produces nausea or actual sickness, and at length sets up a putrid form of fever which is exceedingly fatal. To prevent the escape of these gases the openings from the drains and gullies are trapped, and every effort is made to prevent the diffusion of the fœtid gases into the houses and public way. But still the sewers must be ventilated; and to accomplish this, openings are left in the middle of the streets, out of which the gases pass without hindrance. It has been tried to ventilate the sewers by means of the rain-water pipes, or by tubes to the tops of the houses; but the foul gases diffuse themselves into the upper windows, and are offensive. It has also been proposed that the sewers should be ventilated by the street lamps, or by the church towers; but the only practical means of disposing of the gases is by the aid of charcoal placed in the course of the outlet channels. The efforts made to destroy the gases by means of furnace fires placed in special ventilating shafts have not been successful, partly because of the difficulty of effecting any large amount of ventilation in this manner, and partly because of the enormous expense which it involves.

Attempts have been made to diminish these evils by the use of small drainage pipes, instead of the large brick sewers which are commonly employed. It has been thought that, with a good arrangement of such pipes, the sewage would be quickly discharged, and would not have time to undergo the decomposition to which it is subject in the larger channels; that foul gases would not therefore be evolved from it; and that it could be more easily utilized than the putrid liquid matters of the common sewers. But these expectations have not been realized. In the towns of Croydon, Rugby, Tottenham, Uxbridge, and elsewhere, the system has failed; and experience has shown that it is not only an expensive system, but it is also a dangerous one, because of the mischief occasioned by the escape of foul gases when by accident a stoppage occurs in any of the pipes; for as there are no special contrivances for the outlet of the gases, they are forced through the traps and openings into the houses, and are thus a cause of annoyance and disease. Experience has also shown that the solid excreta which is thus collected cannot be utilized

Special Hygiene. with profit, and that the liquid refuse is as offensive, and is as difficult to dispose of, as the worst kinds of ordinary sewage.

That much has yet to be accomplished in respect of this matter, there can be no doubt; and in the meantime the objects to be kept in view are,—

The construction of special drains for the discharge of the surface and subsoil drainage, and for disposal of the less offensive sullage from the domestic use of the water supply.

The formation of special drains and receptacles for the removal of the animal excreta.

The construction of the sewage-channels and the cess-pools of impervious materials.

The occlusion, by means of traps, &c., of the sewer-gases from the houses and public way; and the providing of distinct ventilating channels with deodorizing trays of powdered charcoal.

The existence of proper regulations for cleansing the public way, and for removing the house refuse.

And the adoption of some profitable and inoffensive means of utilizing the sewage and waste products.

Offensive or Injurious Trades.—All pursuits and occupations have their influence on the health of those who are engaged in them: even the luxurious habits of the wealthy affect the condition of the body, and mark the evils of a too artificial state of existence. But this is not the place to discuss the special effects or particular maladies of each occupation, but rather to lay down such general rules for the management of offensive trades as may be applicable to the purposes of hygiene. And, in the first place, there are certain manufacturing processes which ought not to be conducted within the confines of a city; for they are either dangerous on account of the poisonous matters they discharge into the air or soil, or they are insufferably offensive. To the first of these belong the trades and occupations that deal with corrupting organic matter, and which poison the atmosphere with the products of putrid decomposition: among these are slaughterers and knackers, bone-boilers and catgut-spinners, tanners, and the makers of artificial manure. Nearly akin to these are the different processes of manufacturing chemists, as the making of mineral acids, the assaying and dissolving of metals, the roasting and smelting of ores, the preparing of lead and arsenical pigments, the distilling of crude pyroligneous acid, and the treatment of the various products of gas-making, as coal-tar and ammoniacal liquor. To the second belong the trades of tallow-melting, soap-boiling, tripe-dressing, gas-making, varnish-making, bleaching, &c., &c.; but in all cases, whether the offensive operations are conducted within the confines of a town or not, it is proper that every care should be taken to prevent the escape of offensive effluvia; and this is necessary, not merely because of the nuisance occasioned by it, but also because of the fact that every particle of matter escaping from the domain of art is a loss to the manufacturer. Every effort should therefore be made to collect the volatile and waste products, so that they may be hereafter utilized; and if it so happens that the volatile product is not of sufficient value to pay for the cost of its collection, it should be destroyed or rendered innocuous by some special contrivance, as by conveying it through a flue into the furnace fire. In this manner the disgusting fumes from melting tallow, from boiling bones, or tripe, or whalebone, and from the making of varnishes, manures, and other such like offensive operations, may be consumed and rendered harmless.

Again, when it is necessary to collect or store materials that are apt to undergo decomposition, they should be placed in air-tight receptacles and treated with disinfectants; and when the storage of such materials is large, the chamber containing them should be ventilated by a fanner, and the offensive effluvia conveyed into a furnace

fire. All liquid products of a volatile or noxious character should be transported in casks or close barges, and should be stored in air-tight tanks. Nor should there be a larger stock of such materials than is necessary for the immediate requirements of trade.

And lastly, in every establishment where liquid organic substances are likely to soak into the soil and be offensive, the pavement should be impervious, and it should be laid upon a proper incline, so that the waste liquors may run off and be collected in a covered tank, or discharged into a public sewer. All the sinks and gullies should be effectively trapped, and there should be an abundant supply of water to ensure the needful cleansing. In addition to which, the business of the factory should be under such regulations as will prevent unnecessary annoyance.

There are some trades which are so dangerous and unwholesome as to require particular care on the part of the operatives. This is so in the manufacture of lead and arsenical pigments, in the making of lucifer-matches, and in the dry grinding of steel, &c. All these demand especial precautions. The buildings should be well ventilated; the operations should be conducted in a cleanly manner; there should be no waste of the dangerous products; the working clothes should not be worn out of the factory, and they should be frequently cleansed. Those who work in lead should drink a lemonade acidulated with sulphuric acid, and the lucifer-makers should use an alkaline beverage. Under all circumstances, the action of the dangerous matter should be checked as much as possible by cleanliness, by proper prophylactics, and by effective ventilation.

The discharge of opaque smoke into the atmosphere is nearly always a wasteful nuisance; for the evidence of those who are best able to judge of the matter is to the effect that it may be easily prevented, and that it ought not to be allowed. The mischief of it is, that it obscures the atmosphere, interferes with domestic cleanliness, begrimes the architecture of a city, and causes the inhabitants to shut out the air which is necessary to ventilation. The remedy is a little attention to the manner of supplying the fuel to the fire, or the employment of one of the countless contrivances which have lately been invented for the consumption of smoke.

The Burial of the Dead.—This has been a subject of sanitary regulation from the earliest times. The ceremonies of the Jews and ancient Egyptians, the processes of embalming which were practised by the Egyptians and Peruvians, and the burning of the dead by the Greeks, the Romans, and the Ethiopians, were but the means of preventing danger from putrefaction. And even in later times, when the Romans practised interment in the soil, it was performed in an allotted space beyond the walls of the city. Gradually, however, the custom of burying the dead within cities, and even within the temples of religion, was adopted, and at last it was learned how dangerous the practice was. As far back as the sixth century the mischief of it was anticipated, and edict after edict was promulgated by the church against it, but with little or no effect until the legislative enactments of different countries put a final check upon it. In France, Germany, America, and, lastly, in the metropolis of this country, the practice of intramural interment has been prohibited, but not until it was shown that the emanations from the dead were a fruitful source of danger to the living. It is a serious matter, that close beneath the feet of those who attend the services of the church, and all around the sacred edifice, there are heaps of human remains undergoing putrefactive decay, and evolving foul gases which are known to be a cause of disease. Instances are not rare where these gases have suddenly gushed forth, and have killed with the energy of a thunder-stroke; and often have they spread a pestilence that has decimated the neighbouring population. All this, with

Special Hygiene.

Special
Hygiene.

the knowledge that the gaseous emanations of animal corruption are among the most deadly poisons with which we are acquainted, has led to the condemnation of intramural interment.

The questions which present themselves in respect of this matter are,—the situation of the place where the dead should be buried; the character of the soil which is best suited for the promotion of animal decay; the space which should be allotted for each interment; and the time which should elapse before a grave is disturbed. Add to these the treatment of the body before it is interred, and the manner of dealing with the present churchyards and overcrowded vaults.

The situation of a public cemetery is not an unimportant question; for it involves considerations of economy, of convenience, of reverence for the dead, as well as care for the living. It should be accessible by easy carriage-roads; and better still if it can also be approached by a railway; for this secures economy in the transport of the coffin and mourners, and does away with that worst of all necessities, the conveyance of the dead in cabs and other public vehicles. If the site be upon the side of a hill,—a situation which is always in harmony with the feelings of the sorrowful, and encourages that reverence for the dead to which all consideration is due,—it should be carefully ascertained that the drainage of the soil is not downwards into localities where the water is used for domestic purposes. The proximity to a well-wooded district, and a situation which will permit of complete isolation from dwellings, are always to be preferred.

The character of the soil which experience has proved is best suited for animal decay is a light porous soil, which will permit of atmospheric diffusion. A stratum of wet clay is most objectionable, and a peaty soil will have the effect of preserving the body for an indefinite time.

The graves should never be so close as to prevent the free access of air through the porous soil to the body, and the earth should never be saturated with that unctuous corruption which is characteristic of the overcharged graveyards of the metropolis. It must not be forgotten that the object of interment is to effect the complete decay of the body; and every facility should be offered for this purpose. The rich and the poor are nowise different when they meet in the grave, and both should be subject to the same regulations, for both are liable to the same changes in death, and have to pass through the same processes of decay, in order that the elements of their bodies may be restored to the living world, and may circulate in accordance with the law and economy of nature. We may endeavour to gratify our selfish feelings, and try to keep together the frail fabric of the cherished dead; we may swathe it in cerements, confine it in metal, or wood, or stone, and build it into vaults, and heap pyramids upon it; but all is in vain: the law of nature is, that it shall decay, and its elements pass again into the living world, and so circulate for ever. Our efforts, therefore, should be to expedite the processes of nature, and not to check them. There should be no burying in metal and building into vaults, but all our dead should find a common resting-place in the soil.

The superficial space which should be allotted to each grave should not be less than 20 feet. The largest coffin is about 6 feet long and 2 feet wide; and if such coffins, with a superficial area of 12 feet, were packed side by side, without earth between them, as many as 3620 could be disposed of in an acre; but such an arrangement would be manifestly improper, and therefore it has been decided that a sufficient layer of earth should be placed between the coffins, to enable the physical and chemical powers of the soil to perform their appointed duties. What the space for a coffin should be, is still a matter of uncertainty. It varies in different countries, from a superficial area of 30 to 90 feet.

Special
Hygiene.

The former will permit of 1452 graves in an acre, the latter of 484. In the resolutions which were issued from the Home Office, in accordance with the Burials Acts of from the 15th to the 19th of the present reign, it is ordered that the grave spaces for the burial of persons above 12 years of age shall be at least 9 feet by 4, and those for the burial of children under 12 years of age, 6 feet by 3. The former (36 square feet) will permit of 1210 burials in an acre; and the latter (18 square feet) 2420; the average of both being 27 square feet for each grave, or 1815 burials to the acre; but as the number of children buried is generally twice as great as that of adults, it would give an average of 24 square feet for each grave, or 2017 graves to an acre. Mr Chadwick says that the well-considered regulations for burials in towns give about 1452 common graves per acre. From all of which it may be concluded that a superficial space of about 30 square feet should be allotted to each grave. And it is also necessary that space should be allowed for the gravel walks in a cemetery, and for the ornamental culture of trees; for nothing is so salutary as the growth of vegetation in the organic soil of a burial-ground.

Another regulation from the Home Office is, that not less than 4 feet of earth shall be placed over the coffin, or rather that the coffin shall not be within 4 feet of the ordinary level of the ground, unless it contains the body of a child under 12 years of age, when it shall not be less than 3 feet below the level.

Lastly, it is recommended that only one body shall be buried in a grave at one time, unless the bodies be those of members of the same family; but although this regulation is a very salutary one, it is not observed in any cemetery or burial-ground in England, except in the burial-places belonging to the Jews, amongst whom the custom has prevailed from an early date.

The practice of burying the dead in vaults or catacombs or brick graves is fundamentally wrong, but still it prevails to a large extent in this and other countries; and the regulations which have been made in respect of it are, that the coffin shall be of lead, and that it shall be entombed in an air-tight manner in stone or brick-work, with proper cement. The space which is allotted to them is generally 9 feet by 5, or rather 9 feet by 4 and 9 feet by 6 alternately, and sometimes there is a channel along the head of the vault for ventilation. The notions which prevail in respect of the protective power of lead coffins and brick vaults are very erroneous. If the coffins are made so tight as to prevent the gradual escape of the pent-up gases, they will sooner or later explode; but commonly the lead is purposely left with small fissures and holes for the outlet of the gases. A time also comes when the outer wood coffin decays, and then the weight of the lead and its superincumbent tier of coffins flattens the metal case, and the organic remains are squeezed out, or are crushed by the heavy pressure. The lead also corrodes and becomes converted into white lead, by which means the coffins are pierced with myriads of small holes. These changes may be seen in almost every church vault in the kingdom, and they illustrate the absurdity and danger of such a mode of burial.

As to the time which should elapse before a grave is disturbed for a new tenant, it will vary with the character of the soil, the distance of the body from the surface, and the number of coffins in the grave. In a good soil, and under favourable circumstances, an adult coffin with its contents will have disappeared in 8 or 10 years; whereas in a clay or peaty soil it will remain for a century. It is generally assumed, that in a moderately good soil a period of 14 years is sufficient for the decay of an adult; that for young persons between the ages of 5 and 16 a period of 10 years is sufficient; and for infants under 5 years about half the time. But long before this the soft parts of the body will

Special
Hygiene.

have decomposed, and the skeleton alone will remain. This, however, at last decays, and crumbles into dust, which blends with the neighbouring soil. Not until this has taken place can it be said that the grave is ready for another tenant; for the return of dust to dust, and the total dissolution of the body, is alike required for the purposes of hygiene and for the respect which is due to piety and affection.

The delay which occurs in the burial of the dead has often suggested the necessity for providing some means for the preservation or custody of the body before interment, so as to prevent the mischief which is too often occasioned by putrefaction. In the houses of the poor this is especially needful, for it commonly happens that the dead are kept in the rooms which are occupied by the living; and many days may elapse before the necessary arrangements can be made for the burial: during the whole of this time, the occupants of the room are exposed to the fœtid emanations from the putrid and sometimes infectious body. To guard against this, it has been proposed that there should be houses of reception for the dead, where the corpse might be detained in decent and respectful custody until the appointed time for its burial. These houses might also be used for the reception of bodies found dead in the public way; and means might be taken to prevent putrefaction until the period for interment. Provision has been made for this in most of the local sanitary acts, but it has not yet been put into practice, partly because of a fear that it would violate the feelings and domestic affections of the poor, and partly because it might be abused by those who are too eager to get rid of their dead; for if the body were once deposited in the reception-house, the further cost of its removal and interment might fall upon the local authorities. Altogether, the subject is beset with difficulties, but it is clearly one that requires consideration, for it might be developed so as to be of great advantage to the community.

The treatment of the existing evils which arise out of the present overcrowded state of the church vaults and graveyards is a matter of some importance. In the city of London, where this state of things has called for a remedy, it has been found that the most effectual way of dealing with the mischief is the following:—After a sanitary inspection by the government officer, an order in Council is issued for the final closing of the vaults. This is done under the supervision of the sanitary officer for the district; the coffins are arranged in order, and filled in with dry earth. They are covered to the depth of from 18 inches to 2 feet, with the same sort of earth; and over this is laid a stratum of coarsely-powdered vegetable charcoal to the depth of 3 or 4 inches. A ventilator or two should be carried from the vaults to the top of the church, and the ventilator need only be a pipe of about 4 inches in diameter. The vaults are then built in, and permanently closed with brick-work. In the case of the grave-yards, they are levelled and covered with a stratum of fresh earth, in which trees and shrubs are planted, and the whole is neatly laid out with grass. Vegetation acts as a salutary agent by absorbing the liquid humours from the soil, and by appropriating the organic vapours which may escape from the ground.

Disinfectants and Antiseptics.—It may not be out of place to refer in a very general way to the operation of these agents, and to their value as disinfectants; for putrefaction in one form or another is the chief cause of the unhealthiness of towns.

There are two classes of these correctives,—namely, those which check putrefaction by giving stability to the organic compound, and those which appropriate or absorb the fœtid products. The first of these are properly called *antiseptics* or *antiputrescents*, and the second *deodorizers* or *disinfectants*. The antiseptics are common salt, vinegar,

Special
Hygiene.

sugar, alcohol, creosote, the empyreumatic oils of wood or peat or coal, and the metallic salts, as chloride of zinc, corrosive sublimate, sulphate of copper, muriate of iron, alum, &c. None of these agents entirely prevent putrefaction; they merely check it by combining with the animal matter, and forming compounds which are not prone to decay. They are employed in many operations of the arts, and in some cases are the popular means of preserving food.

The deodorizers act in one of two ways,—they either absorb and fix the fœtid gases, or they utterly destroy them. Those which operate in the first way are the volatile acids, as vinegar, sulphurous acid, nitrous acid, and spirit of salts; the mineral compounds, as the salts of lead, iron, zinc, and manganese, all of which latter unite with ammonia and sulphuretted hydrogen, which are two of the most offensive constituents of almost every putrid vapour. Those which act in the second way are chlorine, hypochlorous acid, the manganates and permanganates of the alkalies, powdered charcoal, and fresh earth. The *modus operandi* of these is nearly always alike; they give oxygen to the putrid matter, and so destroy it. Where it is necessary to act upon organic vapours and putrid miasm, the volatile disinfectants, as chlorine or hypochlorous acid, should be employed; but where the putrid substance is in a solid or liquid form, the other agents may be used: of these, the manganate or permanganate of soda or potash (Condy's fluid) is the most rapid and safe; chloride of lime is also effective, and so is charcoal or dry earth, both of which absorb the foul gases, and bring them into chemical contact with atmospheric oxygen. Both of these agents therefore require free access of air. Practically, it will be found that Condy's fluid acts most freely on liquid products: it disinfects sewage, putrid water, and foul sores, almost immediately; solid substances, as animal remains, and the semifluid matter of cesspools, are best treated with a layer of charcoal or dry earth. A good deodorizer for the preservation of dead bodies during the time which elapses before burial can take place, is sawdust charged with a solution of sulphate of zinc and dried; it may be scented with a little camphor, to take off the cadaverous smell. Game also may be packed in it, when it is to be sent to a distance; and animal matters generally are well preserved by it. None of these agents, however, are applicable to the deodorization of sewage on a large scale, because of their cost. It has been calculated that the cheapest of them (chloride of lime), even when used in the proportions of only twelve grains per gallon, would cost nearly £240,000 per annum to deodorize the sewage of London. Quicklime, therefore, is generally employed in these cases; but it is not a perfect deodorizer, for it merely absorbs the sulphuretted hydrogen of the putrid compound, and casts down a part of the organic matter which is in solution; but if the precipitate is not quickly removed from the supernatant fluid, it passes into a state of decomposition, which is not less offensive than the original sewage. At Leicester and Tottenham, this process is used on a rather large scale, and with some success in a sanitary point of view, but with none in a commercial.

Fire is a powerful and complete disinfectant: it is there used in many processes of the arts where offensive vapours are evolved.

There are many other practical questions which the limits of this article will not embrace, as the economy and adulteration of food, the purity of medicines, the action of poisons and antidotes, the specific and general causes of endemic diseases, the origin and spread of epidemics, the importance of quarantine, &c.; but the facts which have been discussed will illustrate the leading principles of hygiene, and will suggest the rules which should be adopted for the protection of life and the preservation of health. (E. L., H. L.)

San Jose
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Sannazaro.

SAN JOSE, the capital of the republic of Costa Rica, in Central America, on the river Cartago, 248 miles W. by N. of Panama; N. Lat. 9. 46., W. Long. 84. It is quite a modern town, and though the seat of the government, legislature, and law courts, and containing a cathedral and episcopal palace, has few remarkable buildings. There is here a large tobacco factory; and an active trade is carried on. Pop. 30,000.

SAN-JUAN-DE-LA-FRONTERA. See **PLATA, LA.**

SAN LUCAR, a town of Spain in the province and 17 miles N. of Cadiz, in a bare, sandy, undulating country, on the left bank of the Guadalquivir, not far from its mouth. It stands partly on the flat bank of the river, and partly on the rising ground behind; its white glittering houses rising one above the other, up to an old Moorish castle on the summit. There are here 3 churches, 4 hospitals, one of them founded by Henry VIII. for English sailors, and the deserted buildings of several suppressed convents. The place is, however, dull and lifeless; having fallen off very much from its ancient commercial importance. It is now chiefly dependent on the wine trade, and is the mart of the inferior vintages sent to England as sherry. Many of the people are also employed in agriculture and fishing. The climate is hot, but not unhealthy. It was from San Lucar, in 1519, that the first voyage round the globe was begun by Magellan, who never returned, having been slain by the savages of the Philippines. Pop. 16,861.

SAN LUIS. See **PLATA, LA.**

SAN LUIS POTOSI. See **MEXICO**.

SAN LUSSURGUI, a town of the Island of Sardinia, in the division of Sassari, in a valley inclosed by mountains, 8 miles W.S.W. of Cagliari. Its narrow winding streets are lined with good houses; and there are several churches, a convent, and a school. Woollen and linen cloth are manufactured; and there is some trade in cattle, wool, &c. Pop. 4460.

SAN MARINO. See **MARINO, SAN.**

SAN MICHELI, **MICHELE**, an Italian architect of considerable celebrity, was born at Verona in 1484. He acquired his art under the eye of his father Giovanni and his uncle Bartolomeo, who were both architects of distinction. The ancient amphitheatre of his native town was a constant object of interest for the young architect, and his future designs are much indebted for their massive rusticated work to this period of youthful study. He went to Rome about 1500, where he was fortunate enough to gain the intimacy of all the famous artists of the day, Bramante, Michael Angelo, and the Sangalli. While in the ecclesiastical states, he constructed many buildings of celebrity, among others the cathedral of Montefiascone. On his return to the Venetian Republic, in 1525, he was engaged in erecting the new fortifications of Verona. Here he introduced, for the first time, the use of triangular and heptangular bastions, since so much employed by military engineers. He was subsequently engaged in fortifying many places in Cyprus, Candia, Istria, and Dalmatia, some of which were confided to his nephew, Gian-Girolamo. Both uncle and nephew had pressing offers from Francis I. and the Emperor Charles V. to enter their service, but to all such flattering proposals they gave an emphatic refusal. The palazzi or mansion-houses of San Micheli are many of them not to be imitated, abounding, as they do, in irregularities of design, and in a curious mixture of highly ornamented work, with decidedly bald construction. San Micheli enjoyed an honourable old age, and died in 1559 in his seventy-fifth year.

SAN MIGUEL, a town of Central America, in the republic and 45 miles E.S.E. of San Salvador, on the navigable river Lempa, 20 miles above its mouth in the Pacific. It contains a church and convents; and the people are mostly employed in agriculture. Pop. 6000.

SANNAZARO, **JACOPO**, an elegant Italian poet, was

born at Naples on the 28th of July 1458, of a noble family of Spanish origin, who dwelt at San Nazaro, a mansion-house situated near Pavia. He began his studies at Naples, under Giuniano Maggio, but was very early interrupted by an unfortunate love affair, which drove him to travel. Some say he went to France, where he wrote his first poem, *Arcadia*, in 1502, an Italian pastoral, in which he describes, in alternate prose and verse, the scenes and occupations of pastoral life, intermingling them with adventures which really occurred to himself. The poem has been greatly admired for the elegance and purity of its diction; and the author has been generally ranked with the best poets of his country. The success of this work was early extended to Spain. Ticknor, in his *History of Spanish Literature*, vol. iii., p. 38, says, that "Spain was the first foreign country where the *Arcadia* was imitated, and was afterwards the only one where such works appeared in large numbers, and established a lasting influence." In 1526 appeared the work which gained him the name of the "Christian Virgil," *De Partu Virginis*. This poem, which was written in Latin, was much applauded, and the author gained the sanction of Popes Leo X. and of Clement VII. to his production. This work, and his *Sonetti e Canzoni*, 1530, gained for their author a very wide reputation. He received great honours on his return to Naples from King Ferdinand I., and subsequently from Frederic, the last Neapolitan king, who assigned him a residence on the beautiful slope of Mont Posilipo. Sannazaro accompanied the latter king in his exile to France, where he remained while that monarch lived. On his return to Italy, it is said, he was told one day that the Prince of Orange had been slain in battle, who, among other indignities, had recently demolished the poet's country-house; when Sannazaro called out, "I shall die contented since Mars has punished this barbarous enemy of the Muses." He died soon after, on the 27th of April 1530.

SAN PAULO, a province of Brazil, lying between S. Lat. 20. and 24. 30., W. Long. 44. 30. and 53; bounded on the N. by the provinces of Goyaz and Minas Geraes, N.E. by that of Rio de Janeiro, S.E. by the Atlantic, S. by Curitiba, and W. by Parana. Area, 170,615 square miles. The coast line is about 400 miles in length, and stretches from N.W. to S.E.; along the shore is a narrow strip of low land, and beyond it rises a ridge of mountains extending in a parallel direction. These form the watershed of the province, dividing it into two very unequal portions; the rivers of the eastern part flowing directly into the Atlantic, and those on the other side reaching the same destination through the Parana, which forms part of the northern and the whole of the western boundary of the province. The mountains are for the most part of granite formation, and their upper parts are covered with dense forests of valuable timber, especially cedar and pine. Their lower slopes, and the country as far as the Parana, are almost all exceedingly fertile. The principal affluent of the Parana in this province is the Tiete, which flows from east to west very nearly in the centre of the country. Grain, rice, and manise, are the principal crops raised in the interior. Along the coast, tobacco, sugar, and cotton are cultivated. Horses and cattle are reared in great numbers on the tablelands in the central parts of the province. The extreme portion is still occupied by aboriginal tribes. There are several seaports along the coast, by means of which a considerable trade is carried on with Rio Janeiro. San Paulo is divided into 7 comarcas; and represented in the legislature of Brazil by four senators and nine deputies. Pop. (1856) 500,000.

SAN PAULO, the capital of the above province, on a lofty uneven piece of ground, between two small streams, 32 miles from the sea, and 220 miles W. by S. of Rio de Janeiro. It has narrow, well-paved streets, lined with

San Paulo.

Sanquhar ||
San Salva-
dor.

earthen tiled houses, generally two storeys high, and frequently provided with balconies. There are here a cathedral of large size but no great beauty, 7 other churches, 5 convents, a splendid episcopal palace, theatre, public library, several schools, an imperial manufactory of arms, woollen and cotton factories, and gold refineries. It is the central point of the Brazilian mining operations; and in the vicinity are valuable gold mines. San Paulo is the seat of the provincial assembly, courts of law, and public offices. Pop. 25,000.

SANQUHAR, a royal and parliamentary burgh of Scotland, in Dumfriesshire, near the left bank of the Nith, 27 miles N.W. of Dumfries, and 56 S.E. of Glasgow. It has one long principal street, neither very regular nor clean. The chief buildings are the town-hall, parish church, Free Church, 2 United Presbyterian, and a Reformed Presbyterian Church, several schools, &c. Weaving, muslin-sewing, and carpet-making are the chief employments of the people. The burgh is governed by a provost and nine councillors; and represented in Parliament by one member. Pop. (1851) of the parish, 4071; of the parliamentary burgh, 2381; of the town, 1884.

SAN SALVADOR, a state of Central America, lying between N. Lat. 13. 7. and 14. 24., W. Long. 87. 37. and 90. 2., bounded on the N. and E. by Honduras, S. by the Pacific, and W. by Guatemala. Its length is 165 miles, its mean breadth 69, and its area 11,392 square miles. There are two lines of water-parting in San Salvador, one extending from E. to W. parallel to the Pacific coast, separating the waters that flow directly into the Pacific from the affluents of the Lempa; and the other further inland, having a parallel direction, with the Sumpul and Torola on its N. side, and the Lempa (except for a short distance where it pierces through the chain) on the S. This watershed forms the chain of the *Cordilleras*, but consists rather of isolated hills, or groups of hills with their offshoots, than of a continuous range. Along the shore of the Pacific stretches a low tract of rich alluvial land, varying from 10 to 20 miles in breadth. Beyond this the ground rises abruptly to the height of 2000 feet, forming a broad table-land, above which tower many lofty volcanic peaks. From the highest portion, which forms the lower watershed of San Salvador and the southern edge of this plateau, to the chain of the *Cordilleras*, stretches the broad valley of the Lempa, about 100 miles in length, and from 20 to 30 across. The ground slopes very gradually from the south for some distance, and then descends abruptly to the proper valley of the river; on the other side it rises with a more uniform ascent, though broken and rugged, to the foot of the mountains that form the upper watershed of the country, and tower over it at a height of 6000 or 8000 feet. The Lempa rises in the N.W. of the state, and flows for the most part of its course towards the S.E., then turns suddenly to the S., and falls into the Pacific. The whole length of its course is 150 miles, but it is navigable only for 27 miles. The chief affluents of this river are the Sumpul, which forms the northern boundary of the state throughout its course, and the Torola, both from the left. Besides the Lempa, San Salvador is watered by the Rio Paza in the west, separating it from Guatemala, and by the San Miguel in the E. There are two lakes of some size in the country, that of Guija in the N.W., discharging its waters by the Quesalapa into the Lempa, and that of Ilopango, near the centre. The latter of these, as well as many others of inferior size, is of volcanic origin. Indeed the whole of the country is remarkable for its volcanic character, and for the number of burning mountains, both active and extinct, which it contains. A line of eleven great volcanoes extends along the crest of the table-land, between the shore and the Lempa. These are in their order, beginning at the N.W. extremity, Apeneca, Santa Anna, Izalco, San Salvador, San Vicente,

Tecapa, Usulután, Sacatecoluca, Chinemeca, San Miguel, and Conchagua. Of these only Izalco and San Miguel are now active. The former has been entirely formed, since the discovery of the country, from the stones and ashes emitted by the crater, which first opened in 1770. Its height is now about 2500 feet. San Miguel is a cone about 6000 feet above the plain, its lower portion covered with dark green forests, and the lighter verdure of the meadows above them; its summit tinted by the dark brown *scoriae* and the silvery hue of the ashes from the crater, and surmounted by clouds of smoke ceaselessly rolling up from the interior. Probably no region in the world of equal extent contains so many volcanoes, or traces of volcanic action, as this little state, where for days the traveller's road lies over beds of lava and similar substances. A consequence of this is the great fertility of the soil, and the luxuriant vegetation that covers the mountains up to their very summits. The entire soil of San Salvador is either volcanic or alluvial. The ground of the latter sort has been gradually formed, in the lapse of ages, from the ashes and stones ejected by volcanoes now extinct. It occurs for the most part in small patches, scattered over different parts of the country; the most extensive tract of alluvial ground being in the district of Gotera, in the department of San Miguel. In other places, the action of volcanic forces is most strikingly apparent, from the confused assemblage of abrupt cliffs, deep ravines, mountains, valleys, and plains indiscriminately mixed together.

The country is essentially an agricultural one, and well cultivated, the low land yielding tropical produce, and the upper regions the crops of northern climes. Indigo is the plant raised in the largest quantities. Sugar, cacao, coffee, and tobacco are also grown. Almost all the land is cultivated, very little remains unclaimed, and there are few large estates belonging to individuals. The rural population consists mostly of Indians, and the lands which they have been allowed to retain have tended to their encouragement in industrious habits. For the most part they live in villages, which stud the country in great numbers; going in the morning to and returning at night from their little patches of ground in the vicinity. Roads have been constructed throughout the most of the country. The mineral resources of San Salvador include the silver mines of Tabanco in the N.E. of the state, which are easily worked, and yield from 47 to 2537 oz. per ton; and the iron mines of Petapa in the W. It is also believed that extensive beds of coal exist throughout the valley of the Lempa. A certain part of the coast of San Salvador, about 50 miles in length by 20 or 25 in breadth, between La Libertad and Acajutla, is called the Balsam Coast, because it produces what is erroneously called the balsam of Peru. This is obtained from the juice of a tree; the whole region as far inland as the mountains being covered with dense forests occupied by Indians, who make their living by selling this balsam and planks of cedar-wood.

The seaports of the country are La Union, on the Gulf of Fonseca; Libertad and Acajutla further west, along the shore. Of these, the first only is properly a harbour, the others being merely open roadsteads. The number of vessels that entered and cleared in 1858 was 156 each way; tonnage, 55,163. In 1857 the total value of the exports was L.260,820, being an increase of L.3723 over the preceding year; and the imports amounted in value to L.172,021, showing a decrease of L.37,323. The value of the chief articles exported was:—Indigo, L.230,751; sugar, L.14,011; hides, L.12,961; tobacco, L.3920; balsam, L.1437. Very few manufactures are carried on here, and these are chiefly articles for domestic use, such as coarse cotton cloth and hardware. The great majority of the people are Indians, belonging, in all probability, to the Nahual or Aztec race, who inhabited Mexico before the Spanish invasion. Their language is very similar to that

San Salva-
dor.

San Salvador. spoken by the natives of Mexico, and they seem from the ancient traditions to have come from Nicaragua, which was occupied by an offshoot of the Nahuatl race. In most parts of the country they have become assimilated, more or less, to the Spaniards, and have adopted their manners, but in the Balsam Coast they have preserved the purity of their blood and language, as well as in some measure the mode of living of their ancestors. This part of the country is very difficult of access, being traversed only by intricate footpaths, and they have a great dislike to the intrusion of white men. In this district the ancient language is retained, which has almost entirely fallen out of use in other parts of the country. The towns in San Salvador are generally inhabited by white men and those of mixed blood (*ladinos*), the former being generally merchants or proprietors of estates (*haciendas*), and the latter employed in mechanical pursuits. The Indians in the villages and country districts are engaged in agricultural labour.

The government of the country is republican: the executive power is in the hands of a president, elected for two years; and the legislature consists of a chamber of twenty-five members. The army consists of 1000 regular troops, all infantry, and a militia of 4000 men, infantry, cavalry, and artillery. The public revenue in 1855 amounted in all to L.89,360; and in 1856 to L.105,520. The provisory seat of the government is Cojutepec; the former capital, San Salvador, having been destroyed by an earthquake on the night of the 16th of April 1854. It was a place of 25,000 inhabitants, and had a very picturesque and beautiful appearance, being planted in many parts with palm-trees and shaded with evergreens. The buildings were generally low, but there was a fine cathedral, a large university, and other handsome edifices. But the whole was destroyed in a few moments. It was the evening of Easter Sunday, about half-past nine, when the inhabitants were first warned of their danger by a slight shock, and at ten minutes to eleven the ground began to heave and tremble with such force that in ten seconds the entire city was a mass of ruins. Churches and houses fell with a tremendous crash to the ground; terror and dismay seized all the inhabitants that death had not overtaken; and a dense black cloud of dust hung over the whole scene. The loss of life, however, was afterwards ascertained to be less than was at first supposed.

The first European who invaded San Salvador was Alvarado, one of the officers under Cortez, in the conquest of Mexico. After having conquered the country now called Guatemala, he was informed of the existence of a powerful nation to the south-east, which he resolved also to conquer. He met with an obstinate resistance, but succeeded in penetrating as far as the capital, Cuscatlan, where, however, he only remained a few days. The country was then one of the best peopled in America, and contained many large towns as well built as those of Mexico. For a long time the inhabitants resisted the invaders; and it was only by the advantages of cavalry and fire-arms that the conquest was consummated. The country afterwards formed part of the general captaincy of Guatemala, and remained under the Spanish government till 1821, when, by a bloodless revolution, the province regained its independence. Until 1823 San Salvador, along with the other parts of the Spanish Guatemala, was united to Mexico; but in that year a confederation was formed by the five states of Guatemala, Honduras, San Salvador, Nicaragua, and Costa Rica, under the name of the Confederation of Central America. This arrangement continued until 1840, after which the component parts of the confederation became entirely independent, as they have since continued to be. San Salvador is the best peopled, as well as the first in industry and commerce, of all the states of Central America, and indeed of all Spanish America; and the people are superior in intelligence, industry, and enterprise to those of the neigh-

bouring countries. It is divided into six departments, as Sansanding follows:—

	Pop.		Pop.
San Miguel.....	80,000	Sonsonate.....	75,000
San Vicente.....	56,000	La Paz.....	28,000
San Salvador.....	80,000	Cuscatlan.....	75,000
Total.....	394,000		

But more recent returns bring the entire population to 580,000.

SANSANDING, a town of north-western Africa, in the kingdom of Bambarra, on the right bank of the Joliba or Quorra, 20 miles N.E. of Sego, N. Lat. 13. 40., W. Long. 6. 9. It is an extensive town, and has an active trade with Timbuctoo, carried on by means of the river, which is navigable between these two places. Salt from the Sahara, coral and beads from the Mediterranean, are all conveyed to western Soodan through this town, and exchanged for gold, ivory, slaves, wax, honey, &c. Pop. 11,000.

SANSCRIT. See LANGUAGE and PHILOLOGY.

SAN SEBASTIAN, a seaport of Spain, capital of Guipuzcoa, one of the Basque provinces, on the shore of the Bay of Biscay, 42 miles N.N.W. of Pampeluna. It occupies a narrow isthmus, terminated towards the north by a conical rock 400 feet high, called Urgull or Orgollo, and flanked on one side by the river Urumea, which is crossed by a bridge, and on the other by a bay, which forms the harbour. The summit of the hill is occupied by a fort, with five fronts, and the landward side of the town is defended by solid ramparts, with a bastion in the centre. The houses are almost all modern, built uniformly in straight streets and regular squares, so as to present an appearance quite unlike most Spanish towns. There are two large irregular churches, a handsome court-house, a nunnery, theatre, hospitals, barracks, &c. The manufactures of the place are insignificant; and the harbour is small, and not easily accessible, though well protected by a mole and small island. There is a considerable trade in English and French goods, corn and other articles being exported. From its position and strength, San Sebastian has been long a place of much importance, and has sustained several sieges. The most memorable of these was in 1813, when the British, under Wellington, took it by storm. Pop. 10,036.

SAN SEVERO, a town of Naples, capital of a district in the province of Capitanata, on the northern edge of the *Tavoliere di Puglia*, or great pastoral plain of Apulia, at the foot of Monte Gargano, 20 miles N. by W. of Foggia. It is walled, but outside of the fortifications a new town and extensive suburbs have sprung up. In this portion stand many handsome residences of the more wealthy citizens. The inhabitants in 1799 made a gallant but vain resistance to the French under Duhesme, in revenge for which an indiscriminate slaughter was begun, and the town was only saved from total destruction by the heroism of the women, who threw themselves between the victorious soldiery and their victims. Pop. 19,000.

SANSON, NICOLAS, said to be the creator of French geography, was born at Abbeville, December the 20th, 1600. He was educated at the Jesuits' College at Amiens, and afterwards devoted much of his attention to the study of geography, a pursuit of which his father is said to have been particularly fond. At the age of sixteen, young Sanson laid down a map of ancient Gaul, said to be superior to those of Ortelius and Mercator. Having married early, he applied himself to commerce; but, devoting too much attention to his favourite pursuits, his affairs soon became embarrassed, and he gave up his ledgers for ever. Visiting Paris in 1627, and taking with him his map of Gaul, he had the good fortune to attract the notice of Louis XIII., who not only took lessons from him in geography, but made him engineer of Picardy. His duties in the latter

Sansovino position did not interfere with his zeal for geography. He settled in Paris in 1640, where he published numerous maps, together with illustrative volumes. Sanson was made geographer to the king, received a royal pension, and was chosen a councillor of state; but did not assume the rank, lest, it is said, his children should abandon the favourite pursuit of their father. His death, which happened at Paris on July 7, 1667, was induced by the incessant labours to which his devotion to geographical science subjected him.

Sanson, although a zealous geographer, is said by Languerue to have constructed very indifferent maps, and it is well known he was but an indifferent critic; but he had the merit of originating the art, and left subsequent geographers to carry out that which he had so well begun.

SANSOVINO, **JACOPO TATTI**, was a distinguished Italian sculptor and architect, and was born at Florence in the month of January 1477, and not in 1479, as Temanza would have it. Tatti was born in the same street (Via Santa Maria) with Michael Angelo, who was then rising to the zenith of his fame; and it is said the mother of the youth, whom he strongly resembled, caused him to be secretly taught drawing, for which he had shown great aptitude, with the ultimate design that her son should rival the glory of his townsman, Michael Angelo. He assumed the name of *Sansovino*, out of compliment to his generous master, Andrea Contucci of Monte Sansovino, with whom he had learned the rudiments of his art. He seems likewise to have profited much by a very close intimacy with Andrea del Sarto. Sansovino becoming acquainted with Giuliano Sangallo, the architect, this artist took Sansovino to Rome, where he procured for him the friendship of Bramante and of Pope Julius II. On his return to Florence, he executed his celebrated statue of Bacchus, which was destroyed by fire in 1762. During his residence in his native city he tried his hand at architecture, and designed several triumphal arches of great beauty, to celebrate the public entry of Leo X. in 1515. He returned to Rome, only to leave it in 1527, when it was taken and sacked by the imperial troops of Charles V. of Spain. Having sought Venice on his way to France, whither he had been solicited by the court, he was induced to take up his abode in that city, where he afterwards spent his life in the enjoyment of much honour and fame. He began his labours in Venice by repairing the dome of St Mark's, and subsequently erected numerous structures for private individuals and for the Venetian republic. Among his works of this class are the unrivalled Library, opposite the Public Palace; La Zecca or the Mint (his finest work), the Loggia del Campanile, San Geminiano, the Palazzo Cornaro à San Maurizio (one of this artist's most excellent works), San Giorgio de' Greci, La Scuola della Misericordia, San Francesco della Vigna, Palazzo Delfino, Fabbriche Nuove di Rialto, &c. Sansovino did not neglect his sculpture while he raised his reputation as an architect. Three of the most beautiful statues in Venice, according to Vasari, a Laocoon, a Venus, and a Madonna surrounded by angels, are from Sansovino's hand. In addition to these, he executed two colossal figures of Mars and Neptune, which adorn the Giants' Staircase, in the ducal palace, when considerably upwards of seventy years. "In his draperies," says Vasari, "his children, and the expression which he gave to his women, Jacopo never had an equal." He died at the ripe old age of ninety-three, on the 2d of November 1570.

SANTA ANNA, a town in the republic of San Salvador, in the department and 12 miles N.E. of Sonsonate. It has many distilleries, and a large trade in indigo, tobacco, and sugar, which are raised in the vicinity. Pop. estimated at 10,000.

SANTA CATHARINA, a maritime province of Brazil, lying between S. Lat. 26. and 29. 30., W. Long. 48. 30. and 52., bounded on the E. by the Atlantic, N.W.

VOL. XIX.

by the province of Sao Paulo, S.W. by that of Rio Grande do Sul. Length from north to south about 230 miles; breadth varying from 60 to 200; area, 14,707 square miles. The coast is low, but the inland part of the province is hilly, being traversed by the mountain range of Santa Catharina, from which numerous offsets stretch towards the sea. Down the valleys thus formed flow many rivers, such as the Sao Francisco, Aracary, Tapeçu, Tijnea, and others, discharging their waters into the Atlantic; while on the other side of the mountain, the Uruguay, one of the affluents of the La Plata, has its source within the limits of this province. The soil is for the most part fertile, and the climate mild: and, owing to the variety of elevation in different parts of the country, the productions of European countries are raised here, as well as those of more tropical lands. The extensive forests of the country abound in valuable timber; but many of them are infested with wild animals, who dispute their possession with the native Indian tribes. Indigo and cochineal grow without culture. Sugar, rice, millet, beans, onions, and garlic, are used in large quantities, and exported to Rio Janeiro. Some of the rivers are navigable, and there are a few good harbours along the coast; but the principal is that formed by the island of Santa Catharina. This island, upwards of 30 miles in length, by about 10 in breadth, is separated from the mainland by a strait about 7 miles broad at the widest, but narrowing at one place to less than a mile across. This narrow part is formed by two projecting capes, which thus divide the strait into two safe and capacious harbours. The surface of the island is undulating, and well wooded; it has many fine lakes and rivers, and enjoys a mild and salubrious climate. The capital of the province, Nossa Senhora do Desterro, stands on the west coast of the island, which contains also some of the other principal towns. The province of Santa Catharina returns one senator and one deputy to the Legislative Assembly of Brazil. Pop. (1856) 105,000.

SANTA CRUZ. See CANARY ISLANDS.

SANTA CRUZ DE LA SIERRA, the largest and most easterly department of Bolivia, bounded on the N. by that of Beni and by Brazil, E. by Brazil and Paraguay, S. by the Argentine Confederation, and W. by Tarija, Chuquisaca, and Cochabamba. It lies between S. Lat. 15. and 22., W. Long. 57. and 65., and has an area of 136,235 square miles. The surface is level or undulating, and covered with extensive and hitherto unexplored forests. Here occurs the watershed between the affluents of the Amazon and those of the La Plata; the Rio Grande and Rio Blanco belonging to the former, and the Pilcomayo and Paraguay to the latter, watering the department. The last-mentioned river, however, only forms the eastern boundary of the country for some distance. Minerals are believed to exist in large quantities here, and the soil produces sugar, coffee, cacao, rice, cotton, indigo, &c. The greater part of Santa Cruz is still occupied by native tribes of Indians, and very few settlements have been made. Pop. 69,000.

SANTA FÉ, a department of the Argentine Confederation. See PLATA, LA.

SANTA FÉ, the capital of the territory of New Mexico, in the United States of North America, in a wide plain, barren and sandy, surrounded by lofty mountains, about 20 miles E. of the Rio Grande. The streets are narrow and crooked, and the houses, built of sun-dried bricks, have generally but one storey, and an open court in the middle. The most conspicuous buildings are two Roman Catholic churches, with spires. The inhabitants are mostly Spaniards and Indians. Santa Fé is a place of considerable trade. Pop. 7000.

SANTA MARTA, or **MARTHA**, a seaport of New Granada, capital of a province in the department of Magdalena, on the east shore of a bay of the same name, on the Caribbean Sea, 40 miles N.E. of the mouth of the Mag-

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dalena. It has many well-built houses, a cathedral, and a safe harbour, defended by a citadel and battery. Here are some of the most important mercantile houses in the country, and a company for the steam navigation of the Magdalena. The transit trade of the place is very considerable. Pop. 8000.

SANTA MAURA. See IONIAN ISLANDS and LEUCADIA.

SANTANDER, a province of Spain, bounded on the N. by the Bay of Biscay, E. by the province of Biscay, S. by that of Burgos, S.W. by Palencia, and W. by Oviedo. Area 3434 square miles. It is almost entirely occupied with lofty mountains, for the Cantabrian chain traverses the south of the province, and sends off numerous branches towards the sea. Between these there are deep narrow valleys and glens, watered by the rivers that take their rise in the mountains; such as the Deva, Nansa, Besaya, Miera, and others. The loftier regions of the province contain much fine pasture-ground, and are clothed with extensive forests, affording good timber for various purposes. The most prevalent tree in these woods is the lime; but oaks, firs, walnuts, chestnuts, plum-trees, fig-trees, and some apple-trees, are also grown in the province. Maize, wheat, wine of inferior quality, vegetables, and fruit, form the principal produce of the valleys; and maize bread is the chief article of food among the peasantry. Iron, argentiferous lead, and other metals, are obtained here; and there are quarries of limestone, marble, gypsum, and beds of potters' clay. Leather, woollen and cotton cloth, agricultural implements, and other articles, are manufactured; and many of the people live by fishing and fish-curing; but trade of all kinds is much impeded by the deficiency in the means of communication. The only important seaport in the province is Santander, the capital, through which the foreign trade is carried on. The people of the province are quiet, sober, and industrious, and education is more attended to here than in most parts of Spain. Pop. (1857) 232,523.

SANTANDER, the capital of the above province, on the shore of the Bay of Biscay, at the mouth of the rivers Cubas and Fijeros, 85 miles N. of Burgos, and 207 N. of Madrid. It stands on the north side of a large open harbour, and is sheltered towards the north by a small ridge of hills, beginning at the entrance of the harbour, and stretching westwards. The town was once surrounded by walls, of which scarcely a trace now remains, as the buildings have extended far beyond its original limits. There is a cathedral here, not very remarkable for architectural merit, and disfigured by a tasteless modern cupola; several other churches, hospitals, a town-hall, theatre, custom-house, college, and several schools. A cigar manufactory occupies the precincts of a suppressed nunnery; tanneries, breweries, sugar-houses, candle factories, cooperages, &c., are also among the manufactories of the place. The harbour is large, deep, and safe, affording good anchorage, and easy of access. There are fine quays, always busy and crowded. The number of vessels that entered in 1856 was 447, tonnage, 51,788: that of those that cleared in the same year 408; tonnage, 56,375. Santander carries on a considerable trade, almost entirely with Cuba, to which island it exports the flour of Castille, receiving in return sugar, coffee, and rum. Cacao is also brought from La Guayra, and small quantities of fish from Norway, Shetland, and Newfoundland, in exchange for timber, hides, oil, and rice from Spain. The total value of the imports in 1856 was L.976,611, and that of the exports L.363,353. The custom returns for 1855 amounted to L.184,047. Santander is joined by railway with Alar del Rey, about 70 miles off in the interior, and steamers ply regularly between this port and Nantes, Bayonne, Liverpool, and Hamburg. Several improvements are being carried out in the harbour, by increasing its

depth, and erecting a mole and a lighthouse. Santander (called by the Romans *Portus Blendium*) was, at an early period, an important seaport; but afterwards fell into decay, and only recovered its position after the discovery of America, when it was licensed to trade with that continent. Charles V. landed here in 1522, to take possession of the Spanish crown; and Charles I. of England re-embarked here in 1623 after his visit to Spain. Pop. about 20,000.

SANTAREM, a town of Portugal, capital of a district of the same name, in the province of Estremadura, on a rocky hill on the right bank of the Tagus, 50 miles N.N.E. of Lisbon. It is in general well built, although many of its splendid mansions are in a ruinous condition. Some remains still exist of the ancient walls, which in the time of the Moors gave the place such strength, that it was considered almost impregnable. The town is remarkable for the number and antiquity of its ecclesiastical buildings. One edifice, originally a mosque, and thereafter a church, is now used as a theatre, and much defaced. Besides churches and convents, the town contains also schools and hospitals. The surrounding country is very rich, and Santarem carries on an active trade with Lisbon by means of the river, especially in corn, wine, and oil. Pop. 8000.

SANTEUL, JEAN BAPTISTE DE, an excellent Latin poet, was born at Paris in the year 1630. Having finished his studies, he applied himself entirely to poetry, and celebrated in his verse the praises of several great men, by which he acquired universal applause. He enriched Paris with a great number of inscriptions, which are to be seen on the public fountains and monuments of the city. At length, some new hymns being required for the Breviary of Paris, Claude Santeul his brother, and M. Bossuet, persuaded him to undertake that work. Santeul was intimate with all the learned men of his time, and had as his admirers the two Princes of Condé, father and son, from whom he frequently received favours. Louis XIV. also gave him a proof of his esteem by bestowing upon him a pension. He attended the Duke of Bourbon to Dijon, and died there in 1697, as he was preparing to return to Paris. Besides his Latin hymns, he wrote a great number of Latin poems, which have all the marks of genius discoverable in the works of true poets. The best collected edition of the *Œuvres* of Santeul is that in 3 vols., Paris, 1729.

SANTIAGO, the largest of the Cape Verd Islands, and in position one of the most southerly of the group, N. Lat. 14. 54., W. Long. 23. 40. Length 35 miles, breadth 12; area 360 square miles. In its general character it is mountainous, being traversed by a ridge which divides the two *conselhos* of Villa Praia and Santa Catarina, and attains near the centre, in a cone-shaped summit called Antonia, the height of 4,500 feet above the sea. There are, however, a number of fertile and well-watered valleys which stretch towards the coasts, and open out into wide plains and gentle slopes. The geological formation of the mountains is basaltic, with extensive layers of clay, and deposits of chalk and lava. The valleys are mostly occupied with gardens and plantations of coffee and sugar, separated by *purgueira* hedges. In the more level parts, the better land is planted with cotton, anise, and *purgueira*, whose oil forms an important article of export, while the inferior soil is used for pasture; but no trees can be grown on account of the violent hurricanes to which the island is liable. The average produce of the island is 542 pipes of brandy, 97,000 lbs. of sugar, 14,800 qrs. of maize, about as much of beans, and 22,200 qrs. of *purgueira* seed. Santiago has seven harbours for large vessels, the largest, deepest, and safest of which is Praia, on the south coast. It is divided into two *conselhos* and eleven parishes, and has a population of 31,103, of whom 28,137 are free and 2866 slaves.

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SANTIAGO DE CHILI, the capital of the republic of Chili, and of the province of the same name, on the Mapocho, an affluent of the Maypu, 90 miles E.S.E. of Valdivia, at an elevation of 1836 feet above the level of the sea, calculated from the marble fountain in the *plaza*. S. Lat. 33. 26, W. Long. 70. 38. The plain in which it stands is too lofty to exhibit much natural verdure or luxuriant vegetation, except along the banks of the rivers and artificial canals which water the soil. Still the situation of the city is exceedingly fine, and its scenery very beautiful; the majestic ridge of the Andes towers with its snowy summits to the east, while a lower ridge bounds the plain on the west. Careful irrigation has converted large portions of this plain into a very rich expanse, productive especially of wheat, which yields on an average twentyfold. The climate is salubrious, the thermometer ranging between 70° and 75°; and there is no rain and little wind. The rate of mortality fluctuates between 9 and 11 per cent. Among children, however, from 1 to 7 years old, the mortality is much greater, since of these it may be considered that 2590 die annually; while of adults from 25 to 35, the number of deaths is only about 148. This circumstance is to be ascribed to the abundance of unripe and unwholesome fruit, which is greedily devoured, especially by the poorer children. The annual number of births averages about 2300 males and 2690 females. Of the former rather more than half, and of the latter about the half, die. Santiago, like all other Spanish-American cities, is laid out in squares; the streets, which are broad, but not very well paved, crossing each other at right angles. A beautiful avenue, consisting of four rows of stately poplars, with streams of water between them, and a beautiful fountain at one end, divides the city into two parts. The private houses were for a long time low and mean-looking; but within the last ten years great and rapid improvements have been made in the style of house architecture. There are now many handsomely-built and equally well-furnished mansions, most of which have cost not less than L.20,000 for their erection. Near the centre of the town is the great square or *plaza*, with a marble fountain in the middle. Round it stand some of the public buildings of the city. These have in general nothing remarkable about them. The most noteworthy are the mint, the *Camara de Diputados*, or hall of deputies, and the theatre, which accommodates 1500 persons. The churches are very plain; the best are the *Compañia*, the cathedral, and Santo Domingo. Santiago possesses a national public library, containing 23,000 volumes, and a library of the tribunals with 1600 volumes; a museum; an observatory; a university; two hospitals; and a proportionate number of asylums, convents, nunneries, and schools of various descriptions. There are no manufactories worth noticing; a pottery has been lately established, and is now struggling into existence; and a coarse cloth factory has long existed in a very languishing condition. The city is lighted with gas; and an attempt has been made to introduce water in pipes, but this has been as yet only partially successful, and the inhabitants still receive their water in barrels brought on the backs of horses from the public fountains. Tolerable carriage-roads connect Santiago with the coast, and with the far-off northern and southern extremities of the wide-spread republic of which it is the capital; while at present a railroad to Valparaiso and another to Talca are in progress, the former connecting it with the vast Pacific, and the latter with a long series of agricultural provinces. There is a considerable trade carried on, chiefly through Valparaiso. Fruit, hides, salt beef, and the produce of the mines are exported; while sugar, cacao, and other articles are imported from Peru and Central America. Some commercial intercourse also subsists between Santiago and Mendoza, on the other side of the Andes, across which

there are here two passes, lofty but practicable, for mules. The city was founded by Pedro de Valdivia, on the 24th of February 1541, on property belonging to the Cacique Huelen-Guala, surrounding the little hill or rather rock of Huelen, now called Santa Lucia. This hill is now crowned with a fort, which is frequently visited by strangers for the sake of the fine view it commands. Valdivia portioned out the city into lots, in squares of 150 Spanish or 138 English feet, which he divided into fourths, called *solares*, or building sites. Each of his followers received one of these, on which he built his wooden, straw-thatched house. Each received likewise a piece of enclosed land, for the cultivation of wheat and vegetables. Thus the city rose, and soon became rich and populous. But many barriers were opposed to the advancement of its prosperity by the restrictive policy of Spain, as long as Chili remained subject to that country. When the colonies achieved their independence, Santiago sprang into new life and activity, and made such rapid progress in size, wealth, and civilization, that it may now be ranked among the most flourishing and important cities of South America. Besides natives, it is inhabited in a large proportion by foreigners. Of these the most numerous are the Germans; then Americans and English conjointly, who, till the railway and gas-works were commenced, were the scarcest; next to them, French and Italians. The population is 107,000, in the proportion of 1 unmarried man to 3 unmarried women; 14,420 married men to 14,570 married women.—The province of Santiago comprises the departments of Santiago, Victoria, Melipilla, and Rancagua, and is bounded on the north by the provinces of Aconcagua and Valparaiso, south by that of Colchagua, while the Argentine Republic lies to the east and the Pacific to the west. Its length is about 120, and its breadth 114 miles. Along its eastern border stretch the Andes from north to south; and in this part of the range stands their highest summit within the dominions of Chili, Tupungato, 22,015 feet high; for Aconcagua, which attains the height of 22,300 feet, belongs to the Argentine Republic. Between the mountains and the sea, this province contains some of the richest valleys in Chili. It is well watered, and enjoys a fine climate. Santiago is consequently almost exclusively an agricultural country, and its principal production is grain; but it also yields silver and copper to a considerable value. The great mass of the people are farm-labourers, of whom there are 24,000; then farmers, of whom there are 11,400; of sempstresses, there are 10,011; of washerwomen, 4585; of cooks (chiefly women), 4206; of spinners, 5493; of servants, 9618; of shopkeepers, 2501; shoemakers, 4204; weavers (chiefly women), 1777; miners, 1036; priests, 321; teachers, 170; doctors (M.D.), 39; advocates, 150; wet nurses, 350; dentists, 5; dressmakers, 22; tailors, 870; butchers, 80; bakers, 600; jewellers, 35. The whole population amounts to 280,000, of whom 16,000 males and 13,000 females are able to read and write.

SANTIAGO DE COMPOSTELLA, a town of Spain, Galicia, in the province and 32 miles S. of Corunna, occupying an uneven irregular situation, encircled by hills, from which may be obtained picturesque views over the town and neighbourhood. The climate of the place is cold and damp, and the weather almost invariably rainy; but this humidity favours the vegetation of the country, so that the place is well supplied with fruit and vegetables. The town is mostly built of granite, and has a sombre appearance; the public places are embellished with numerous fountains. Many of the streets radiate in different directions from the cathedral, while those of a better class run parallel to one another. The most important building in the place is the cathedral, built about 1082, on the site of a former one. The external appearance has been injured by subsequent additions, which have been built against the outer walls, but which

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have served to protect them from the effects of the damp climate. On each of its sides is a square formed by various ecclesiastical edifices. The interior is impressive, with its long lofty naves, its dim religious light, heightening the effect of the illuminated high altar, surmounted by the image of St James. This image, no way remarkable for beauty, is an object of great reverence, and its back between the shoulders is kissed by all the pilgrims to the shrine. The most remarkable objects in the cathedral are the fine dome, two bronze pulpits in the choir, and the numerous monuments, some of them much defaced. Some of the other churches in the town are handsome; the ancient large and wealthy Benedictine convent of St Martin is now a barrack; the university, founded in 1532, and having 1030 students in 1845, has a heavy Ionic front and a handsome Doric quadrangle. The principal manufactures of Santiago are those of linen cloth and silk stockings; there is an active trade in rosaries and saints' images. The city owes its origin and importance entirely to the saint whose name it bears. He, according to the legend, after his decapitation at Jerusalem, conveyed himself into a boat and made a remarkably quick passage in seven days to Padron, a small seaport near Santiago. The body, however, lay unnoticed and unknown for nearly 800 years, until the appearance of heavenly lights over the spot pointed out its resting-place. Hence the epithet of Compostella (*Campus stellæ*), added to the name of the town. The bones were removed to Santiago in 829; and the first cathedral built over it in 874 became a great centre of pilgrimage, as the Spaniards were forbidden by the Pope to go as crusaders to Jerusalem as long as the Moors were in their own land. In 997, Al Mansur penetrated as far as Santiago, and destroyed the whole place except the saint's tomb; and when the new cathedral was erected, the sacred bones were for security built into the foundation. After the time of the Reformation, the pilgrimages to Santiago diminished very much in number, and the town fell into decay. It now presents a very melancholy appearance; its numerous convents suppressed and fast falling into ruins. Pop. 22,729.

SANTIAGO DE CUBA, the oldest city and formerly the capital of Cuba, on the river Santiago, about 6 miles above its mouth, on the S.E. coast of the island, N. Lat. 20.; W. Long. 76. It is well built, chiefly of stone, with straight regular streets, and a handsome public square, with an equestrian statue in bronze of Ferdinand VII. Among the more important buildings are a cathedral and other churches; and the town contains a theological seminary, several learned societies, schools, a theatre, &c. Santiago is the seat of an archbishop, and of the governor of the eastern intendency of Cuba. The harbour, though difficult of entrance, is large, deep, and well defended by several forts. In the extent of its trade it ranks next highest to Havannah and Matanzas among the ports of Cuba; the imports for 1855 amounting in value to L.500,878, and the exports to L.506,208. The climate, however, is very unhealthy, and yellow fever is very destructive here. The town is surrounded by mountains, which are not insalubrious. Pop. (1850) 24,005, of whom 9610 were white people, 9396 free coloured people, and 4999 slaves.

SANTIAGO DEL ESTERO. See PLATA, LA.

SANTONA, a town of Spain, in the province and 16 miles E. of Santander, on the north side of a fine bay, on the opposite shore of which stands Laredo. It occupies a rock somewhat resembling that of Gibraltar, and, like it, joined to the mainland by a low isthmus, and it is fortified, containing barracks, arsenals, and magazines. Pop. 934.

SANTORIN, or THERA, an island in the Ægean Sea belonging to Greece, the most southerly of the Cyclades, 13 miles S. of Nio, and about 60 N. of Crete. It is of the form of a horse-shoe or crescent, about 30 miles in circumference, and nowhere more than 3 miles across. This

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island was formerly united with Therasia, and formed a complete circle, having in the centre the deep crater of a submarine volcano, the rim of which may still be traced by the islands of Santorin, Therasia, and Aspronisi. The water in the inside is of great depth, though not, as was at one time supposed, unfathomable; and near the middle are three islets which have been thrown up by the volcano, two of them in ancient times, and the other, which is the largest, as late as 1707. The whole of the islands are of volcanic origin, except the southern part of Santorin, which is of limestone formation. In this portion, Mount Elias, the highest point, reaches an altitude of 1887 feet. The inner edge of the crescent formed by the island consists of rugged and steep precipices, from 500 to 1200 feet above the sea, and at the foot of these stand Epanomeria, Merovouli, and Thera, the chief towns; many of the houses nestling among the cliffs and accessible only by stairs cut in the rock. The other side of the island presents an agreeable contrast to these bare cliffs. It slopes gradually to the sea, and is entirely covered with vines, from among which numerous white villages rise. Barley, vetches, beans, figs, &c., are also raised; but the chief product of the island is its wine, which is of good quality, and the total value of which is upwards of L.16,000 yearly. The whole annual produce of the island is about L.24,000. Santorin contains thermal and mineral springs, but there is some scarcity of fresh water, and the inhabitants, though in other respects industrious, have done little to secure the small supplies they possess. Some ancient remains have been found, and there are numerous churches and convents belonging to the Greek and Roman Catholics. The only important circumstance connected with Santorin in ancient history is its having founded the celebrated colony of Cyrene, in Africa. Pop. (1848) about 14,380.

SANTOS, a town of Brazil, in the province and 34 miles S.S.E. of San Paulo, on the north side of the island of San Vincente, in the bay of Santos, which forms an excellent harbour. It is built for the most part of stone, and contains a town-hall, arsenal, churches, convents, and hospitals. Santos is the port of San Paulo, and connected with that town by a good road. Almost all the exports of the province are shipped here, especially sugar, rice, coffee, tobacco, and cotton cloth. Pop. 8000.

SAN VICENTE, a town of Spain, Estremadura, in the province and 33 miles N. of Badajoz. It contains a parish church, several schools, a town-hall, prison, &c. The houses are for the most part well built, and the streets clean. Manufactures of hats, leather, linen, &c., are carried on, and there is some trade in cattle, hides, dried figs, and other fruit. Pop. 6888.

SAONE, (anc. *Arar*), a river of France, rises near Vionmenil, in the department of Vosges, and flows first south-west and afterwards directly south, till it joins the Rhone at Lyons. Besides the department in which it has its source, the Saone traverses those of Haute Saone, Côte-d'Or, and Saone-et-Loire; while in the lower part of its course it separates that of Rhone on the right from Ain on the left. Its most important affluent is the Doubs from the N.E.; and among the towns on its banks are Gray, Auxonne, Chalon, and Macon. Its whole length is about 280 miles; and it is navigable as far as Gray, 190 miles above its confluence with the Rhone. By means of canals the Saone is connected with the Rhine, the Loire, and the Seine.

SAONE, *Haute*, a department of France, bounded on the N. by that of Vosges, E. by Haut-Rhin, S. by those of Doubs and Jura, W. by Côte-d'Or, and N.W. by Haute Marne. Length from N.E. to S.W. 70 miles, greatest breadth 38; area 2064 square miles. The eastern part is occupied by the Vosges Mountains and their branches; the main ridge forms for a short distance the N.E. boundary, and has two principal summits here, the Ballon de Ser-

Saône-et-
Loire.

vance, 3967 feet, and the Ballon de Lare, 3718 feet high. This portion of the department is rugged and barren; but not so the remainder, which occupies the centre of the wide basin of the Saône. This basin is enclosed on the north and north-west by the Faucilles, the chain of Langres, and the Côte-d'Or; on the south-east by the hills of Laumont, a branch of the Jura Mountains. All these ranges are outside the limits of the department, but some of their offshoots extend into it; its surface, however, except in the north-east, is not mountainous, but consists of gentle slopes and level plains. Through the centre of the country flows the sluggish stream of the Saône, into which flow all the rivers that water the department. The Oignon rises among the Vosges on the N.E. frontier of Haute Saône, and flows south-west, separating for the greater part of its course this department from Doubs and Jura. It joins the Saône at Pontaillier in the department of Côte-d'Or. In its geological character, Haute Saône is not uniform. The eastern portion consists of the primitive rocks of the Vosges; to the south and west of this lie beds of sandstone, and beyond these again there are strata of the various kinds that lie between the sandstone and the chalk formation. Iron, coal, granite, porphyry, and freestone are the most valuable minerals obtained in the country. Mineral and saline springs exist at various places. The climate is more moderate than in the surrounding departments, being neither so hot in summer nor so cold in winter. The autumns are very fine, but sudden changes of weather are not uncommon in spring. The soil in the loftier regions is not very good, and the mountains are almost all covered with forests; but the more level districts are of great fertility. Fine meadows occupy the plains; and the sloping hills are covered with vines and corn-fields. Although agriculture is not very far advanced, the produce of the country in corn and wine is more than sufficient for the consumption. About half of the area consists of arable land, and about a fourth is occupied by wood—oak, beech, and fir being abundant. About 150,000 acres are occupied by meadows and pasture-land, and 55,000 by moors and heaths. The vineyards, which cover an area of 30,000 acres, produce wine of a very ordinary quality. Wolves, foxes, squirrels, and otters, are among the wild animals of the country. Game is plentiful, and the rivers abound in fish. The rearing of cattle is much attended to, as well as of horses and pigs, and the breeds of all these animals are good; but sheep are neglected. It is calculated that the department contains 150,000 horned cattle, 32,000 horses, 110,000 sheep, 80,000 pigs, and 12,000 goats. The manufactures comprise iron, for which there are from 35 to 40 furnaces, 60 foundries, and 2 steel manufactories, ironmongery of all kinds, glass, pottery, leather, cotton thread and cloth, paper, oil, brandy, &c. Some trade is carried on in wine, corn, and other rural produce, horses, cattle, timber, and iron. Large quantities of the produce are floated on rafts of timber down the Saône, which forms one of the principal means of internal communication. There are numerous roads throughout the department; and a railway is in course of construction, which will traverse the country. Haute Saône belongs to the diocese of Besançon, and, besides Roman Catholic churches, contains 4 Protestant ones, and 3 synagogues. It has law-courts, subject to the Court of Appeal at Besançon, a normal school, 4 colleges, 7 upper, and 1100 elementary schools. There are three arrondissements, subdivided as follows:—

	Cantons.	Communes.	Pop. (1856).
Vesoul	10	215	102,228
Gray.....	8	165	81,301
Lure.....	10	203	128,868
Total.....	28	583	312,397

The capital of the department is Vesoul.

SAONE-ET-LOIRE, a department of France, bounded

Saône-et-
Loire.

on the N. by that of Côte-d'Or, E. by Doubs, S. by those of Ain, Rhone, and Loire, W. by Allier, and N.W. by Nièvre. Length from E. to W. 85 miles, greatest breadth 68; area 3305 square miles. It is traversed from north to south, in the centre, by the Charolais and Mâconnais Hills, which form a northern prolongation of the Cevennes, connecting that range with the Côte-d'Or, the Faucilles, and ultimately with the Vosges. The southern portion of these hills consists of several parallel ridges, with valleys between them, down which rivers flow either to the Saône on the one side, or to the Loire on the other. Towards the north, the breadth of ground occupied by the hills diminishes; and the number of separate ranges is reduced to two, with a valley between, opening at either end to the level ground on different sides, so as to permit a communication; and this has afforded a passage for the canal that connects the Saône and the Loire. The highest summit of these hills is Mount Blauvray, 3280 feet above the sea. The ground on either side slopes gradually down to a level surface—that on the east side belonging to the basin of the Saône, and that on the west to the Loire. These rivers flow in opposite directions, the former towards the south, and the latter towards the north; and they, with their affluents, are the principal streams that water the department. Both are navigable through their whole course in Saône-et-Loire, and the Saône receives the Doubs and the Seille, the Loire, the Arconce, Arroux, and others, within its limits. The department has also some small lakes. Granite is the prevailing rock in the hills and western plain, while the geological structure of the Saône basin is oolitic. Along the banks of both the great rivers, however, there are tertiary deposits. The climate is in general temperate; among the hills it is cold and variable; but much more genial weather prevails in the lower ground. The soil is in general extremely fertile, and the surface is varied with rich corn-fields, green meadows, and vineyards, covering the hills and dales of the country. Corn is chiefly grown to the east of the Saône; the central portion between that and the hills is the vine-growing part of the country; and the western slope is chiefly occupied with pasture-land. Of the whole area, about 1,632,000 acres are occupied by cultivated land, 417,000 acres by wood, and 87,000 by heaths and waste lands. The corn produced is, on the whole, more than sufficient to supply the demand; for although some parts of the department import it, this is made up for by the exportation from other districts. The wines produced here are in considerable repute, though not esteemed of first-rate quality. A great number of cattle, and especially of sheep and pigs, are raised here; and the oxen of the Charolais have a reputation little inferior to the best Swiss breeds. It is calculated that there are in the department more than 240,000 horned cattle, 150,000 pigs, and 370,000 sheep. Wolves and wild boars are found in the mountains. The minerals of the country contribute in no small degree to its wealth. The coal-fields in the valley of the Arroux are among the richest in France; iron is also obtained in great abundance; and at Romanèche there is a rich mine of manganese, which yields annually about 80,000 tons of that mineral. There are, too, in the department quarries of marble, alabaster, and freestone. Besides the mining operations, various branches of industry are carried on. The most important of these is the manufacture of iron, and next to that those of glass, pottery, leather, cotton cloth, paper, hats, &c. The principal articles of trade are iron, coal, leather, corn, and wine. The internal means of communication are numerous, as there are two navigable rivers, joined by the Canal du Centre, numerous roads, and a railway which traverses the valley of the Saône. The department forms the diocese of Autun, and has several courts of law under that at Dijon. It contains also a lyceum, normal school, 5 colleges, 7 upper, and

Sao Sebastiao 670 elementary schools. The capital is Mâcon, and there are 5 arrondissements, as follows:—

	Cantons.	Communes.	Pop. (1856.)
Mâcon	9	131	120,297
Autun	8	85	104,595
Châlon-sur-Saône	10	152	134,480
Charolles	13	136	129,911
Louhans	8	81	85,735
Total.....	48	585	575,018

SAO SEBASTIAO, a seaport of Brazil, on the Atlantic coast, opposite an island of the same name, in the province of San Paulo, and 65 miles E.N.E. of Santos. It is wretchedly built, with mean houses and unpaved streets, but contains a church, convent, and schools. The harbour is large, and the trade of the place considerable. Pop. of the district 6000.

SAPPERS AND MINERS, ROYAL. See ARMY.

SAPPHIRE. See MINERALOGY.

SAPPHO (Σαπφώ, Æolic Ψάπφα), a very celebrated Grecian poetess, was a native of the island of Lesbos, and was nearly contemporary with her countryman Alcæus, with whom she divided the leadership of the Æolic school of lyric poetry. She must have been younger than that poet, as she was still alive in 568 B.C. It cannot now be ascertained whether she was a native of Eresos or of Mitylene; but the supposition of K. O. Müller (*Hist. of Greek Lit.*, vol. i. p. 172), may perhaps bear some degree of plausibility, that at the time of her greatest celebrity she passed from the lesser city to the greater. Few circumstances relating to this illustrious woman can now be ascertained. About 596 B.C., while still in the bloom of youth, she sailed from her native island to take refuge in Sicily; and at a much later period she produced the ode alluded to by Herodotus (ii. 135), in which she reproached her brother Charaxus for purchasing Rhodopis or Doricha of Naucratis in Egypt,—a beautiful courtesan, with whom he had fallen desperately in love. The severity with which the censure is laid on has induced the majority of the later critics to treat as a libel the current charge of Sappho having herself occasionally sacrificed to the goddess of love. It was formerly a pretty common belief that Sappho took a violent leap into the sea from the Leucadian rock, because her love was not requited by a youth named Phaon, to whom it had been addressed. It is true a youth is frequently mentioned, but never by name, in her odes; and it is just possible she may have alluded in some of her verses to Adonis, the favourite of Aphrodite, who in some legends is called Phaon and Phaëthon. But the whole story is likely to have originated in some highly poetical expression used by the author. Besides, as Welcker and others have remarked, it is not told by any of the preservers of the legend whether Sappho survived the leap or perished by it. Sappho, like all the early lyric poets, sang the praises of Love and Marriage. She sang them with simplicity and directness, and with a warmth of poetic fire which emanated from uncommon poetic endowments. In the remains of her lyrics which survive, there is no line calculated to cloud her fame, as there is none to cloud her genius. They contain passages in which the poetess repels with dignity the least transgression of the bounds of social intercourse as understood by the Æolians; but it is precisely because the manners of that race are so little understood, that men have chosen freely to calumniate the name of this great poetess. Müller justly remarks, that at the time at which Sappho wrote, the line had not been drawn with any degree of exactness between sensual and sentimental love. The Attic comic poets could neither understand the simplicity of that simple time, nor could they indeed comprehend it at all. They accordingly made short work of it, by introducing Sappho into their licentious dramas as a common courtesan.

Those who wish to see the character of the poetess vindicated

from the numerous charges which have been brought against it, may read the little work of Welcker, *Sappho von einem herrschenden Vorurtheil befreit*, Göttingen, 1816; and the writings of K. O. Müller, Neue, Ulrici, Bode, &c. To form a true estimate of the erotic poetry of Sappho, one must have recourse to the few fragments of it which now remain. Of the nine books of erotic odes, epithalamia, hymns to the gods, and other poems which Sappho originally left, only one complete ode and a number of short fragments are now left. Judging from the very scanty material at our disposal, it is not difficult to justify the admiration of the ancients. In purity and fervour, in delicacy and sweetness, in grace of diction and in harmony of construction, Sappho may be fairly pronounced equal to the greatest lyric poet of any age or country. The *editio princeps* of the hymn to Aphrodite was published by H. Stephens in his edition of Anacreon, with whom Sappho's poems have been usually printed, in 1554. Since then there have been countless editions of her fragments, from the simple text up to the most cumbersome elaboration of annotation. In the latter respect Volger, Leipzig, 1810, decidedly bears away the palm; while the edition of Neue is regarded as the first in point of excellence. It bears the name of *Sapphonis Mytilenææ Fragmenta, Specimen Operæ in omnibus Artis Græcorum Lyricæ Reliquiis, excepto Pindaro collocandæ, proposuit*, C. F. Neue, Berlin, 1827. Sappho has been frequently translated into all the European languages. What is called the Sapphic measure is the most important of all the Sapphic metres. It corresponds very closely to the measure employed by Alcæus. That used by Sappho, and which bears her name, has a short syllable at the end of the verse, while in the Alcaic measure the syllable begins the line. According to the improved scansion of Professor Key (*Journal of Education*, vol. iv.), the Sapphic measure is as follows:—

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Grandinis misit pater et rubente.

The Sapphic and Alcaic are most probably the favourite measures of Æolian lyric poetry. The near resemblance of the two verses, as well as their frequent employment by the poets of Lesbos, and in the odes of Horace and Catullus, afford good evidence of this proposition.

SARABAND, in Spanish *zarabanda*, a Spanish dance in $\frac{3}{4}$ time, formerly danced with castanets. The movement is rather slow. In the music of Corelli and other old masters, sarabands are of frequent occurrence.

SARAGOSSA (Sp. *Zaragoza*), a province of Spain, bounded on the N.E. and E. by that of Huesca, S. by that of Teruel, S.W. by that of Guadalajara, W. by that of Soria, and N.W. by that of Navarre; area 11,783 square miles. It is not so mountainous as the other portions of Aragon, of which ancient kingdom it once formed a part, lying principally in the valley of the Ebro, which traverses the province from N.W. to S.E. This valley, from 70 to 80 miles broad, is enclosed on the S.W. by the Sierra de Moncayo, the highest hills in the province, and on the N.W. by the Sierra de Sobrarbe. The latter separates from the valley of the Ebro that of its affluent the Aragon. Several other rivers water the country, all flowing into the Ebro; the Jalon, Huerba, and Aguas from the right; the Arva and Galleago from the left, being the largest of these. The soil is in the level portions pretty fertile, and agriculture is the principal occupation of the people. Wheat, rye, barley, oats, hemp, flax, oil, and wine are the chief productions; silk-worms are also bred; and there are extensive forests which yield wood for charcoal. There are no important manufactures, silk and soap being the only articles which were formerly made to a considerable extent, and even these branches of industry have now much fallen off. Pop. (1851) 297,336.

SARAGOSSA, the capital of the above province, and for-

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Saragossa.

Saragossa. merly of the kingdom of Aragon, in a rich plain on the Ebro, just above its confluence with the small river Huerba, 180 miles N.E. of Madrid. It is built on the south side of the river, which is crossed by a fine stone bridge erected in 1437. Encircled by walls, and substantially built, with numerous domes, towers, and spires, it looks very imposing from a distance, but has a dull and gloomy appearance on a nearer approach. The streets are narrow, crooked, and ill-paved, the grand old mansions deserted or in ruins, and the whole town crowded with beggars and lumbering rustic waggons. Along the river's side there are fine public walks and avenues of poplar-trees. The chief buildings of the town are the two cathedrals, in each of which the chapter resides alternately for six months. They present in almost all respects a complete contrast,—the one ancient and stately, in the Gothic style; the other like an oriental building, with multitudinous domes and variegated tiles. The interior of the former is very fine, and has many interesting monuments. The latter is quadrangular, with three naves, and is entirely dedicated to the worship of the Virgin, the chief object of adoration being a pillar of alabaster, on which she is said to have alighted. This relic is enclosed in a small chapel inside the cathedral, and a hollow has been worn in it by the lips of the worshippers. The new tower, or tower of San Felipe, like the celebrated one of Pisa, diverges about 9 feet from the perpendicular, a defect caused by the sinking of the foundation. It is built of brick, richly ornamented, and is lofty enough to command a fine view of the city and environs. Among the eighteen churches of the town, that of San Pablo is remarkable for its grand architecture; and that of Santiago is said to cover the site of the lodging place of the apostle to whom it is dedicated. Saragossa contains one of the largest hospitals in Spain, and a *Casa de Misericordia*, or poor-house, with accommodation for 600 or 700 inmates. The university, which was founded in 1474, had, in 1841, 1100 students. It formerly possessed a fine building and valuable library, but these were destroyed by the French, and a new edifice, with a handsome quadrangle, has been partially erected. Another remarkable building of the town is the *Aljaferia*, or old citadel, an irregular pile, standing outside the N.W. gate. It was originally built as a palace by the Moors; subsequently occupied by the Inquisition; afterwards used in succession as a barrack, military hospital, and prison. It is now unoccupied and falling into decay, although it contains a splendid staircase and many magnificent halls. Besides the establishments already mentioned, Saragossa contains various schools and convents, a museum, public library, botanic garden, theatre, baths, &c. Leather, silk, and woollen cloth are manufactured, and there is some trade in agricultural produce carried on by the Ebro. The most ancient name of the town was Salduba, or Saldyva, which was given to it by the Celtiberians, who originally inhabited this country. After the Cantabrian war it was colonized by Augustus, B.C. 25, who gave to the place his own name, calling it Cæsar Augusta, or Cæsarea Augusta. It early renounced the pagan religion, and is said to have been the birth-place of Prudentius, the earliest Christian poet. No remains of the ancient city have been preserved. About 470 A.D. it was taken by the Goths, and in 712 by the Moors, who corrupted the Roman name into that which it now bears. In 1118 Alonzo, surnamed *el Batallador*, wrested Saragossa from the Moors after a siege of five years, during which the defenders were reduced by famine to the utmost straits. In 1710 the British general, Stanhope, defeated the French under Philip V., not far from the town. But the most memorable events in connection with Saragossa are those which took place during the French invasion of Spain. In 1808 the citizens rose against the invaders, and, under the command of Palafox, defended the town for two months, favoured by the strength of the place

and their own obstinate courage. The first siege was raised August 15th, 1808; but the respite thus gained was not made use of to strengthen the defences; and when the French attacked the place again in greater force, it was compelled to surrender, February 20th, 1809, having lost in all nearly 60,000 men. Pop. 82,189.

SARAIK, a town of European Russia, capital of a circle in the government and 35 miles W.N.W. of Riazan, on the Osetr. It has eight churches, five of stone and three of wood; two schools, two charitable institutions, an old stone citadel, and numerous gardens. Carpentry is carried on here, as well as the manufacture of tar and rosin; and there is an active trade in cattle. Pop. 6332.

SARANSK, a town of European Russia, capital of a circle in the government and 70 miles N. of Pensa, at the confluence of the Insara and Saranka, in a very fertile country. It is an irregular place, with crooked, ill-paved lanes; and contains numerous churches, a school, and an hospital. Here are salt magazines, and manufactures of soap, sail-cloth, &c. Some trade is carried on. Pop. 5443.

SARAPUL, a town of European Russia, capital of a circle of the same name in the government of Viatka, on the Kama, 195 miles S.E. of Viatka. It is commanded by a fort on an adjacent hill; and contains a cathedral and other churches, besides various schools and hospitals. There are here manufactures of soap, jewellery, and cloth; some river navigation, and an active trade in corn and salt. Pop. 7668.

SARATOGA SPRINGS, the most fashionable watering place in America, in the state of New York, 38 miles N. of Albany. It is only celebrated for its mineral waters, as the scenery in the neighbourhood has not many attractions; but it is resorted to by multitudes of all classes for the sake of health or pleasure. There are numerous large and splendid hotels here; as well as churches, academies, &c. The number who visited the place in the summer of 1853 is estimated at 30,000. Near this, in 1777, the British troops under Burgoyne surrendered to General Gates. Pop. 4650.

SARATOV, a government of European Russia, lying between N. Lat. 48. and 53., E. Long. 42. 20. and 48.; bounded on the W. by the government of Voronetz and Tambov, N. by those of Pensa and Simbirsk, E. by that of Samara, S. by that of Astrakhan, and S.W. by the land of the Don Cossacks. Area 54,797 square miles. A chain of hills, pretty high in the southern portion, stretches from S. to N. through the western part of the country, and divides the waters of the Don from those of the Volga. From these heights eastward to the Volga, which flows southwards, and forms the eastern boundary of the government, the country is hilly and undulating. That river receives no important tributaries in the government, and a large portion of the country in the S. and W. is watered by affluents of the Don; the principal of which are the Choper and Medveditza. The hills are composed of slate and limestone rocks; and the soil of the lower ground is for the most part fertile, especially in the N.W. portion, where no manure is needed to render the ground productive. Further south the soil is somewhat stony and barren. In the forests, which lie chiefly in the N.W. of the government, oaks, pines, poplars, and maple, are the principal growth. Agriculture is the chief occupation of the inhabitants. Saratov contained in 1849, 7,202,282 acres of arable land; 15,892,868 acres of meadows; 3,249,129 acres of wood; and 21,437,864 acres of waste land. The produce of corn in the same year was 55,276,886 bushels, and that of potatoes 896,290 bushels. These numbers, however, include part of what now forms the new government of Samara, which had not been constituted at that date. The number of horses within the old limits in 1849 was 861,008; of horned cattle, 839,526; of sheep, 1,756,450;

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Saratov.

Saratov
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Sardinia.

of swine, 257,216; and of goats, 22,896. The principal crops raised are rye, wheat, oats, millet, hemp, and flax; tobacco and hops have been introduced; and in some places mulberries and even vines are cultivated. The fisheries on the Volga are productive. Iron, salt, and millstones, are the only important mineral productions. The manufactures are chiefly carried on by the foreign settlers, who were introduced into the country in great numbers from Germany and Switzerland by Catherine II. The number of establishments in 1849 was 140, employing 1449 hands. The most important factories were 37 tanneries, 25 tallow-houses, and 14 tile-works. The country is well situated for trade, communicating by means of the Volga with the west of Russia and the Caspian; and by the affluents of the Don with the Black Sea. Besides the foreign settlers, the population consists of Russians, Tartars, and Cossacks. The majority belong to the Greek Church; but there are 81,753 Protestants, 18,672 Roman Catholics, 42,571 Mohammedans, and 529 Pagans. Education is generally in a low condition in the country. For administrative purposes, Saratov is divided into ten circles, as follows:—

	Pop. (1851.)		Pop. (1851.)
Saratov	204,339	Kamyschin	152,166
Zaritzin	53,688	Atharsk	180,149
Volsk	122,047	Balaschov	185,253
Kusnetz	117,255	Chvalynsk	125,005
Petrovsk	157,287	Serdobsk	141,893
			1,439,182
		Astrakhan Cossacks	5,314

Total

SARATOV, the capital of the above government, on the right bank of the Volga, 386 miles N. of Astrakhan, and as far W. of Orenburg. It stands in a valley between the river and a wooded limestone hill, and is neither handsomely nor regularly built, for the most part only of wood. It contains several Greek churches, some of them built of stone; as well as others belonging to the Protestants and Roman Catholics, a mosque, and two monasteries. Saratov is the seat of a Greek archbishop, and of a Protestant consistory; it has also government offices, a college, and various schools, hospitals, &c. There are large salt magazines, a botanic garden, and a bazaar or market-place, where a large annual fair is held. The principal articles manufactured here are leather, sail-cloth, cotton stuffs, cordage and hats. An active trade is carried on by the Volga. Pop. 61,610.

SARAWAK. See BORNEO.

SARAWAN, a province of Beloochistan, lying between N. Lat. 27. 53. and 30. 20., E. Long. 64. and 67. 40.; bounded on the W. and N. by Afghanistan, E. by Afghanistan and the province of Cutch-Gundava, and S. by those of Jhalawan, Kelat, and Mekran. Length from N.E. to S.W. about 250 miles, greatest breadth 80; area about

15,000 square miles. It is a very mountainous and rugged country, and is enclosed by mountain ranges on the E., N., and W. Those on the E. are traversed by the Bolan Pass, leading into Cutch-Gundava; and those on the northern frontier contain the lofty summit of Tukato, estimated at 11,000 or 12,000 feet high. There are some very fertile valleys and plains in Sarawan, especially the valley of Shawl in the N., and that of Musturg, separated from it by a barren plain, 20 miles broad; but in general the country is very dry, having no large stream except the Bolan, which flows through the pass of that name. The population is estimated at 50,000; and the chief town is Sarawan, a collection of mud houses, with a wall of the same material, and 4000 inhabitants.

SARCOPHAGUS (σάρξ *flesh*, and φαγείν *to eat*), a sort of stone coffin or grave, in which the ancients deposited the bodies of the dead which were not intended to be burned. It is supposed to be derived from the *Lapis Assius*, a stone much used among the Greeks in their sepulchres, recorded to have always perfectly consumed in forty days the flesh of human bodies buried in it. There was also another fabulous quality assigned to it—namely, its power of turning into stone anything put into vessels made of it. One of the most celebrated specimens of antiquity is the great sarcophagus, which is commonly called the tomb of Alexander the Great. It fell into the hands of the British at the capitulation of Alexandria in Egypt in 1801, and is now deposited in the British Museum.

SARDANAPALUS, the last King of the Assyrians, according to the Greek and Roman writers, was the thirtieth from Ninus, of whom Herodotus merely mentions that he concealed his treasure in subterranean vaults. The character usually ascribed to him is that of a luxurious and slothful prince, who spent the greater part of his time in the harem among his women. But it is difficult to reconcile this statement with the brave and obstinate resistance he made to the attack of the rebel Arbaces, prince of Media. He defeated Arbaces twice, but at last was shut up within Ninus (Nineveh), where he destroyed himself with all his women and his treasures on a funeral pile. There would seem, however, to have been another Sardanapalus, the son of Anacyndaraxes, who is said to have founded Tarsus and Anchiale in one day, and whose epitaph is frequently quoted; and it is not unlikely that Ctesias, from whom Diodorus quotes, has mixed up the events that happened to these two. The second is thought to be the Esarhaddon of the Scriptures, and the first to be the Saracus of Abydenus. But regarding the whole matter there seems to be very much doubt. The late excavations at Nimrud have brought to light several particulars not very reconcilable as to the existence and reign of Sardanapalus. His annals are proposed to be published by Sir H. Rawlinson and E. Norris.

Sarcophagus.
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Sardinia.

SARDINIA.

THE dominions of the House of Savoy, called in Italian the *Regno Sardo*, have an area of 29,075 English square miles, with a population (in December 1857) of 5,172,283 inhabitants. They are composed of two separate parts—the continental territories, which in Italian are styled *Stati di Terra Ferma*, and the islands of Capraia and Sardinia, the latter of which gives the title of King to the head of the state.

The continental possessions, consisting of what formerly were the principality of Piedmont, the duchies of Savoy, Genoa, and Montferrat, the counties of Nice and Asti, the marquisesates of Susa, Ivrea, Saluzzo, and Ceva, &c., have

an area of 19,774 square miles, with a population of 4,590,206 inhabitants, and extend in N. Lat. from 43. 30. to 46. 27., and in E. Long. from 5. 35. to 10. 9. With the exception of the southern portion of the Lunigiana, lying east of the Magra, they comprise the country extending between that river and the Var, the Ticino and the Rhone; and are bounded on the N. by Switzerland, on the W. by France, on the S. by the Mediterranean Sea, and on the E. by the grand duchy of Tuscany, the duchy of Parma, and the Lombardo-Venetian kingdom.

The island of Sardinia, with the adjoining small islands of St Antioco, San Pietro, Asinara, Maddalena, and several

Sardinia. smaller ones, has an area of 9301 square miles, with a population of (in December 1857) 577,282. It lies north-west of Sicily, north of Africa, and south of Corsica, from which it is separated by a narrow strait called *Bocche di Bonifacio*, and extends in N. Lat. from 38. 52. to 41. 16., and in E. Long. from 8. 10. to 9. 50. Sardinia is the largest and, next to Sicily, the most important island in the Mediterranean Sea. Capraia, which has only 15 miles in circumference, and 4741 inhabitants, is situated east of the northern extremity of Corsica, north-west of Elba, and west of the Tuscan coast.

The surface of the *Stati di Terra Ferma* presents the greatest possible variety. On the north and west it is covered by the Alps, and on the south by the Apennines; and between these two great mountain chains lies the most fertile and valuable portion of the kingdom, consisting of the slopes, valleys, and plains that form the upper basin of the Po, from its source to its junction with the Ticino below Pavia.

The two divisions of Chambery and Annecy, to the north-west, including what formerly was the duchy of Savoy, are in physical aspect, as well as in the general character and language of their inhabitants, more a part of Switzerland than of Italy. They are an alpine land separated from the plains of the peninsula by an enormous chain of mountains known as the Graian Alps. Its lofty mountains covered with eternal snow and glaciers, its long and deep valleys, its numerous cascades, the raging winds and violent storms of rain, hail, and snow, which occur with frequency in the elevated regions, give Savoy a peculiar and lasting interest. In ancient times it formed part of the country of the *Allobroges*.

The three divisions of Nice, Savona, and Genoa, formerly the county of Nice and the territories of the Genoese republic, and known by the general name of the *Riviera*, surround the Gulf of Genoa, and include all the sea-shore of the continental possessions from the Var to the Magra. They are the ancient *Liguria*, which, according to the division of Augustus, constituted the 9th region of Italy, and are poetically pointed out by Dante as the rugged country, "*Tra Lerici e Turbia*." It is a narrow strip of land, bordered along its whole extent by the ranges of the Maritime Alps and the Apennines, and cut everywhere by narrow valleys and deep ravines. In some places the mountains rise so abruptly from the sea-shore as to render any passage impossible except by means of galleries cut through their projecting spurs. The chief ports, in the order of their importance, are Spezia, the ancient *Portus Lunæ*, placed at the eastern extremity, one of the most spacious and safe harbours in the Mediterranean Sea, and which of late has been made the principal station of the Sardinian fleet; Genoa; Villafranca; Savona; Nice; Porto-Maurizio; and Mentone. The tract from Savona to Sestri di Levante is more thickly inhabited than any other part of the kingdom, with the exception of the neighbourhood of Turin.

The remaining six divisions of Turin, Ivrea, Cuneo, Vercelli, Novara, and Alessandria, comprise the fertile region extending downwards from the Alps and the Apennines, and forming part of a vast valley, or rather plain, which begins at the foot of the Monviso, and only terminates on the easternmost frontier of Italy, at the Adriatic Sea. The River Po divides this valley into two nearly equal portions. Its northern side, which in ancient times formed part of *Gallia Transpadana*, or the 11th region of Augustus' division, extends to the foot of the Alps, some great projections of which enter it in the provinces of Ossola and Aosta. The southern side, which was part of ancient *Gallia Cispadana*, or the 8th region, is bordered in its whole length by the ranges of the Maritime Alps and the Apennines. Piedmont, the name given in a large sense

to the whole of this country, is divided from Switzerland and Savoy by the Helvetic and the Graian Alps, from France by the Cottian Alps, and from the Riviera by the Maritime Alps and the Apennines.

The mountains of the continental states have already been fully described in this work under the general articles ALPS and APENNINES. The principal rivers are the Po, the largest river of Italy, which has its source in two springs on the eastern slope of Monteviso, at a height of 6562 feet above the level of the sea; the Ticino, which forms the boundary between Lombardy and Piedmont; the Sesia, the Dora Baltea, and the Dora, all tributaries of the Po on its northern side; the Tanaro and the Bormida, which join at Alexandria, and flow into the Po on its southern side; the Var, which constitutes the boundary between the province of Nice and France; and the Magra, which flows into the Mediterranean, outside the Gulf of Spezia.

The larger lakes of the Alps belong only in part to this kingdom. The Leman, or Lake of Geneva, is divided between Sardinia and Switzerland, the southern bank of it only belonging to the kingdom. The Lago Maggiore or of Locarno (*Verbanus*)—for a description of which see LOMBARDY—has also only its western shores within the Sardinian dominions, the eastern side belonging to the Lombardo-Venetian kingdom, and the upper part forming a portion of Switzerland. The lakes exclusively Sardinian are of much smaller extent. The Lake of Orta is a long narrow sheet of water by the side of Lake Maggiore, into which its surplus water is discharged. The Lake of Annecy, in Savoy, is 1350 feet above the level of the sea, and 180 feet in depth. It has an outlet by the rivers Thor and Fior into the Rhone. The Lake of Bourget, near Aix-le-Bains, scarcely exceeds 100,000 acres in extent, but is about 240 feet in depth, and by means of the canal of Savières, discharges much water into the same river. There are some smaller lakes, a few of which are dried up in the summer; others of them are on elevations of great height, the most remarkable of which is one on Mont Cenis, 5740 feet above the level of the sea.

The several states abound in mineral springs; those that have attained greater celebrity are the hot springs of Acqui in Montferrat, which are impregnated with sulphuretted hydrogen; the medicinal springs of St Vincenzo, in the valley of Aosta; and in Savoy the warm baths of Aix, and the sulphureous wells of Bonneval.

A more detailed geographical description of each of the great divisions of the continental territories is given in this work under GENOA, PIEDMONT, and SAVOY.

The climate of the *Stati di Terra Ferma* varies excessively in the different provinces. In Savoy, in the valleys of Aosta and Ossola, and among the Alps of Piedmont, a real Swiss climate prevails. The air in these districts, though changeable, is on the whole pure and healthful, but is too raw to bring forth the fruits of Italy; in favoured spots, however, the grapes ripen, and the sides of the hills are covered with chestnut-trees. In the upper valley of Piedmont the thermometer falls below 10 degrees in winter, and in the neighbourhood of the mountains it is not unusual to see the ground covered with snow during twelve days or a fortnight. Night frosts, which begin in November, continue till April; and even in the midst of summer, cold winds occasionally descend from the heights. The mulberry-trees, the vines, and the maize flourish; and the air, when not in the vicinity of rice-fields, is remarkably pure, and has a balmy fragrance. Along the whole coast from Nice to the Magra, which is protected by the mountains from the cold winds, the climate is much milder and more agreeable. In some favourite spots which are entirely sheltered from the north and north-east winds, the thermometer rarely, if ever, falls below the freezing-point; and the vegetation, combining the botany of Southern Europe and Northern Africa with those of the tropics, is of

Sardinia. singular beauty. The mountains are clothed with sweet chestnuts, their slopes with olive-trees, and figs and orange-trees grow luxuriantly along the sea-shore.

The chief occupation of the inhabitants of this kingdom consists in the cultivation of the land, and is accordingly as varied as the surface of the soil and as the climate, which depends on the elevation. Under the head of LOMBARDY will be found a detailed account of the agriculture of that district, the greater part of which may be adverted to as a description of what takes place in the richer portion of Sardinia, which belongs to the basin of the River Po, comprehending the greater part of the provinces of Turin, Cuneo, and Alessandria. Here we shall only add that the most important article of cultivation is the mulberry-tree, the produce from which, and the price it fetched in the market for the last six years, was,—

	Cocoons.	Price.
1853.....	1,025,287 lb.	L.373,987
1854.....	1,410,454 „	529,523
1855.....	1,830,353 „	706,398
1856.....	4,535,346 „	853,306
1857.....	1,001,811 „	824,900
1858.....	724,332 „	30,256

In Savoy generally the cultivation is badly conducted. The cultivable land is divided into large portions, belonging to a few great proprietors, and is subdivided into smaller portions to tenants, who, without leases, transmit their lots from one generation to another, paying neither money-rent nor labour to their superiors, but delivering to them or their agents one-half of the produce of the fields, whatever it may be, in its several kinds. The cattle on these lands are commonly the property of the lord, and are maintained on the produce of the soil, before the division is made of what it yields. The power of the tenants to transmit the land to their successors is combined with the power of subdividing it among their several children; and this is carried to such an extent that it has led, and is leading, to such a subdivision that a great number of the farms barely raise sufficient food for the occupants, though their provisions are of the most humble and penurious kind. Savoy is annually deficient in corn to the extent of nearly one-third of its consumption. This is in some measure made up by using chestnuts and potatoes as substitutes for bread. In Aosta and in some other parts the potato is little cultivated, and corn is supplied to them from the neighbouring districts. Along the Riviera the land consists chiefly of narrow strips of valley, which in the greater portion is composed of sand, and is not very appropriate for the growth of grain, though a little is grown in some of the more fertile valleys. The common people derive part of their subsistence from chestnuts, other fresh and dried fruit, fish (especially Sardines, which at some seasons are very abundant), and from an inferior kind of cheese made by themselves; and oil, a useful accompaniment, is at a very moderate price.

The *Regno Sardo* cannot be considered as a manufacturing country, except for the purposes of domestic consumption. Before the seventeenth century, Genoa was the centre or channel of all the supply of manufactured silks and velvets to the other parts of Europe; but at present the manufacturing industry, as regards silk, is reduced almost to the point which the internal consumption demands, or to the process of preparing the raw material for the manufacturers of France, England, Holland, Germany, and Russia. Their silks are handsome and strong, especially the stockings; but, in the absence of the best descriptions of machinery, they are dearer than elsewhere. Silk stuffs, velvets, paper, musical instruments, and some kinds of jewellery, principally manufactured at Genoa, are almost the only articles of export.

The physical aspect of the island of Sardinia is greatly diversified, and more than eight-tenths of its surface are covered with mountains, of which the main chain extends

Sardinia. along the whole eastern side, from the headland called Cape Lurgo Sardo, opposite Corsica, to Cape Carbonara in the south; none, however, of these mountains reach such an elevation as to be covered with perpetual snow. The loftiest range is that of Genargentu in the Barbagia district, in the middle of the island. Its highest summit, the Punta Bruncu Spina, is 6293 feet above the level of the sea. Next in importance is the granitic chain of Mount Limbara, which covers the district of Gallura in the north; its highest peaks attain an elevation of more than 4000 feet. The mountains in the centre and the south of the island, including the Genargentu, chiefly belong to the palæozoic formations, through which arose at different ages the numerous extinct volcanoes that render the island so interesting to the geologist. The most important volcanic tract is north of the River Tirsi, between the Gulf of Oristano and Sassari, where the highest lip of the crater of Monte Urticu, near Milis, reaches 3440 feet above the sea-level. Between the Gulfs of Cagliari and Oristano is the extensive plain of the Campidano, scattered with many populous and flourishing villages. Next in extent to the Campidano is the Campo d'Ozieri in the north of the island, south of the Limbara Mountains. The principal rivers are,—the Flumendosa, which springs from the Genargentu Mountains, waters the Barbagia district, and falls into the sea near Muravera on the eastern coast; the Coghinias, which has its sources in the Limbara group, and falls into the Gulf of Torres on the north; the Mannu, which waters the Campidano, and joins the sea in the Gulf of Cagliari; the Tirsi, which has the longest course of all, and after traversing most of the island from N.E. to S.W., flows into the Gulf of Oristano; and the Flumenbosa, which rises among the volcanic range on the W., and empties itself into the sea below Bosa.

Mineral springs are numerous, but are for the most part neglected. The principal are those of Sardara, Villa Cidro, and Fordongianus, those at the foot of Castel Doria, at Codrongianus, and the Benetutti springs of the Gocceana Mountains. They are all on the W. side of the island. In a secondary rank may be noticed the thermal waters of Marrubin, of Iglesias, and of St Antonio. Aqua Cotta, at the eastern base of an insulated hillock near Villa Cidro, is a small but constantly limpid spring, of about 105° of Fahr., close by a stream of potable water having a temperature of 60°, whilst that of the atmosphere is 64°. Here most of the cloth of the Campidano is fulfilled, the makers of it paying to the proprietor for the use of the water.

The situation and the soil of the island are favourable to the cultivation of all those trees and plants which grow in Spain, in Italy, and in Sicily. Its mountains are clothed almost to their summits with forests of cork, green oak, common oak, pine, sweet chestnut, and other trees. The wild olive covers extensive tracts in the hilly districts. Figs, vines, and pomegranates thrive wonderfully, with scarcely any cultivation. The madder and liquorice roots grow wild in some districts. The orange forest of Milis, on the western coast, shows no appearance of cultivation, and has trees compared with which the finest orange-trees in Portugal would seem dwarfs. Lemons, apple, pear, walnut, carrouba, almond, peach, and mulberry trees; flax, hemp, saffron, and every variety of grain, are among its productions. Corn, even under the present system of agriculture, gives a return of 7 or 8 for one, and in some districts the average is said to amount from 16 to 20 fold. There are no wolves. The "moufflon," a ruminating animal, frequenting only the highest and most secluded woods, is a native of the island. Deer, wild boar, and a variety of game abound in the forests; so that there are annually exported about 60,000 skins of hares and rabbits, 5000 of foxes, and 2000 of martins.

With all these natural advantages, this island, which

Sardinia. in ancient times was reckoned with Sicily a granary of Rome, was sadly neglected, and remained till very recently in a semi-barbarous state. The Vandalic invasion; the anarchy into which it fell during the middle ages; the establishment of the feudal system in a most vexatious and oppressive form; its having long been a dependency of Spain, and for centuries misruled worse than Spain itself; its partition into vast estates, many of which belonged to distant Spanish grandees;¹ and the numerous restrictions upon industry and commerce, were some of the most prominent causes that paralysed the industry of its inhabitants, diminished their number, and changed its fertile plains and valleys into unoccupied and marshy wastes. In the year 1836, however, most important changes were introduced, which will conspire with the wise and stringent measures passed by the present constitutional government to raise this fine island from the abyss into which bad government and worse laws had plunged it.

Feudal tenure and feudal jurisdiction have entirely been abolished; and lands have been declared to be the free property of individual owners, communes, or the crown. The latter is become the possessor of all waste lands, or such lands as neither individuals nor communes could show any title to. These crown-lands are sold or granted in *emphytheosis* by the government at a very low price, with a view of attracting population, capital, and industry into the island. There are, scattered over various districts of the island, nearly 510,800 hectares (1,262,200 English acres) of public lands to be sold, of which only 80,000 hectares (197,690 English acres) have some appearance of cultivation. There are, besides, 430,000 hectares (1,062,590 English acres) of communal lands not cultivated, most of which are also offered for sale. The government are empowered to sell 80 hectares (197 English acres) without any auction; but when a greater extent is demanded by a single person or a company, the formality of a public auction must be gone through. The average price at which these lands are being sold varies from 20s. to 32s. a hectare. So that land is to be obtained in an island of proverbial fertility in the Mediterranean Sea at the same price that lands sell in Australia.

Its insular position gives Sardinia some advantages in point of climate over the opposite coasts of Italy. The heat in summer is not so overpowering, and the winter is very mild, snow being rarely seen, except in the elevated districts. December and January are the finest months of the year, and February the most disagreeable. Spring bursts out in great luxuriance towards the end of March. But the great disadvantage of the Sardinian climate, in ancient as well as in modern times, is the unhealthiness of the lower regions in summer. The *intemperie*, as the malaria is called in the island, is somewhat different from the malaria of Italy and Greece; for although equally or more acrimonious in effect, it does not produce the swelled bodies and sallow skins which are the pathognomonic symptoms of the latter. Both diseases usually commence when the summer heat, assisted by slight showers, disengages the impure gases from the low grounds, and continue till the beginning of November, when the heavy rains have precipitated the miasma, and purified the air. But they differ, inasmuch as malaria is generally supposed to be weak in its effects unless imbibed during sleep; whereas *intemperie*, though worst at night, is dangerous at all times. Instances have been known of strangers landing for a few hours only, from Italian coasters, who were almost immediately carried off by its virulence; indeed, the very breathing of the air by a foreigner at night, or in the cool of the evening, is considered as certain a death in some parts as if he had swal-

lowed some poisonous drug. While the atmosphere is in this state, the natives never move abroad until an hour after sunrise; and they hasten home before sunset, carefully closing every door and window, or, if obliged to go out, carefully holding a handkerchief before the mouth. The extreme heat of the day is also carefully avoided, for they are apprehensive of the *colpo di sole*, or stroke of the sun, attributing its frequency and fatal effects to the malignancy of the *intemperie*.

It is agreed on all sides that fire is an excellent antidote to this evil; and it is recorded that the lords of Oristano were wont, during the unhealthy season, to burn large fires around the town every night, to rarefy the mephitic exhalations. Most of the people remove from the plains to the higher grounds on St John's day in June, when the air begins to be unsafe, although it does not become dangerous before August. Those who, from their circumstances, are obliged to remain, keep themselves well clad in thick woollens, to avert the ardent rays of the sun. Exertion, exposure to summer showers, and fatigue of every kind, are studiously avoided; and a spare but nourishing diet is adopted, with cool acidulated drinks.

It is remarkable that adults who have been accustomed to the insalubrious districts can remain during the summer with comparative impunity, whilst children and new comers are more likely to fall victims to the *intemperie*. As it is chiefly owing to the extensive marshes and lagoons at the mouths of the rivers, and in all the low coasts or level tracts, there can be no doubt whatever that its ravages will disappear in proportion as marshy districts are drained, the beds of rivers and torrents embanked, and cultivation extended in the island.

The manufactures in the island are in so rude a state that in a commercial view they scarcely require to be noticed.

The foreign trade of the kingdom, both by land and by sea, is yearly increasing. The following table of the number and tonnage of the mercantile navy shows that every year, from 1853 to 1856, there has been an increase in the size of the vessels, and in the number of sailors engaged in trade:—

		Ships.	Tons.	Sailors.
On the 31st Dec.	1853.....	3222	168,585	28,746
"	" 1854.....	3174	175,744	30,782
"	" 1855.....	2962	184,860	31,987
"	" 1856.....	2934	197,924	33,370

It is remarkable that, whilst in 1855 the building of ships, as compared with the previous year, shows an increase of 9116 tons, in 1856 the difference reaches 13,064 tons. Of the total number of sailors employed in 1854, 11,398 were furnished by Genoa, 5936 by Chiavari, 4384 by Savona, 4011 by Spezia, 1619 by Oneglia, 1529 by Cagliari, and 1405 by Nice. The great emporium of the trade of the state is Genoa. The number of vessels, national and of other countries, which entered its port from 1850 to 1854 was as follows:—

Number and Tonnage of Vessels which entered the Port Genoa, 1850–54.

Years.	National.		Foreign.	
	Ships.	Tons.	Ships.	Tons.
1850.....	5782	278,113	1603	205,752
1851.....	5937	301,463	2175	231,528
1852.....	5886	332,792	1830	239,758
1853.....	5681	307,626	2152	467,905
1854.....	5544	349,918	2349	301,598

The other four tables here below annexed will give an

¹ So late as 1820 the whole island was divided into 376 fiefs, of which 188 belonged to six Spanish noblemen, who never visited the island.

Sardinia. idea of the state of trade in the kingdom. They come only so far down as 1856, as there are no later official returns published. The first of them, marked "General Trade," shows the amount of all imports and exports, whether for internal consumption or re-exportation, whether of national or foreign production. The second, marked "Special Trade," gives the amount of imports and exports merely for home consumption and of home produce. The third table shows the various articles of import and export, with their official valuation; and the fourth points out the different countries with which the Sardinian trade is carried on, and the respective degree of importance with regard to each country. It will be seen that the chief articles of importation are cotton (raw and manufactured), sugar, coffee, spices, and other colonial productions; wool (raw and manufactured), wheat (chiefly from the Black Sea), common metals (such as iron, steel, lead and copper), mercery, cheese and butter, salt fish, and tobacco. The most valuable article of exportation is silk, but it has little connection with maritime commerce. The greater part of it, which goes to other countries, is transported by land-carriage, in order to supply the manufacturers of France, Prussia, Belgium, Holland, and in some measure of England; for even to the latter country much is now sent by land through France, or by the Rhine. Oil is one of the greater productions exported from Genoa, after being collected there by means of the numerous coasting vessels with which the shores abound. The larger portion of this article is sent to England, where it is used by the wool-combers in the manufacture of cloth; but a considerable quantity of it is sent to Holland, and to the interior of Germany, where it is applied to the same purposes. The other chief articles of export are wine, brandy, oxen, cows, swine, mules, fruit, seeds, and vegetables. The commerce in grain is casual, depending in a great degree on the productiveness of the harvests at home and in Switzerland, to which latter country, when the domestic supply is insufficient, the corn from the ports of Odessa and Taganrog is transmitted through Piedmont. The countries with which the most important trade is carried on stand in the following order:—France, England, Lombardo-Venetian kingdom, Switzerland, United States, and Parma, Modena, and Tuscany. On the whole, the trade of Sardinia may be considered to be in a prosperous and thriving state.

General Trade, 1852–56.

Years.	Imports.		Exports.	
	Value declared.	Official Valuation.	Value declared.	Official Valuation.
1852.....	L. 10,637,237	L. 13,189,807	L. 7,968,592	L. 9,381,945
1853.	11,199,467	13,240,615	8,012,322	8,747,994
1854.....	11,728,380	12,387,841	8,043,478	8,520,134
1855.....	12,493,931	13,165,521	9,061,462	9,727,493
1856.....	15,693,997	15,445,366	12,413,582	11,503,704

Special Trade, 1852–56.

Years.	Imports.		Exports.	
	Value declared.	Official Valuation.	Value declared.	Official Valuation.
1852.....	L. 5,407,757	L. 6,605,874	L. 3,384,578	L. 3,543,769
1853.....	6,668,174	7,455,013	4,007,432	3,747,314
1854.....	7,974,343	7,904,323	4,542,543	4,348,017
1855.....	8,345,049	8,205,820	5,327,191	5,232,723
1856.....	10,599,051	9,710,477	7,633,152	6,193,170

Value of Imports and Exports during the year 1856.

Articles.	Imports.	Exports.
Wine, brandy, other drinks, oil.....	L.284,692	L.571,246
Coffee, sugar, other colonial and chemical productions	1,256,215	169,228
Fruit, seeds, vegetables	86,327	195,704
Cheese, butter, eggs, tallow, &c.	184,709	94,601
Fish	58,958	4,104
Oxen, cows, swine, horses, mules, &c.	167,094	283,242
Skins and furs.....	140,246	86,930
Hemp and flax, raw and manufactured... ..	254,038	255,102
Cotton, raw and manufactured	1,721,319	357,983
Wool, do. do.	842,626	55,862
Silk, do. do.	1,795,619	3,016,764
Wheat, maize, rice, paste, chestnuts, &c..	1,035,958	509,068
Timber, wood, furniture, charcoal.....	132,631	118,220
Paper and books	59,859	115,015
Mercery	446,968	129,645
Common metals	634,547	97,428
Gold, silver, precious stones	95,485	18,347
Marble, alabaster, coal, building-stone, &c.	252,476	104,482
Glass, china, earthenware, &c.....	86,293	8,254
Tobacco.....	166,617	1,945

Total.....L.9,710,677 L.6,193,170

Table of Imports and Exports.

COUNTRIES.	IMPORTS.			EXPORTS.		
	Degree of Importance.	Official Value.	Duties Levied.	Degree of Importance.	Official Value.	Duties Levied.
France	1	L.2,620,685	L.206,734	1	L.2,997,608	L.2,533
Algeria.....	28	3,739	658	22	9,527	25
Zollverein States.....	20	16,548	1,111	6	275,551	...
Holland.....	9	311,512	71,410	14	24,138	43
Belgium	15	126,809	7,802	15	26,148	47
England	2	1,568,039	104,176	5	303,904	247
Portugal	22	12,268	1,676	23	8,939	...
Spain.....	13	141,420	47,905	11	56,400	77
Lombardo-Venetian kingdom.....	3	1,274,533	18,329	2	849,251	16,041
Parma, Modena, Tuscany.....	6	563,324	12,429	7	168,149	1,876
Naples.....	7	356,863	5,988	7	78,280	5
Papal States	14	136,481	338	13	28,802	4
Switzerland	4	915,697	73,091	3	624,922	1,024
Turkey	10	201,706	1,701	8	84,520	55
Egypt	21	14,189	405	24	5,262	...
Tunis and Tripoli	19	18,842	422	20	12,940	2
Morocco.....	23	9,235	...	28	...	...
United States.....	5	668,991	2,153	12	30,256	425
Brazils	16	54,816	9,301	21	10,956	1
South American republics.....	11	141,573	10,515	4	442,408	1,994
Central America and the Antilles.....	12	140,711	28,490	25	4,843	...
Carry forward.....	...	L.9,297,981	L.604,634	...	L.6,042,804	L.24,399

Table of Imports and Exports—Continued.

COUNTRIES.	IMPORTS.			EXPORTS.		
	Degree of Importance.	Official Value.	Duties Levied.	Degree of Importance.	Official Value.	Duties Levied.
Brought forward.....		L.9,297,981	L.604,634		L.6,042,804	L.24,399
Mexico	27	4,693	54	19	14,814	61
Russia	8	312,984	159	10	75,749	35
Sweden, Norway, Denmark	18	31,082	1,528	17	17,862	13
Anseatic towns	26	5,633	201	18	17,509	24
Greece.....	25	5,152	49	16	20,234	...
East Indies.....	17	46,125	177	26	4,198	2
Other countries	24	8,030	556	27	...	...
Total	...	L.9,711,680	L.607,358	...	L.6,193,170	L.24,534

The internal commerce of the country, as well as its land trade with the neighbouring states, has been greatly favoured by the excellent carriage roads and the railways opened within these few years. Two magnificent roads, passing over Mount Simplon and Mount Cenis, and well known to tourists, connect Turin with Switzerland; a road over the Maritime Alps, by the Col de Tende, connects it with Nice; and two roads over the Apennines with Genoa and Savona. Several high roads open communications between Sardinia, Lombardy, and the duchies of Parma and Piacenza; and a beautiful road along the shore from the Var to Sarzana, places all the cities of the Riviera in communication with each other, with the capital, with Milan, and with France and Tuscany. In January 1859 there were open for the public traffic the following railways:—From Turin to—Genoa, 167 kilometres long; Pinerolo, 38 kil.; Cuneo, 87 kil.; Susa, 53 kil.; Ticino, 109 kil.; from Genoa to Voltri, 15 kil.; from Alessandria to—Arona, 102 kil.; Stradella, 59 kil.; Acqui, 34 kil.; from Mortara to Vigevano, 13 kil.; from Tortona to Novi, 16 kil.; from Savigliano to Saluzzo, 15 kil.; from Culoz to St Jean de Maurienne, 106 kil.; from Chivasso to Ivrea, 32 kil.; from Santhià to Biella, 30 kil.; from Vercelli to Valenza, 42 kil.; in all 918 kil., or 570 English miles.

From the reign of Duke Emmanuel Philibert (1553–80), who abolished the political rights of the great feudal vassals, the government of the states of the House of Savoy became a purely absolute monarchy. The head of the state being the only source of law, not only all laws emanated from him, and were promulgated in his name, but he also abrogated them at his will, as well as all judgments and decisions of any judicial body. He had an unrestrained authority of imposing taxes, and the uncontrolled administration of the revenue. Even in the island of Sardinia, though the form of convoking its national assembly, composed of the three *Stamenti*, or orders—of the clergy, the nobles, and the representatives of the town—from the transfer of the island to the House of Savoy was sometimes resorted to for an augmentation of the taxes, yet the powers of the *Stamenti* had gradually been limited to objects only of a local and insignificant nature, and the government was as absolute as in the continental states.

In 1848, however, the unlimited powers of the sovereign were placed under proper restraints by a constitutional charter (*Statuto Fondamentale del Regno*) freely granted by the late King Charles Albert on the 4th of March of that year.

By this new constitution, whilst the executive power belongs exclusively to the king, the legislative power is collectively exercised by the king and by two chambers, an upper one, called *Senato*, and a lower one, called *Camera de' Deputati*. The upper chamber or Senate is composed of an unlimited number of members nominated by the king for life, from among persons at least forty years old, and belonging to one of the twenty-one categories spe-

cified by the charter. The princes of the royal family sit by right in the Senate at twenty-one, but do not vote till they are twenty-five years old. The number of senators at present is ninety-eight.

The Lower House, or Chamber of Deputies, is elective. A deputy must be thirty years old, and have the requisites established by the electoral law. The Chamber consists of 204 deputies, who are returned by a corresponding number of electoral colleges or districts, into which the kingdom is divided. Neither senators nor deputies receive any salary or indemnity. The duration of Parliament, unless a dissolution takes place before, is five years. The chambers meet annually, and in case of a dissolution of the Lower House, a new chamber must be summoned within four months. No tax can be imposed or levied which has not previously been assented to by the Chambers and sanctioned by the king. Each of the three powers of the state has the right of introducing bills, but all money bills must be introduced first in the Chamber of Deputies. The sittings of the Chambers are public. No sitting is valid unless an absolute majority of the members are present: the debates must be in Italian. The ministers of the crown are entitled to attend the debates and to address the houses whenever they deem it expedient; but they have no vote unless they are members of either house. The charter also declares the throne hereditary according to the Salic law; guarantees individual liberty and the liberty of the press,—the latter, however, subject to a repressive law; and establishes that judges, except those of *Mandamenti*, are irremovable after having exercised their functions for a period of three years.

The king's ministry consists of eight departments:—Presidency of the council; Foreign Affairs; Home; Grace and Justice; War and Navy; Finances and Commerce; Public Instruction; and Public Works. The public administration is carried out by an *Intendente Generale* and a Council in the capital of every division, an *Intendente* and provincial council in every province, and a *Sindaco* or mayor in every commune. A Council of state residing at Turin takes cognizance of appeals in all questions relating to administrative matters.

Justice is imparted according to the *Codice pel Regno Sardo* (which in substance is the Code Napoleon), and is administered by means of—1. Justices of the peace established in the *Mandamenti*. 2. Provincial tribunals residing in the capital of every province. 3. Several tribunals of commerce, residing at Turin, Genoa, Savona, Nice, and other cities. 4. Six courts of appeal, residing at Turin, Chambery, Nice, Genoa, Casale, and Cagliari; each court has two chambers, one for civil, and the other for criminal matters. A branch of the court of appeal of Cagliari resides at Sassari. 5. A court of cassation residing at Turin, which revises the judgments of the courts of appeal, and in case of a violation of the law, annuls them, and sends the parties before another court of appeal for a new trial. 6. A

Sardinia. *Regia Camera de' Conti*, or audit court, at Turin, with jurisdiction over all the accountable in the kingdom. 7. An Admiralty court at Genoa.

For military purposes the Sardinian states are divided into the five divisions of Turin, Genoa, Alessandria, Savoy, and Sardinia; and the two sub-divisions of Novara and Nice. The army bears a very high character, and by her gallant conduct in 1855 and 1856 earned praise from high military authority in our country. It is recruited yearly, in the continental possessions by means of a conscription, and in the island of Sardinia, which is exempt from it, by means of voluntary enlistment. Every conscript who does not avoid service by providing a substitute, or every volunteer who has enlisted, is bound to serve eight years, after which, on retiring, he is enrolled in the provincial battalion of his respective district, and for another period of eight years is liable to be called into active service in case of war. Without including the provincial battalions, the whole regular force of the kingdom in 1854, whilst on peace footing, numbered 47,524 men and 7602 horses. It was raised to more than 60,000 in 1855, when Sardinia, having joined England and France against Russia, sent 15,000 men to the Crimea as her contingent. In 1858 it numbered altogether 53,330 men, and was composed as follows:—

		No. of Men.
Infantry.....	20 regiments	28,000
Sharp-shooters (<i>bersaglieri</i>)....	11 battalions	6,600
Chasseurs (irregulars).....	1 battalion	780
Cavalry	9 regiments	5,715
Carabineers, engineers, artillery, bodyguards, &c.....	...	12,235
Total.....		53,330

There were also twelve battalions of the National Guards. The carabineers answer to the French *gensdarmes*, and perform the service of the police.

The fleet in 1858 consisted of four sailing frigates, four steam frigates, four corvettes, three brigs, a schooner, ten steamers, and other small craft; in all, forty ships, carrying 900 guns, and manned by about 3000 sailors and marines. The stations were, Spezia, Genoa, Villafranca, and Cagliari.

According to the budget voted by the Chambers for the present year 1859, the revenue of the kingdom is set at L.5,816,430, 11s. 9d.; expenditure L.6,012,598, 16s. 6d.; thereby showing a deficit of L.196,168, 4s. 9d. Of late years there has always been an annual deficit, which has chiefly been caused by the outlay for the army, the formation of the naval station at Spezia, the repairs of the fortress of Alessandria, and the construction of railways and other public works; and has been met by an increase of the taxation. The national debt, which in 1847 was only of L.4,000,000 sterling, in 1856 had swelled to the sum of L.27,240,000, bearing interest for L.2,000,000 at 4 per cent., and for the remaining 25,240,000 at 5 per cent. Such a great increase in the course of less than nine years was brought on by an expense of nearly L.6,000,000, incurred by the state for the construction of the railways from Genoa to Turin, and from Alessandria to Arona; by the extraordinarily heavy expenses entailed by the war with Austria in 1848-49; and by a loan of L.2,000,000, contracted in 1856 to meet the expenses of the Crimean expedition. The subjoined table will give an idea of the various items of the revenue and expenditure. Here we shall only notice that about L.1,341,997, or more than one-fifth of the whole expenditure, and nearly one-fourth of the revenue of the kingdom, is absorbed by the payment of the interest on the national debt; and yet, on the whole, the finances of Sardinia may be considered to be in a satisfactory state; for though the expenditure has been steadily and yearly increasing since the establishment of a constitutional government, the revenue has equally increased in

proportion; and the country, owing to a much greater amount of production and a considerable development of commerce, caused by the liberal commercial policy of the present administration, has scarcely felt the corresponding increase of taxation.

Estimated Amount of the Public Revenue and Expenditure for 1859.

Revenue—Ordinary and Extraordinary.	
Customs and excise.....	L.2,166,495
Direct taxes and domains.....	2,700,139
Railways and other public works.....	563,361
Post-office.....	160,586
Consular offices.....	109,417
Ministry of the interior.....	44,939
Ministry of public instruction.....	1,644
Mint.....	9,237
General treasury.....	108,328
Total	L.5,765,671
Expenditure—Ordinary and Extraordinary.	
Finances.....	L.3,124,172
Foreign affairs.....	54,411
Grace and justice.....	209,579
Public instruction.....	89,982
Interior.....	285,003
Public works.....	577,268
War.....	1,381,838
Navy.....	237,869
Total	L.5,960,222
Revenue.....	5,765,671
Deficit.....	L.194,551

By the constitutional charter, the Roman Catholic religion is the religion of the state, but perfect freedom of conscience is guaranteed to all existing dissenters. With the exception, however, of some 25,000 Protestants, well known by the name of Waldenses, and about 40,000 Jews, the inhabitants of the Sardinian kingdom all adhere to the Roman Catholic Church. The Waldenses, who have wonderfully withstood long, frequent, and cruel persecutions, are settled in the valleys of Luserna, Perosa, and San Martino, on the eastern slope of the Alps in the western part of Piedmont, between Susa and Nice. They have fifteen parishes, besides churches at Pinerolo, Turin, Alessandria, Genoa, and Nice; and a college of the Holy Trinity at Torre, near Pinerolo, in which their youths receive literary and theological education. The Jews are scattered over all the continental Italian states, and have twenty universities or synagogues of their own.

The Roman Catholic establishment is very extensive, comprehending no less than seven archbishoprics,—Turin, Chambery, Genoa, and Vercelli, on the continent; and Cagliari, Sassari, and Oristano, in the island; and thirty-five bishoprics, of which nine are in the island,—Galtelli Nuovo, Iglesias, Ogliastro, Alghero, Ales, Ampurias, Tempio, Bosa, and Bisarcio; and twenty-six on the continent,—Maurienne, Tarantaise, Annecy, Aosta, Susa, Pinerolo, Acqui, Alba, Asti, Cuneo, Fossano, Ivrea, Mondovì, Saluzzo, Alessandria, Biella, Casale, Novara, Vigevano, Albena, Nizza, Bobbio, Sarzana, Savona, Tortona, and Ventimiglia. Besides the chapter of ecclesiastics attached to each cathedral, there are seventy-six collegiate churches with their respective chapters. Every see has a seminary for the education of the ecclesiastics. The island of Sardinia is divided into 381, and the continental possessions into 3872 parishes. The number of monks and nuns was very large; but by a law passed by the Chambers in May 1855 all religious and monastic orders were suppressed, with the exception of those actually employed in "preaching, teaching, or tending the sick." On the carrying out of this law, it was found that the various religious orders affected by it were as follows:—

Sardinia.

	Continental States.				Island.			
	Monks.	Nuns.	Mendi- cants.	Total	Monks and Nuns.	Mendi- cants.	Total	
Religious orders...	14	11	...	...	...	...	...	
Houses.....	66	46	136	248	40	47	335	
Priests and sisters	557	814	...	...	...	...	...	
Lay brothers and sisters.....	215	265	...	...	...	...	...	
Novices and ser- vants.....	9	6	...	...	...	...	...	
Total.....	781	1085	2306	4172				
Gross income	L. 26,512	L. 20,402			Average Income.			
Charges.....	8,587	5,019			Per House.	Per Head.		
Nett income...	17,925	15,383			L.208	L.20		

A commission appointed to take possession of and administer the estates of the suppressed orders published the following returns of the income derived from them:—

From the cloisters.....	L.9,264
Other establishments.....	12,005
Landed property.....	41,290
Capitals.....	11,497
Various sources.....	28,908

Gross income.....	L.102,964
Passive.....	26,005

Nett income..... L.76,959

The education of the people, which formerly was little attended to, has of late attracted the attention of the government, and thereby made considerable progress. The kingdom is divided into the four academical districts of Turin, Genoa, Cagliari, and Sassari, with a university in each of those cities for the attainment of the higher branches of knowledge. The university of Turin, the most important of them, was founded in 1412, and is now very flourishing. It consists of five faculties: theology, with eight chairs; law, with fourteen; medicine and surgery, with fourteen; humanities, with twelve; and natural philosophy and mathematics, with fourteen. In each faculty there is a council of doctors, by whom the academical degrees are conferred. The number of young men who attended the various faculties in 1858 was reckoned at about 1300. In the provinces there are colleges and schools, in which young men are prepared for the university degrees; technical schools for artisans; and the seminaries already noticed, in which those intended for the church receive their education. By a law passed under the constitutional regime, every commune must provide teachers for the elementary education of both sexes; and the tables here annexed show the number of these elementary schools, the attendance at them, the total expenses for their support, as well as their steady increase from 1854 to 1857. They also show the number of private schools, and their decrease in proportion as public schools increased. It will be seen that in 1857 there still were 126 communes without any elementary schools for boys, and 1019 communes that had no schools for girls.

Number of Public and Private Elementary Schools, and of Communes without them, from 1854 to 1857.

Year.	Public Schools for Boys.			Public Schools for Girls.			Private Schools.	
	Higher.	Lower.	Com. without	Higher.	Lower.	Com. without	For Boys.	For Girls.
1854	221	5066	223	58	2413	1422	605	797
1855	234	5332	207	59	2604	1289	557	760
1856	254	5672	145	68	2833	1171	477	759
1857	280	5792	126	88	3158	1019	429	859

Number of Children attending Public and Private Elementary Schools, in each of the years 1855, 1856, and 1857.—The Population in 1848 was 4,916,087, and the estimated number of Children from 6 to 12 years of age 702,433.

Sardinia.

SCHOOLS.		1855.		1856.		1857.	
Public	Males	Winter.	Sum- mer.	Winter.	Sum- mer.	Winter.	Sum- mer.
	Fem..	233,983	123,266	244,390	121,720	244,649	144,510
Private	Males	131,060	68,806	141,287	79,125	150,225	88,086
	Fem..	13,250	8,968	9,827	8,022	8,424	6,120
		21,361	16,795	18,819	16,605	18,166	14,749

Salaries and other Expenses for the Support of Public Elementary Schools from 1854 to 1857; with the sources whence they are derived.

Years.	Amount of Salaries.			Sources whence Derived.			
	Males.	Females.	Total Expenses.	Com- munes.	Legacies.	Private Donations.	State.
1854	L. 83,178	L. 31,936	L. 120,297	L. 95,134	L. 16,669	L. 5447	L. 3047
1855	88,981	36,230	132,948	103,764	18,009	7847	3328
1856	92,894	40,326	142,610	112,562	20,375	6451	3222
1857	98,579	40,877	154,218	119,688	19,986	7477	7067

The salaries of the teachers average—to men L.16, to women L.13 per annum.

Of the teachers at all these schools, 2854 were in 1854 ecclesiastics, and 2510 laymen; and in 1857, 3055 belonged to the former, and 3917 to the latter class. In 1848, out of a population of 4,916,087, there were able to write and read 754,309 men and 323,535 women; and able only to read 195,504 men, and 230,899 women. The lowest state of education was in the island of Sardinia, in which, out of 547,112 inhabitants, there were able to write and read 68,484 men and 4238 women; and only to read, 2928 men, and 3082 women. The returns of the last census, when published, will no doubt show a very considerable improvement, especially in the continental possessions; for in the town of Turin alone, which in 1848–49 had only 22 public elementary schools, with a yearly expense of 43,362 francs (L.1734, 10s.), in 1857–58 there existed 174 schools, the support of which cost altogether 275,000 francs (L.11,000). Such are some of the blessings that a constitutional government has bestowed upon Sardinia.

The kingdom is divided into fourteen administrative Divisions, of which eleven include the continental possessions, and three the island of Sardinia. Each division is divided into Provinces, each province into districts called *Mandamenti*, and each mandamento into Communes; a commune sometimes consists of several villages. There are altogether 50 provinces, 502 mandamenti, and 3088 communes. There is a regular census taken every tenth year on the 31st of December. As the detailed official returns of the last census, taken on the 31st December 1857, have not yet been published, the following table will show the extent of each province, its population, and that of its chief town, the number of mandamenti into which it is divided, and of the communes in each mandamento, according to the returns of the census taken in December 1847. It will also show the population of each administrative division as returned in December 1857. Of the island of Sardinia, which has not yet been regularly surveyed, there is only given the supposed area of the whole, with the dependent smaller islands. The name of the capital, when it differs from that of the province is also given, as well as the names of the other towns in the kingdom with a population of more than 6000 inhabitants.

Sardinia.

Sardinia.

Administrative Divisions.	Provinces.	Area in Square Miles.	Population in 1848.			Pop. in 1853.
			Provinces.	Divisions.	Capitals.	Divisions.
TURIN	1. Torino	1,117	411,959	627,026	143,157	680,868
	2. Pinerolo	593	133,233		14,259	
	3. Susa	539	81,834		3,270	
GENOA	4. Genoa	358	285,230	545,182	100,382	570,332
	5. Chiavari	354	116,077		10,915	
	6. Novi	289	65,016		10,772	
SAVONA	7. Levante	261	78,859	240,101	(Spezia) 10,558	244,949
	8. Savona	311	78,906		18,068	
	9. Acqui	445	101,202		8,254	
NIZZA	10. Albenga	263	59,993	242,990	4,416	256,603
	11. Nizza	1,180	118,377		36,804	
	12. Oneglia	175	60,072		5,867	
CUNEO	13. San Remo	265	64,541	600,872	10,252	618,813
	14. Cuneo	1,003	179,636		20,564	
	15. Mondovì	679	148,450		17,370	
ALESSANDRIA	16. Alba	408	118,844	452,316	8,577	496,946
	17. Saluzzo	622	153,942		14,438	
	18. Alessandria	332	117,870		41,653	
NOVARA	19. Asti	351	136,065	453,958	24,446	480,836
	20. Voghera	308	101,695		11,454	
	21. Tortona	257	58,853		12,383	
IVREA	22. Bobbio	269	37,833	249,793	4,090	257,507
	23. Novara	533	178,069		21,725	
	24. Lomellina	480	139,649		(Mortara) 5,688	
VERCELLI	25. Pallanza	312	64,030	372,925	2,435	401,573
	26. Ossola	521	36,331		(Domodossola) 2,089	
	27. Valsesia	292	35,879		(Varallo) 3,318	
CHAMBERY	28. Ivrea	562	168,561	313,302	9,570	313,891
	29. Aosta	1,233	81,232		6,770	
	30. Vercelli	473	121,806		18,353	
ANNÉCY	31. Biella	377	130,691	270,510	8,302	267,942
	32. Casale	335	120,428		22,203	
	33. Chambery	634	152,468		16,169	
SASSARI	34. Alta Savoia	377	50,872	147,045	(Albertville) 3,804	149,820
	35. Moriana	798	64,239		(St Jean) 3,098	
	36. Tarantasia	706	45,723		(Moutiers) 2,072	
CAGLIARI	37. Genevese	620	107,474	547,112	(Annecy) 9,074	577,282
	38. Faucigny	786	105,474		(Bonneville) 2,168	
	39. Chablais	356	57,562		(Thonon) 4,488	
Total		19,774	4,338,975			4,590,260
Island of Sardinia.						
CAGLIARI	40. Cagliari	...	106,388	276,133	27,140	300,134
	41. Iglesias	...	42,598		4,800	
	42. Isili	...	48,958		2,276	
NUORO	43. Oristano	...	78,189	123,934	5,745	127,328
	44. Nuoro	...	58,882		4,769	
	45. Lanusei	...	27,530		2,005	
SASSARI	46. Cuglieri	...	37,522	147,045	4,133	149,820
	47. Sassari	...	65,821		21,853	
	48. Alghero	...	34,108		8,716	
SASSARI	49. Ozieri	...	24,456	547,112	7,481	577,282
	50. Tempio	...	22,660		8,577	
	Sardinia	9,301				
Continental States		19,774	4,368,975			4,590,260
Capraia		...	4,640			4,741
Total		29,075	4,920,627*			5,172,283

* Of the total 4,920,627, 2,484,059 were men, and 2,436,568 were women.

The following is a List of the other Towns with more than 6000 Inhabitants :—

Fossano	16,423	Barge	9,694	Trino	8,217	Paesana	6,806	Sta. Margherita ..	6,421
Vigevano	14,530	Busca	9,375	Dronero	7,890	S. Salvatore	6,751	Galliatà	6,361
Savigliano	14,447	Moncalieri	9,334	Carignano	7,804	Castelnuovo Scri-		Quarto	6,322
Chieri	13,920	Sarzana	9,130	Oleggio	7,746	via	6,730	Poirino	6,320
Carmagnola	12,958	S. Pier d'Arena ..	9,078	San Damiano	7,396	Ventimiglia	6,595	Garesio	6,202
Rapallo	10,522	Villafranca	8,820	Demonte	7,364	Rivarolo	6,592	Chiusa	6,046
Racconigi	10,343	Valenza	8,735	Porto Maurizio ..	7,040	Vigone	6,551	Stradella	6,044
Voltri	10,005	Chivasso	8,477	Cavour	6,911	Ovada	6,497	Bena	6,039
Cherasco	9,982	Sestri a Levante ..	8,468	Varese	6,906	Caraglio	6,471	Corio	6,027
Boves	9,713	Varazze	8,451	Lavagna	6,890	Peveragno	6,458		

Sardinia.

The population for the last thirty years has steadily though slowly increased. Thus the Stati di Terra Ferma, which in 1838 had 4,125,735 inhabitants, in 1848 had 4,368,975, and 4,590,260 in December 1857. The variations in the population of the island of Sardinia were greater. In 1775, 426,375; in 1800, 361,445; in 1809, 359,344; in 1815, 362,405; in 1828, 436,357; in 1838, 496,205; in 1848, 547,112; and in 1858, 577,282. The great fall of the population from 1775 to 1800 has never been well accounted for; and it is remarkable that the decrease continued even after the island had become the residence of the royal family, on the occupation of the continental possessions by the French. According to the census of 1838, which is taken in preference, as its returns were not in any way affected by revolutions or wars, the Stati di Terra Ferma, on the 31st December 1837, were inhabited by 2,072,707 men and 2,053,028 women. In the course of that year there had been 306,902 marriages, 1,303,250 deaths, and 1,457,493 births, of which 30,474 illegitimate, —the average of illegitimate being 2·09, and that of legitimate births 97·91 per cent. The maximum of natural children is of 3 per cent. at Turin, and the minimum is of 1·03 per cent. in the province of Alessandria. The maximum of births takes place in the following order:—March, April, January, October; the minimum in June and December. The greatest number of marriages take place in February, January, April, November; and the smallest number in December and March. Out of their total number in 1837 there had been in February, 62,188; January, 47,022; April, 32,108; November, 26,131; March, 13,053; December, 10,054. With regard to age, the greatest number marry from 20 to 25 years old. In 1837, 23 men and 288 women had married from 12 to 14, and 4052 men and 949 women more than 56 years old. The maximum of deaths occurs in February and August; the minimum in June and October. An idea of the longevity in the continental possessions may be formed from the following numbers:—Out of 1,303,250 deaths that occurred in 1837, 15,734 were still-born; 158,542 died before they were a month old; 152,843 from 1 month to 1 year old; 95,333 from 1 to 2 years old; and so on, decreasing to the minimum of 5130 from 12 to 13 years old; 92,956 had died from 50 to 60; 121,665 from 60 to 70; 100,614 from 70 to 80; 39,274 from 80 to 100, and 362 more than 100 years old.

Little is known of the early history of the various states which now form the continental possessions of Sardinia before they fell under the Roman power. From that time they followed the fate of Rome, and eventually were overrun by the various northern nations that overthrew the empire. Most of the territories south of the Alps, in the sixth century, fell under the Longobards, in whose history the dukes of Ivrea, of Asti, of Aosta, of Turin, &c., play an important part. When Charlemagne put an end to the Longobard kingdom the country fell under the sway of several small counts, dukes, and marquises, who, sometimes as vassals of the empire, sometimes asserting their independence, succeeded in holding possession of it till they were gradually swept away by a more able, more powerful, or more fortunate one of their number, and their petty states absorbed into a monarchy.

The House of Savoy is one of the most ancient sovereign families in Europe. Its earliest historical progenitor, and the founder of its power, was Umberto Biancamano, or Whitehand (flour. 1003–1045), a liege baron of the Burgundian kings, and a descendant, according to some genealogists, of Berengarius II., Marquis of Ivrea and King of Italy; and according to others, of Louis the Blind, King of Provence and Italy, and emperor. Umberto's original possessions seem to have been the county of Salmonrec in the Viennois, to which eventually he added the counties of

Sardinia.

Noyon and Bellay, the Chablais, the Maurienne, the Tarentaise, Savoy, and Aosta. Rudolph III., at his death without issue in 1032, having appointed his joint heirs his widow Ermengarda and Conrad the Salique, the Burgundian Barons refused to comply with his will, and asserted their independence. Umberto alone remained faithful, and having led an army by the valley of Aosta across the Alps, enforced obedience to the widow and to Conrad. This act of chivalry strengthened the foundation of his power. His son Odo, by marrying Adelaid, only offspring of the royal family of the Harduins, added the county of Turin and great part of the surrounding country to his paternal states. The power of the House of Savoy was established. Ever since, through the course of eight centuries—through many vicissitudes of fortune, such as at times had nearly brought it to its total ruin—the House of Savoy has gone on slowly, but steadily gaining power and influence; and whilst all the other great mediæval Italian families, such as the Estes, the Gonzagas, the Viscontis, the Sforzas, the Carraras, the Medicis, have disappeared, the descendants of Umberto Biancamano are still powerful and flourishing. As it is not consistent with the plan of this work to give a regular history of the Sardinian states, we shall confine ourselves to a short notice of the principal events by which they were gradually brought together into a monarchy.

The reign of Charles III., in the beginning of the sixteenth century, was a period of great misfortunes for the House of Savoy. The progress of the new religious opinions tore away from his possessions the Canton de Vaud, Geneva, and the lower Valais, and deprived him of the alliance of Berne and Fribourg. During the contests between Francis I. of France and the Emperor Charles V., Duke Charles III. having attended the coronation of the emperor at Bologna, Francis invaded Piedmont, and, by a royal edict of February 1537, declared it a French province, which had been unlawfully detached from the kingdom. Charles died in misery at Vercelli, attended only by his barber, in 1553. Emmanuel Philibert (1553–80), the heir to the ducal crown of Savoy, was living in poverty at the court of Charles V.; but he was a man of great energy of character, of an iron will, and of remarkable military talent. The battle of St Quintin is well known in history. By the treaty of Chateau Cambresis that followed it, Emmanuel Philibert, to whose wisdom and valour the Spaniards chiefly owed their victory, recovered all the possessions of his ancestors, and was the second real founder of the greatness of his house. One of his most important measures was that of abolishing political feudality, and, by substituting a fixed annual payment in money instead of the military service of the great vassals, forming a stipendiary regular infantry, which enabled him to restore order in the country, and to defend it from foreign enemies. His successors in the dukedom were Charles Emmanuel I. (1580–1630), Victor Amadeus I. (1630–37), Francis Hyacinth (1637), Charles Emmanuel II. (1638–74), and Victor Amadeus II. (1675).

The latter sovereign, who during his long reign (1675–1730) was almost constantly at war with France or Spain, was the first king of Sardinia. On the breaking out of the war of the Spanish succession in 1700, at first he followed the part of the French; but, indignant at the treatment he met with from Louis XIV. and his generals, for a whole year he took no part in the war. But at length, tempted by the offers of the allied powers, Austria, Holland, and England, in 1703 he declared himself against France. After many reverses, which had nearly deprived him of all his possessions, finally the battle of Turin, won by the imperial army under the command of Prince Eugene of Savoy on the 7th September 1706, compelled the French to raise the siege of his capital and retire from Italy. By the treaty of Turin of March 13, 1707, all the possessions which the

Sardinia. French held by virtue of the rights and in the name of Spain in Italy, were surrendered to Austria; and the latter power ceded to Victor Amadeus, as the price of his co-operation, the Lomellina, the Montferrat, the district of Alessandria, and the Valsesia. The power of the House of Savoy was thus extended into Lombardy, which Victor Amadeus used to compare to an artichoke that was to be eaten leaf by leaf. At the final end of the war, by the peace of Utrecht in April 1713, and the treaties of Rastadt and Basle in March and September 1714, Spain gave up the island of Sardinia to the emperor, and the island of Sicily to Victor Amadeus, who thereupon assumed the name of King of Sicily. This arrangement, favourable to the House of Savoy, was due chiefly to the influence of England.

But at the death of Louis XIV., Spain, which was then governed by Cardinal Alberoni, tried by going to war to recover her losses, and at once re-took possession of Sicily and Sardinia. The quadruple alliance formed against her compelled her in 1720 to a peace, by which the House of Austria retained Naples, and had Sicily added to it, and the island of Sardinia was given to the House of Savoy, to make up for the loss of Sicily. From that time the dukes of Savoy became kings of Sardinia.

The early history of this island is wrapped up in darkness, and the accounts that the ancient writers have left us of the origin of its first settlers are extremely various and conflicting. But whatever may be thought of them, the high antiquity of its settlement is attested by durable monuments, the materials, height, and construction of which are different from almost any other that are to be found. These Cyclopean structures are very numerous, more than twelve hundred of them having been found and recorded in the island. They are called *Nuraggis* both by ancients and moderns, being in height about 50 feet, and in diameter at the base about 90 feet. They are strong buildings, in the form of a truncated cone, composed of masses of stone from 2 to 5 or 6 feet square, arranged in layers without cement. The materials are lava, freestone, porphyry, or such other substances as the respective sites afford; and they generally crown the summits of hills commanding plains, where they are seen in every state, some being nearly complete, and others a mere heap of rubbish. On entering these edifices, which is effected by a low door, the structure is found to extend below the surface of the surrounding earth. The interior space is almost invariably divided into two floors, each consisting of a vaulted room, to which access is gained from a ramp between two concentric walls, and leading to the summit, where a flight of steps completes the ascent. The *nuraggis* are of two distinct kinds. Those which are the most common have no marks of the chisel, and are constructed of massive blocks with irregular faces, and smaller stones in the interstices; the materials of the others exhibit exteriors formed by tools, though the stones are not exactly square, but are placed with a stricter regard to keeping the horizontal layers, and gradually diminish in size towards the summit.

There have been various conjectures respecting the probable object of these buildings. The darkness of their interior, and the fragments of *terra-cotta* found in them, would indicate their having been monuments for the dead; a belief so general that they have obtained in their neighbourhood the name of *Domu de Orçu*, or the house of death; but the pottery being evidently Roman, and in some instances accompanied by coins of the lower empire, indicates only that such was the use made of them at a late period. Captain Smyth, who examined these ancient monuments, says, "From their laborious construction, their number, and their general situation on *curcureddus*, or eminences, more or less distant from each other, I cannot but suppose they were designed to answer the double purpose of mausolea

for the eminent dead, and as asyla for the living, especially as many of them are flanked with smaller *nuraggis* having a subterraneous communication. But the mystery in which they are involved will probably remain impenetrable, since none of them exhibit the least trace of either literal or symbolical characters."

At whatever periods these remarkable works were erected, a long time elapsed before any precise notice is to be discovered of the history of Sardinia, until about the year 500 before Christ, when the Carthaginians under Malchus, after a victorious campaign in Sicily, attempted the conquest of the island. They were repulsed with such loss, however, as left it in repose for some time; but at length the Carthaginians succeeded in gaining a footing and maintaining themselves in the island, till they surrendered their claims over it to the Romans, B.C. 238. The latter, however, did not effect its subjugation till after several campaigns.

At the fall of the Roman empire, Sardinia, by successive conquests, passed into the hands of the Vandals, the Saracens, and the Spaniards, in whose power it remained from 1324 till they lost it, as has already been noticed, during the war of the Spanish succession.

The war of the Polish succession (1733-38), which caused important changes in Italy, brought to the House of Savoy Tortona and Novara; and by the war of the Austrian succession, on the death of the Emperor Charles VI., Sardinia gained the districts of Vigevano and Bobbio, which Maria Theresa ceded to Charles Emmanuel in reward for his services.

Such was the state of Sardinia when the French attached it in 1792. In 1798 their successes were such as to compel the king, Charles Emmanuel IV., to abandon the capital, Turin, and the whole of his continental dominions. He withdrew to Leghorn, where he received with delight deputies from the *Stamenti* of the island of Sardinia, assuring him of the entire devotion of the people to his person and government. Satisfied with these assurances he embarked, and, escorted by an English frigate, arrived at Cagliari on the 3d of March 1799, where he was enthusiastically welcomed.

The successes of the Russian general Suwarof induced his majesty to return to the Continent, till, hearing while in Tuscany of the battle of Marengo, and being inconsolable for the death of his wife, the sister of Louis XVI., he abdicated in favour of the Duke of Aosta in March 1802, and resided in privacy at Rome, where he died in 1819. His successor, Victor Emmanuel, remained some time in Italy, in the hope of gaining his continental dominions; but seeing little prospect of succeeding, he left Naples, at which place he had resided since his accession, and arrived in Sardinia on the 17th of February 1806, where he remained secure under the protection of England.

The son of Charles Emmanuel followed the footsteps of his father in opposing the principles of the French revolution, which was then spreading its effects over all Europe, and nowhere more generally than in the continental part of the kingdom of Sardinia. The events of that period are to be found narrated in this work in the historical part of the article FRANCE. We need only state here, therefore, that the King of Sardinia returned to his continental capital in 1814, and by the treaty of Vienna the duchy or ancient republic of Genoa was added to his dominions. By the same treaty he ceded to the state of Geneva the circles of Carouge and Chesne, containing 12,700 inhabitants.

Victor Emmanuel on his restoration re-established, as far as could be done, the old order of things, except that he confirmed the purchases of confiscated property made under the French, restored to the former owners only the few estates that had not been sold, and allotted an annual sum of L.16,000 as some compensation to those whose property

Sardinia.

Sardinia. had been plundered. But he became a zealous member of the Holy Alliance, again introduced the Jesuits, established a very severe censorship of the press, and introduced such restrictions on the process of education in the universities and the colleges and seminaries as he judged advisable to check the prevailing tendency to infidelity and immorality. These measures, combined with the general state of Italy, caused in 1821 an insurrection, the particulars of which, as well as a summary of the events of 1848, and the establishment of a liberal constitutional government in the country, are given in this work under ITALY.

The liberal institutions granted by the late King Charles Albert in 1848, have been maintained by his son and successor, the present King Victor Emmanuel; and during the last seven years the country, under a wise and enlightened administration, has made great progress in agricultural improvements, in commerce, in general wealth, and in education.

Such was the state of Sardinia in January 1859. Since that time important events have happened, which seemed to endanger, not only her constitutional liberties, but even her very existence as an independent power. The gigantic struggle that for two months strewed the plains of Northern Italy with human bodies, has just come to an end; but its results being dependent upon a peace, the real terms of which are still wrapped up in mystery, and are at this moment being arranged at Zurich, we shall only give here a very rapid sketch of the causes and the course of the war we have recently witnessed.

Ever since the conclusion of the disastrous war with Austria in 1848 and 1849, the relations between Sardinia and that country, far from being on a friendly footing, had been such as to lead at last to an interruption of diplomatic relations. For an explanation of their hostile attitude, we must go back, at least, to 1815; since which time, whenever an attempt was made on the part of any of the Italian States for freedom—as in 1820 at Naples, and in Piedmont; and in 1830 in the Legations and the Duchy of Modena—the iron hand of Austria interposed, and re-established the stringent despotism of previous governments. It was either at the direct bidding of Austria—as in Tuscany, Parma, and Modena; or by Austrian counsel, countenance, and support—as in Naples and the Papal dominions,—that the constitutional charters, granted in 1848, were, in the course of 1849 and 1850, suppressed, and a despotic and reactionary policy resorted to.

Sardinia alone, after 1848, preserved her liberal institutions, and fairly worked out a regular constitutional government. Hence her very position as a free state, in direct antagonism to the military despotism by which the Lombardo-Venetian kingdom was swayed, became a standing menace to Austria. The feeling of nationality, and the liberal aspirations of the Italian subjects of the latter power, not only were kept alive by the constitutional liberties thriving in a neighbour Italian state, but found expression and sympathy, and were constantly fanned by the free Sardinian press, which never failed to register and expose any general act of despotism, or any instance of individual wrong and oppression, exercised by the Austrian rulers of Lombardy and Venice. For the attacks by the press Austria often demanded redress from Sardinia; and was uniformly answered, that the press being free by the constitution, the government had no control over it; but if the newspapers made false statements, they might be prosecuted for libel. Many Lombards and Venetians, to escape persecution after 1849, availing themselves of the permission to expatriate given by the Austrian laws, had established themselves in Sardinia, where some of them even sat in the Chambers, or filled high official situations. It was in the nature of things, that as Austria was the counter-tenancer and supporter of the despotic rulers, so the con-

*Sardinia.*stitutional party, all over Italy, should look up to Sardinia as their representative and leader, and the power by which they might expect a voice to be raised in their behalf.

Under such circumstances it was evident that Austria would never have a peaceful supremacy in Italy, so long as a constitutional government existed in Sardinia; and that, on the other hand, the liberal institutions of the latter country were constantly in danger of being trampled upon by the former, whenever a favourable opportunity occurred.

This state of things had almost daily been growing worse, when a few significant words of menace offered by the French emperor to the Austrian ambassador, at Paris, on New Year's day, 1859, accelerated a crisis, which otherwise would have been only delayed, not avoided. Austria, suspecting the existence of an accord against her between France and Sardinia, poured a formidable force into Italy, and assumed a threatening attitude towards the latter power, by bringing a division of her army up to the frontier, on the Ticino, and by strongly fortifying and garrisoning Piacenza, in the duchy of Parma.

Sardinia protested against the Austrian movements, especially against the fortification and occupation of Piacenza, contrary to the treaties of 1815. At the same time she made preparations for defence, and applied to France and England for assistance, in case of attack. The relations between France and Sardinia grew at this time closer, by means of a marriage between Princess Clotilde, a daughter of King Victor Immanuel, and Prince Louis Napoleon.

Our government, under Lord Derby's administration, endeavoured to bring the parties to an understanding; and to that effect Lord Cowley, from the embassy at Paris, was sent by Lord Malmesbury on a special, but, as it turned out, fruitless mission to Vienna. It was proposed that Austria should give up the separate treaties she had made, since 1815, with the smaller Italian powers, and should withdraw from the Duchies and the Legations. The efforts of England were, in a certain way, thwarted by the proposal of a congress by Russia. But the rather too favourable attitude we assumed towards Austria, by raising a hope, that, in case of war, we would eventually join her, may possibly have tended to induce her to take the step which finally led to the rupture of peace. For whilst arrangements for a pacific solution of the difficulties were still going on, Austria addressed to Sardinia a peremptory summons to disarm within three days. The Sardinian government having answered, that though it was unreasonable for the strong to ask the weak to disarm, yet they would abide by the decision of France and England. After a few days, at the end of April, the Austrian army, in three bodies, crossed the Ticino, and invaded the Sardinian territory.

Had Count Gyulai, the Austrian commander-in-chief, pushed on with the greatly superior force he had, the Sardinians would scarcely have been able to cover Turin; and they were so much prepared to give it up, if necessary, that the state archives had been removed to Chamberg. But before the arrival of the French, the Austrians lost an invaluable time in comparative inaction, and in exacting heavy, and almost marauding, requisitions of provisions of every kind, and money, in the provinces of Lomellina, Vercelli, and Novara.

Meanwhile a large French force, which was sent on the first news of the Austrian summons, began to pour its numbers into Italy, across the Mont Cenis and the Mont Genevre, and by Genoa, in aid of the Sardinians; and, on the 12th of May, the French emperor himself landed at the latter place, and assumed the command-in-chief of the French and Sardinian armies.

An imperial manifesto promised the independence of Italy, from the Mediterranean to the Adriatic Sea; and for

Sardinia. a time it seemed as if the promise was to be fulfilled. In less than two months from the commencement of hostilities, the Austrians, beaten in every encounter, were driven back from the Sesia and the Po, beyond the Mincio.

The main body of the French army assembled at first round Alessandria. Large forces were afterwards concentrated on the right, and seemed to aim at Piacenza, and forcing a passage of the Po, between that fortress and Pavia. An endeavour of the Austrians to dislodge them from their position led, on the 20th, to the battle of Montebello. The French were reposing within their lines, when, at 11 A.M., the Piedmontese outposts gave the alarm. A Sardinian cavalier, covered with blood and dust, galloped into the French camp, calling out, "To arms! the Austrians!" A detachment of Sardinian cavalry, under General Sonnaz, and two French battalions of the line, commanded by General Forey, had to sustain for hours an unequal combat against overwhelming forces. At length, strong French reinforcements having been brought up from Voghera, the head-quarters of Marshal Baraguay D'Hillier's division, the Austrians, after a sanguinary struggle of six hours' duration, were repulsed, driven out of Montebello, and, fairly beaten, retreated to Casteggio.

After several skirmishes on the 31st, the main body of the French army crossed the Po at Casale, and took the road to Vercelli, where the passage of the Sesia was carried out by the successful action of Palestro, to cover their rapid march on Novara. At the same time, two actions, gallantly fought by the Sardinians, made the Austrians believe that the French were marching on Mortara, in the centre of their line.

By these strategic movements the allies outflanked the right wing of the Austrian army. On the 2d of June, General M'Mahon, with his division, threw a bridge over and crossed the Ticino at Turbigo, and marched towards Magenta, on the road to Milan; whilst the emperor, with other army corps, advanced towards the bridge of Buffalora.

The Austrians having learned, on the night of the 2d, the passage of the Ticino at Turbigo, rapidly sent across that river, at Vigerano, three army corps, and on the 4th opposed at once the passage at Buffalora, and attacked M'Mahon's division at Magenta. A fearful struggle took place, in which the troops on each side engaged in the action exceeded 100,000 men. After a sanguinary conflict, which lasted more than eight hours, during which the Imperial and Sardinian guards took and retook the position six times, at half-past eight P.M. the allies remained masters of the field of battle; and the Austrians, who, according to the French accounts, had 15,000 killed and wounded, withdrew, leaving 4 guns, 2 flags, 5000 prisoners, 12,000 muskets, and 30,000 knapsacks. The loss of the allies was put down at 4000. Two French and one Austrian general fell in battle. General M'Mahon, to whom the victory was chiefly owed, was created a field-marshal and Duke of Magenta.

This victory was followed up by another signal success at Melegnano, from which place Marshal Baraguay D'Hilliers, on the 8th, dislodged bodies of Austrian troops that had entrenched themselves. The Austrian loss was estimated at nearly 2000; the French at 943, among whom were 69 officers.

The Austrian accounts, which admitted a loss only of 5000 men at Magenta, greatly deprived the action of its former proportions, and represented it more like a drawn battle than a victory. Its great importance, however, was proved by its practical results. In conjunction with the brilliant action of Melegnano, not only it opened the way to Milan to the allies, but it cleared Lombardy of the Austrians; at first, as far as the Adda, and afterwards the Mincio. Pavia, Brescello, Pizzighettone, and Piacenza,

Sardinia. were hastily evacuated; and the great fortifications, constructed at the latter place with so much labour and expense, which gave one of the pretexts for the present war, were destroyed. In every direction the Austrians fell back upon their reserves in the fortresses beyond the Mincio. They precipitately retired even from Ancona and Bologna, in the Papal States, which they had occupied since 1849.

On the 8th of June, the day of the battle of Melegnano, Napoleon III. and Victor Emmanuel entered Milan, among the enthusiastic greetings of the inhabitants.

On the same day, by a proclamation to the Italians, Napoleon III., after disclaiming any view of personal ambition, or enlargement of the territory of France, and only claiming the moral influence of contributing to render free one of the most beautiful parts of Europe, invited them all to unite in one sole object, the enfranchisement of their own country. "Form a military organization," he continued; "hasten all of you to place yourselves under the flag of King Victor Emmanuel, who has already so nobly shown you the path of honour. Remember, that without discipline there is no army; and, animated with the sacred fire of justice, be nothing to-day but soldiers. To-morrow you will be free citizens of a great country."

The Austrians, under General Count Schlick, the successor of Gyulai, who was deposed in consequence of the defeat of Magenta, continued their retreat along the north bank of the Po, within the quadrangle of the fortresses of Peschiera, Verona, Mantua, and Legnano; and the allies, keeping the northerly road, crossed the Adda and the Oglio without opposition.

On the 22d of June, the hostile armies had come so nearly face to face, as to make it evident that a great battle was imminent. The allies were encamped between the Chiese and the Mincio, occupying Lenato, Castiglione, and Montechiaro; and having their left wing resting on the high ground near Brescia and the southern end of the lake of Garda. At their extreme left was General Garibaldi, who, with the Cacciatori della Alpi, a body of volunteers, after a most daring and brilliant series of manœuvres round the extreme northern frontiers of Lombardy, had come down on the Lake of Garda. The Austrian forces were on the left bank of the Mincio, resting with their right on Peschiera and Verona, and with their left wing on Mantua.

On the 23d, the Austrians poured out their numbers from Mantua, Verona, and Peschiera; and, led by their young emperor, Francis-Joseph, who had assumed the command-in-chief, in the course of the evening crossed the Mincio at four different places, confident of defeating the allies, and driving them beyond the Chiese.

On the 24th, one of the bloodiest battles on record took place. The Austrians began the attack at daylight; and at 10 A.M. the whole of the two armies had come into collision. The battle lasted fifteen hours, and extended along a line of nearly 18 miles, from the neighbourhood of Brescia down towards Mantua. The right wing of the Austrians occupied Pozzolengo, where they met the Sardinians; their centre was at Caviana and Solferino, whilst their left wing marched on Guidinolo and Castel Goffredo, and for a time succeeded in repulsing the French.

The day was decided by a concentrated attack, made about three o'clock P.M., by the French Emperor on Solferino, a village in a commanding situation, where the Austrians had fortified themselves. After several hours of desperate fighting, the place was carried by the French, who, thereby breaking the Austrian centre, moved large masses against their left wing, which, having pushed on almost to the Chiese, was in danger of being surrounded and cut out. Late in the evening, the young Emperor of Austria, with tears in his eyes, saw that the day was irrecoverably lost, and gave the order for the retreat beyond the Mincio, which was accomplished under the protection

Sardis. of a violent storm, that had begun to rage since three o'clock in the afternoon.

Few battles, in modern history, have been marked with more slaughter and horror. More than 300,000 human beings were brought into a close fight, and at night 35,000 of them, at least, were dead or dying. The French, according to their own statement, had 12,720 killed and wounded, and the Sardinians 5525. The Austrian loss, which was put by them at 11,213, is generally asserted to have exceeded 18,000. Numerous prisoners, 13 pieces of cannon, 2 flags, and large quantities of arms and ammunitions, fell into the hands of the allies; and Napoleon III. slept at Solferino, in the very apartment which, the previous night, had been occupied by Francis-Joseph.

After the battle of Solferino, the command-in-chief of the Austrian army was given to Baron Hess, who offered no opposition to the passage of the Mincio by the allies. On the 1st of July, the latter received a reinforcement of 35,000 men, brought by Prince Napoleon through Florence and Modena.

Whilst the Sardinians were investing Peschiera, a French division was at Goito to watch Mantua; Garibaldi's *Cacciatori delli Alpi*, supported by General Cialdinè's division, were moving to close up the valley of the Adige; and the emperor, with the main body of the army, was approaching Verona,—the startling news was received that Napoleon had sent an aide-de-camp to ask for an armistice; and that, on the 7th July, an armistice was actually concluded between him and Francis-Joseph, and commissioners already appointed to agree upon its terms. Events took at once a pacific turn. On the 11th, the two emperors met at Villafranca, and signed a peace, the basis of which were thus vaguely announced:—

"Italian Confederation under the honorary presidency of the Pope.

"The Emperor of Austria cedes his rights to Lombardy to the Emperor of the French, who transfers them to the King of Sardinia.

SARDIS, or **SARDES**, anciently the capital of Lydia, in Asia Minor, stood at the foot of Mount Tmolus, now called Bozdag, in a beautiful plain, about 50 miles N.E. of Smyrna. It was an ancient town, and built at first in a rude manner, so as to be very liable to conflagrations; but the citadel on a steep rock was almost impregnable, being fortified by three walls. It was thus enabled to hold out when the lower town was taken by the Cimmerians in the reign of Ardys. Under Cræsus, the last of the Lydian monarchs, Sardis rose to a high degree of prosperity; and after his fall in 546 B.C., it was the residence of the Persian satraps of Western Asia. During the Ionian revolt, B.C. 501, the insurgents, aided by the Athenians, took the city; and on that occasion it was accidentally set on fire and burned to the ground. Sardis was rebuilt; but its burning was the chief event that called down the indignation of the Persians against Athens, and led to the Persian wars with Greece. The city remained under the Persian empire till the time of Alexander the Great, to whom it opened its gates after his victory at the Granicus. After the battle of Ipsus, B.C. 301, Sardis fell to the kingdom of Syria; and when the two Scipios conquered Antiochus at Magnesia, B.C. 190, it became a part of the Roman empire. As we learn from the Book of Revelation, a christian church was early founded at Sardis, and was one of the seven to which that book was addressed. The city continued wealthy and powerful till the fall of the Byzantine empire; it was taken by the Turks in the eleventh century, but suffered a severer blow from Tamerlane, who almost entirely destroyed it about 200 years later. The ruins, though covering a large space of ground, are not

"The Emperor of Austria preserves Venice; but she will form an integral part of the Italian Confederation.

"General amnesty."

The intelligence of the peace, and its terms, were received with bitter disappointment in Italy; and no where more, perhaps, than in Tuscany, Parma, Modena, and the Legations. From the beginning of the war those states had overthrown their despotic governments; and, encouraged by the French Emperor's proclamations, had declared their wish of joining in the war against Austria, and uniting themselves to Sardinia. The peace of Villafranca threatened them with a restoration of their despotic rulers.

As it has already been stated, the real terms of the peace are at this moment being settled at Zurich, among the envoys of Austria, France, and Sardinia. In the meantime, at Parma, at Modena, at Bologna, and at Florence, representative assemblies have been summoned, which have expressed the national wish of resisting any attempt to re-establish their previous governments, and of placing themselves under Victor Emmanuel. On the 3d September, a Tuscan deputation presented to Victor Emmanuel, at Turin, an address, stating the unanimous proclamation by the Tuscan Assembly of the will of Tuscany to form part of an Italian kingdom under his constitutional sceptre. The king replied, that the accomplishment of their wish could only take place by negotiations, which were about to begin, on the affairs of Italy; that he would second their desire, and support it before the European powers, especially before the French Emperor, who had done so much for the Italian nation.

Whether, and on what terms and conditions, Lombardy will really be annexed to Sardinia; and whether Tuscany, Parma, and Modena, will eventually form part of the constitutional kingdom of the descendant of Umberto Biancamano, the lapse, possibly, only of a few months will show. At the present moment (September 1859), everything is in a state of great confusion and uncertainty. (***)

very interesting; in the middle of them stands the modern village of Sart.

SARDONIC LAUGHTER, a peculiar convulsive action of the diaphragm, giving the appearance of ghastly and unnatural laughter, and which is the closing symptom of several fatal diseases, is said to have been first observed in those who ate the herb *Sardonia*, a plant said to belong to Sardinia.

SARDONYX, a precious stone, consisting of a mixture of the chalcedony and carnelian, sometimes in strata, but at other times blended together.

SAREPTA, a fortified town of European Russia, in the government of Saratov, near the confluence of the Sarpa and the Volga, 15 miles S. of Tzaritzin. It was founded in 1765 by a colony of the Moravian brethren, and contrasts favourably with most of the Russian towns in this region, having straight streets, lined with neat white houses, and meeting in the centre in a fine market-place, adorned with a fountain. Cotton, silk, and woollen fabrics are manufactured here, as well as hosiery, tobacco, and snuff. The surrounding country has been brought by the labours of the settlers into a most flourishing condition, with rich fields, gardens, and meadows. Pop. about 4000.

SARI, or **SAREE**, a town of Persia, capital of the province of Mazanderan, about 11 miles from the shore of the Caspian, and 115 N.E. of Teheran. N. Lat. 36. 30.; E. Long. 53. 10. It is about 2 miles in circuit, surrounded by a mud wall and moat, with brick towers. There are several gates, but most of them have fallen down, and roads have been made through the wall at various other places. The houses are of brick, neatly tiled, and some of the

*Sardonic
Laughter*

Sari.

Sarlat
||
Sarno.

streets are good, though others are unpaved and very muddy. Everywhere marks of ruin and neglect are apparent. The most remarkable building is a hollow tower of brick, with a conical roof, 100 feet high. There are also a mosque, palace, five colleges, several Parsee temples, baths, and a mean bazaar, where there is some trade in the produce of the country. The surrounding region is fertile, and contains many saints' tombs. Pop. 30,000.

SARLAT, a town of France, capital of an arrondissement in the department of Dordogne, in the valley of the Sarlat, amid steep barren hills, 32 miles S.E. of Périgueux. It is encircled by old walls, and consists for the most part of narrow streets, lined with old ill-built houses. The best of the edifices are the ancient parish church, the college, and the hospital. Sarlat is the seat of law-courts, and has manufactures of paper and walnut oil. It was formerly a place of some strength, and has sustained several sieges. Pop. (1856) 6223.

SARMATIA, the name given by the ancients to an extensive tract of country lying to the east of the ancient Germania, bounded on the N. by the Baltic and the unknown country to the E. of that sea, E. by the Volga (*Rha*) from its confluence with the Kama to its mouth, and by the Caspian Sea, S. by Mount Caucasus, the Euxine Sea, and Dacia, and W. by the Vistula. It thus included eastern Prussia, parts of Poland and Galicia, and the whole centre and south of European Russia. All this country is now included within the limits of Europe; but as in ancient times the arbitrary boundary between the two continents was formed by the river Don (*Tanais*), Sarmatia was divided into European and Asiatic; the former lying to the west, and the latter to the east of that river. This vast region was occupied by a great number of warlike nomadic tribes, whose names are given by ancient writers, but whose respective localities are for the most part merely matters of conjecture. The history of Sarmatia presents us with no event of any importance. Its wild and fierce tribes were not subdued by any of the great empires of antiquity, and are only known to us by the incursions that they made into the more civilized countries to the south. The Romans frequently encountered them on the borders of Pannonia and Mœsia, and after the conquest of Dacia, also in that province. But they never inflicted any serious damage on the empire; and in later times, when the people of these countries came into historical prominence, the name of Sarmatians had disappeared, superseded by the better known appellation of Vandals and Huns. It is to be observed, that the people described by Herodotus under the name of Sauromatæ, which is merely a different form of Sarmatæ, did not occupy the whole of the country known in the time of Ptolemy as Sarmatia, but only that portion of it which lies between the Don, the Volga, and Mount Caucasus; the rest being inhabited by the Scythians. Whether or not the Sarmatians were a distinct people from the Scythians, is a somewhat doubtful point; but it is probable that the two were distinct, and that the former belonged to the Slavonic and Lithuanic, the latter to the Turkish races. See SCYTHIA. The Sarmatians wandered about in large waggons, surmounted by tents, and drawn by oxen, wherever their pastoral avocations, the pursuit of game, or their warlike passions, might direct their movements. A vivid description of these savage barbarians is given in the poetical epistles, which were written by Ovid from his place of banishment, near the mouth of the Danube; where he was exposed to the assaults, probably, of the Jazygae, one of the fiercest and most powerful of these tribes.

SARNO, a town of Naples, in the province of Principato Citra, near the source of the Sarno, at the foot of the Apennines, 12 miles N.N.W. of Salerno. It has an old castle, a fine cathedral, with some good paintings, several

other churches and convents, and an hospital. About the middle of the town there are mineral springs, which are much resorted to. Paper-mills, iron, and copper foundries are the chief manufacturing establishments in the place. Silk is produced in abundance in the neighbourhood. Not far off are some remains of an ancient aqueduct. Pop. 12,000.

SAROS-PATAK, a town of Hungary, in the county, and 15 miles S.W. of Zemplin. It stands on the Bodrog, and contains a once famous but now ruined castle, a large protestant seminary, a Roman Catholic upper school, &c. Cloth is made here, and wine raised in the vicinity. Pop. (1846) 5480.

SARREGUEMINES, or SAARGEMUND, a town of France, capital of an arrondissement in the department of Moselle, at the confluence of the Saar and the Bêlise, 42 miles E. of Metz. The most notable buildings are the prison and a former convent, now divided between the court-house, the sub-prefect's residence, and the lecture-rooms of the college. The town has manufactures of leather, silk, earthenware, &c.; and is the centre of a considerable trade in snuff-boxes, which are made in large numbers in the vicinity. Pop. (1856) 4918.

SARSAPARILLA (*Smilax Sarsaparilla*), a plant growing in Russia, Central and South America, and the West Indies, the roots of which have long had celebrity in the cure of certain cutaneous diseases. The best mode of using it is in decoction, of which half-a-pint may be taken daily, or half-an-ounce of the powder. In 1857 there was imported into Britain of this plant 205,392 lbs., at a total cost of L.11,184.

SARTHE, a department of France, bounded on the N. by that of Orne, E. by those of Eure-et-Loir and Loir-et-Cher, S. by those of Indre-et-Loire and Maine-et-Loire, and W. by that of Mayenne. Its length from N. to S. is about 62 miles; greatest breadth, 58; area, 2395 square miles. It is very compact, and nearly circular in form. The surface is almost unbroken, sloping very gradually from the north-west, where the highest elevations in the department occur. It belongs entirely to the valley of the Loire, and the principal river is that from which the department takes its name. It enters the country from the north, forms for some distance the north-western boundary, and then flows generally southwards through the centre of the department. Its principal affluents here join it from the left, the Orne, Huisne, and Loir watering the eastern portion of Sarthe. Of all these rivers only two, the Sarthe and the Loir, are navigable, the former up to Le Mans, and the latter to Chateau-du-Loir, giving a total length of 254 miles of river navigation within the department. Besides those mentioned, various smaller streams traverse the country; these, as well as the others, abounding in fish. The geological structure of the land exhibits a considerable variety; in the north-west, granite is the prevailing rock, as a portion of the department here belongs to the great primitive formation of Bretagne. As we proceed south-east, across the country, we come upon new red sandstone, and afterwards, in succession, the various formations between this and the chalk group; the extreme south-east of the department being entirely cretaceous. The mineral wealth of the country is very considerable. There are coal-pits in the western portion; iron is also obtained, as well as marble, slate, paving-stone, mill-stones, fuller's earth, potter's clay, &c. The department throughout is an agricultural country. Its plains and gentle slopes have a fertile soil, and are generally well cultivated; the waste land in the department is continually diminishing in extent. The quantity of corn produced is more than sufficient to supply the demand. Besides wheat, there is grown here, maize, buckwheat, potatoes, and pulse of various kinds; wine is produced, but of an inferior quality; fruit-trees are carefully

Saros-Pa-
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Sarthe.

Sarti. cultivated; and much cider is made. Of the entire area of the department, about 804,150 acres are occupied by arable land; 145,000 by meadows; 25,000 by vineyards; 170,000 by wood; 112,500 by waste land. On the extensive and rich tracts of pasture land, both natural and artificial, large numbers of live stock are raised; the cattle are of good breed, the horses much esteemed for carriages; and a considerable amount of profit is derived from the sale of poultry. It is calculated that there are in the department 123,000 head of horned cattle, 122,000 sheep, 76,000 pigs, 20,000 goats, and 56,000 horses. Honey, chestnuts, dried and preserved fruit, form some of the articles of trade. There is not much manufacturing industry; cloth of various qualities is the principal article made; there are also bleach-fields and manufactories of wax-candles. Some trade is carried on in the mineral and agricultural produce of the country. Internal communication is facilitated by the rivers, by numerous roads, and by four railways, diverging from Le Mans in different directions. The department forms, along with that of Mayenne, the diocese of Le Mans; it contains law courts, subordinate to the imperial court at Angers, 5 colleges, a normal school, 8 upper and 609 elementary schools. The capital is Le Mans; and the department is divided into four arrondissements, as follows:—

	Cantons.	Communes.	Pop. (1836.)
Le Mans.....	10	116	173,458
Mamers.....	10	143	125,758
Saint-Calais.....	6	56	66,850
La-Flèche.....	7	80	101,127
Total.....	33	395	467,193

SARTI, GIUSEPPE, an excellent Italian composer, was born at Faenza, in the Papal States, on 28th December 1729. He studied composition under Padre Martini, at Bologna, and in 1752 produced his first opera, *Il Re pastore*, which was performed at Faenza with the greatest success. Several other operas which he composed soon afterwards added to his high reputation. In 1756 he was called to Copenhagen as chapel-master and professor of singing to the hereditary prince. Several operas which he composed there were coldly received; and, in disgust, he resigned his employments and returned to Italy in 1765. His countrymen had half-forgotten him, and the operas which he composed for Rome, Venice, &c., had no great success. In 1769 he visited London, but could not get any of his operas performed there, and was obliged to give lessons in singing and on the harpsichord. He published, at London, six sonatas for the harpsichord, which are highly valued by professional musicians. Returning to Italy in 1770, he accepted the office of master of the Conservatory of the Ospedaleto, left vacant by Sacchini's visit to England. This was the beginning of Sarti's most brilliant career, from 1771 to 1784, during which he composed his best operas,—among these, *Le gelosie Villane*, *Giulio Sabino*, and *Le nozze di Dorina*. In 1779 he was appointed chapel-master of the Duomo at Milan, having proved his superiority over the many eminent competitors opposed to him. The hymn, psalm, and mass for six and eight real voices, which he wrote for that competition, afford evidence of his profound skill and learning. Between 1779 and 1784 he wrote a great deal of church music, besides operas. In July 1784 he was called to St Petersburg as director of court music, and was received with great favour by the Empress Catharine II. In a *Te Deum* which he composed at this time, he thought to add to the solemnity of effect by introducing cannon, to be fired at certain intervals. By the intrigues of the celebrated singer, Signora Todi, the empress was persuaded to dismiss Sarti, who then found a protector in Prince Potemkin, and employment as master of a singing school in the Ukraine, in a village presented to him by the prince. After the death of Potemkin, Sarti found means to regain the favour of the empress, who not only restored

to him his former appointments, but fixed his salary at 35,000 roubles, with apartments in the palace. By her orders he formed a conservatory of music; and when the pupils gave their first concert in 1795, the empress was so much pleased that she raised Sarti to the highest rank of nobility, and bestowed a considerable territory upon him. His strength failing, he attempted to return to Italy in 1802, but was unable to proceed further than Berlin, where he died, on 28th July, aged 73. The most distinguished of Sarti's pupils was the celebrated Cherubini, who, in his work on Counterpoint and Fugue (French edit., pp. 188–195), gives, as a model, a Real Fugue, in eight parts, for two choirs, by Sarti.

Sarti was one of the most learned and skilful composers of the last century. He had the rare gift of inventing beautiful and appropriate melodies. William Shield, in his *Introduction to Harmony*, pp. 92–94, gave a charming vocal Terzetto by Sarti. Sarti's dramatic compositions amounted to forty-two; and his compositions for the church were numerous, including a *Miserere*, four *Masses*, and the *Te Deum* before mentioned. He constructed an apparatus for counting the number of vibrations made by any given sound in a second of time. Sauveur had experimented on that subject in the latter part of the seventeenth century. Sarti wrote a severe criticism upon the harmony of two passages in the introductory movement to Mozart's Quartet in C, and in the first movement of that in D minor, for two violins, viola, and violoncello. Certainly the effect of those passages is highly unsatisfactory. (G. F. G.)

SARTO, ANDREA D'AGNOLO VANNUCCHIO, called DEL, from his father's occupation of a tailor, was born in Florence in 1488. At the early age of seven years he was placed with a goldsmith, but he showed a much greater liking for the pencil than the burin at that early age. A painter named Barile, more noted for his generosity than for his knowledge of the art, took the young Sarto to instruct him in painting. The lad made great progress, and was soon transferred to the school of Pietro Cosimo, then considered one of the best painters in Italy. Sarto continued to make very steady progress; and formed an intimacy with Francio Bigio, with whom he executed numerous paintings for the public buildings of Florence. He painted a fine fresco for the ducal palace at Poggio a Caiano, and an excellent "Pietà" for the nuns of Lugo. On his return from Rome, whither he had lately gone, he painted a "Holy Family in Repose," a work of great merit; and executed his "Descent of the Holy Ghost," the "Birth of the Virgin," and "Last Supper," for the monastery of Salvi. The story told by Lanzi, of the soldiers being astounded by the latter painting at the siege of Florence in 1529, need not be repeated in the artist's favour. A band of wild soldiers, bent on plunder, could scarcely be expected to have either the patience or taste necessary for estimating such a sublime work of art. Yet painting, probably, like the music which Orpheus drew from his lyre, has charms capable of fascinating alike the wild savage and the lettered Roman. Sarto was afterwards engaged on a "Dead Christ" for Francis I., King of France, when that monarch gave him a most regal invitation to his court. Andrea went to Paris, and was feasted and robed in great magnificence, when suddenly, on the receipt of a letter from his wife, a woman who possessed the single merit of great personal attractions, he immediately left for Florence, with the intention of procuring pictures for the king, by whom he was entrusted with a considerable sum for that purpose. Notwithstanding his solemn pledge to return again to Paris, the artist spent his time and squandered away the king's money. Sunk in poverty and despondency, filled with public and domestic wretchedness, abandoned by his wife and all his former associates, he died of the plague in 1530, in his forty-second year. Bryan makes his death occur much

Sarto.

Sarum
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Sassari.

later. Thus ended the career of one who was, in the words of his pupil Vasari, "the most faultless painter of the Florentines, for perfectly understanding the principles of chiaroscuro, for representing the indistinctness of objects in shadow, and for painting with a sweetness truly natural."

SARUM, OLD, was formerly a parliamentary borough of England, in Wiltshire, 2 miles N. of Salisbury; returning two members to parliament, though without a single house or inhabitant. It was thus, before the Reform Act of 1832, by which it was disfranchised, the most complete instance of a rotten borough. The place is, however, of great antiquity, having existed, under the name of Sorbiodunum, in the time of the Romans. It was fortified by Alfred, and after the Norman Conquest was made the seat of a bishop. The cathedral was removed in 1220, in consequence of a quarrel between the bishop and the people, to Salisbury, or New Sarum; and from that time Old Sarum began to decline. Some remains of walls and ditches still exist.

SARUN, a district of British India, under the lieutenant-governor of Bengal, lying between N. Lat. 25. 40. and 27. 29., E. Long. 83. 55. and 85. 30.; bounded on the N. by the kingdom of Nepaul, E. by the district of Tirhoot, S. by those of Patna, Shahabad, and Ghazepoor, and W. by that of Goruckpoor. Length about 115 miles from north to south; breadth, 90; area, 6394 square miles. It is almost entirely even, with no mountains or hills; and has a general slope towards the south-east, in which direction the most of the rivers flow. The southern border of the district is washed by the Ganges, between the points where it receives the Ghaghra and the Gunduk; the former of which forms the south-western, and the latter the eastern, boundary of Sarun. The Ganges and the Ghaghra are both navigable here. Of the numerous other rivers the most important is the Bagmuttee. The soil is exceedingly fertile, and produces wheat, barley, rice, maize, millet, and pulse of various kinds, besides opium, tobacco, indigo, cotton, &c. There are, especially in the north of the district, large and valuable forests of saul and other timber. The manufactures are few and unimportant; and the trade consists chiefly in the exportation of raw produce, and the importation of silk, broadcloth, salt, &c. Sarun once belonged to the powerful kingdom of Magadha; and subsequently formed part of the province of Behar, which was granted to the East India Company in 1765 by the Mogul. Pop. 1,700,000.

SARZEAU, a town of France in the department of Morbihan, on the peninsula of Ruis, which forms the south shore of the bay of Morbihan, 14 miles S. of Vannes. The principal building is a church with a lofty tower; and another object, so conspicuous as to form a sea-mark for coasting vessels, is a high conical *tumulus*, the largest in France. The town is chiefly inhabited by sailors, and has some trade in salt and in the indifferent wine of the vicinity. Sarzeau was the birthplace of Le Sage, the well-known author of *Gil Blas*. Pop. 7425.

SASSARI, a town of Sardinia, capital of the division of the same name, forming the northern part of the island, stands on a hill near the Turritano, about 9 miles above its mouth at Porto Torres, and 105 N.N.W. of Cagliari. Around it lies a rich and beautiful tract of gardens, orchards, vineyards, and well cultivated fields. The town is encircled by walls, outside of which are shady promenades; and the houses, especially in the main street, are substantial and handsome. Among its twenty-five churches, the most remarkable are the large massive cathedral and a fine Minorite church. There are, too, a castle; numerous convents; a university, founded in 1766, and attended in 1842 by 240 students; two colleges; an ecclesiastical seminary; three palaces, that of the governor, of the archbishop, and of the Duke of Asinara; a small public library; and a fine theatre.

Sasseram
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Sattara.

Sassari is the seat of several courts of law and public offices. The only important manufacture is that of tobacco, for which there is here the largest establishment in the island. The trade, carried on through Porto Torres, consists chiefly in the exportation of articles of domestic produce; grain, oil, cheese, and skins. The ancient town, Turrus Libyssonis, which occupied the site of Porto Torres, was one of the most important in the island; but about the eleventh century A.D. the whole population migrated inland to Sassari, which from that period began to rise into importance. Some remains of antiquity are still to be seen at Porto Torres. Pop. 23,000.

SASSERAM, a town of British India, in the district of Shahabad, 72 miles S.E. of Benares, and 117 N.W. of Hazareebagh. It is extensive, but chiefly occupied by ruined Mohammedan mosques and tombs. There is a bazaar; and a few manufactures of hardware and jewellery are carried on. Pop. estimated at 10,000.

SATALIAH, or ADALIA, a town of Asiatic Turkey, at the head of the bay of the same name, on the Mediterranean, 50 miles N.E. of Cape Khelidonia. It occupies a fine position, on a cliff rising steeply from the sea to the height of 70 or 80 feet, and encircled on the landward side by vineyards and orchards. The houses rise one above the other up the hill; and the view from the more lofty points of the bay and the mountains that skirt its shores is exceedingly beautiful. On the summit of the hill stands a castle; and in other parts of the town there are churches, mosques, baths, caravanserais, and many ancient remains. The port, which is formed by two moles, is of considerable size, but now only frequented by a few small vessels. Pop. 8000.

SATORALLYA-UJHELY, or simply UJHELY, a market-town of Hungary, capital of the county of Zemplin, on the Hegyallya Hills, which are celebrated for their wines, 46 miles S.S.E. of Eperies, and 138 N.E. of Pesth. It contains several churches, belonging to various religious bodies, a Piarist college, and a gymnasium. Pop. 7200.

SATTARA, a province of British India, in the presidency of Bombay, lying between N. Lat. 16. 22. and 18. 32., E. Long. 73. 24. and 76. 25.; bounded on the N. by the collectorate of Poona, N.E. and E. by that of Sholapore, S. by that of Belgaum, the southern Mahratta jaghires, and the native state of Colapore, and W. by the collectorates of Rutnagherry and Tannah. Length from N.W. to S.E. about 215 miles, breadth about 90; area 11,000 square miles. The western frontier of the province is skirted by the Siadri Mountains, or Western Ghauts, which separate it from the Concan; and though very precipitous on the W. side, have a more gradual slope within the limits of Sattara, sinking towards the plains of Hyderabad to the S.E. The surface is, however, for the most part rugged, and broken by high ridges and isolated hills, and the soil is in general barren. All the rivers follow in their course the general declivity of the country, and discharge their waters finally into the Kistna, which has its source and the upper part of its course within the province. Besides this, Sattara is watered by the Neera, and other rivers of smaller size. In the loftier districts of the country the climate is extremely moist; and in some parts of the Ghauts the annual fall of rain is sometimes nearly as much as 300 inches. In these districts the heat is alleviated by the great elevation of the country, and the mean annual temperature is about 66°. The lower parts of the province have a much greater degree of heat, and suffer greatly from want of rain; for sometimes not more than 23½ inches fall during the whole year. Sattara, however, enjoys a healthy climate; and, considering the mountainous and barren nature of the country, the population is pretty dense, being in the ratio of about 100 per square mile. The great majority of the people belong to the Mahratta race, which has had from the most remote antiquity its head-quarters in

Sattara || **Saturnus.**
 this part of India. From the period of the rise of their power under Sevajee, onwards until it had begun to decline, Sattara formed part of the Mahratta empire; and in 1818, when the rajah was delivered by the British from the durance in which he had been held by his peishwa or prime minister, the territory was assigned to him, along with several jaghires or feudal grants. The administration of the government was carried on for four years by a British agent, but after that time by the rajah himself. Disputes, however, arose between him and the Bombay government, which ended in his deposition and the elevation of his brother in 1839. This rajah died in 1848, leaving no issue; and as the line of Sevajee thus became extinct, the territory lapsed to the East India Company. During the reign of the last rajah a good road had been constructed from Sattara to Mahabulishwar, and another to complete the communication between Sattara and Poona. Since the accession of the British to power, these improvements have been diligently carried forward by the addition of several other roads throughout the country. The net revenue of the province for 1855-56 was L.132,587. Pop. 1,319,673.

SATTARA, the capital of the above province, in a valley between two ranges of hills on the E. and W., 56 miles S. of Poona, and 115 S.E. of Bombay. It has a strong fort, erected on the summit of a hill, about 1100 yards long by 500 across, and 800 feet in height. It is defended by the steepness of the rock, which at the N.E. corner has quite the appearance of a tower, having a perpendicular scarp of 42 feet, above which is a wall with an additional height of 25 feet. In 1700 this fort offered a vigorous resistance for two months to Aurungzebe, who besieged it in person, but it was reduced by blockade; and in 1818 a few bombshells procured its surrender to the British. The fort contains the old palace and numerous temples. It commands a fine view over the numerous hills of the surrounding country, many of them crowned with picturesque old forts. There is another palace in the town, a large but not very handsome edifice. In it is preserved, among other relics, the sword of Sevajee, a long, straight blade of fine polished steel.

SATURDAY, the seventh and last day of the week, so called from the idol Seater, worshipped on this day by the ancient Saxons, and thought to be the same as the Saturn of the Latins.

SATURN. See **ASTRONOMY.**

SATURNUS, a fabulous king or god of Italy, to whom was ascribed the introduction of agriculture and the arts of civilized life. Saturn, like the Greek Kronos, was regarded by the Romans as their most ancient deity; but here the identity of the two fabled gods ceases, as there was no resemblance, even such as the ancients alleged, between their several attributes. The name is said to be derived from *sero, sevi, satum*, to sow; and the deity is supposed to preside over everything which promotes the growth of vegetation. To his reign is ascribed the golden age of Italy, which disappeared with his disappearance. The country received his name, and was denominated *Saturnia*, or the land of plenty. He is reported to have come to Italy with his wife Ops, in the reign of Janus, and to have formed a settlement on the Capitoline hill. Like other mythical dignitaries, he suddenly disappeared from the eyes of man, and withdrew into godlike seclusion; whence, according to some, the name of *Latium*, from *lateo, I lie hid*. Janus is said to have erected an altar to his honour in the Roman forum; and the rustic population, in the month of December, instituted at Rome the festival of the *Saturnalia*, to celebrate in unrestrained merriment the memory of the founder of their peculiar industry, and the author of the golden age among men. The statue of the god was hollow and filled with oil, in his hand was placed a crooked pruning knife, and his feet were surrounded with a riband of wool.

VOL. XIX.

He is sometimes represented, also, as an old man with a scythe, a sand-glass, and wings; and occasionally as a serpent, with its tail in its mouth. This is supposed to shadow forth the seasons in their perpetual succession, and is most probably borrowed from the emblematical representations of the Greek god Kronos.

SATYRS. See **BACCHUS.**

SAUGOR and **NERBUDDA TERRITORIES**, an extensive tract of India, forming the S.W. portion of the presidency of Bengal, lying between N. Lat. 21. 16. and 25. 15., E. Long. 76. 53. and 82. 51.; bounded on the N. by Bundelcund and the British districts of Banda, Allahabad, and Mirzapore; E. by Mirzapore and the native state of Korea; S. by the dominions of the Rajah of Berar, and of the Nizam; and W. by those of the Rajah of Bhopal and of the Scindia family. Length from E. to W. 380 miles, breadth 190, area 27,632 square miles. The greater part of these extensive territories is governed directly by the British; but there are also comprised within their limits the independent allied state of Rewah, and the petty states of Kotee, Myhir, Docheyra, and Sohawul, feudatory to the British government. The territories are subdivided as follows:—

British Districts.	Area in Sq. Miles.	Pop. (1855.)
Saugor	1857	305,594
Jubbulpore	6237	442,771
Hoshungabad	1916	242,641
Seonee	1459	227,070
Dumoh	2428	363,584
Nursingpore	501	254,486
Baitool	990	93,441
Total of British districts	15,388	1,929,587
Native states	12,244	1,560,000
Total	27,632	3,489,587

The country is elevated and mountainous. Its eastern portion is occupied by a tableland, which rises in the summit of Amarakantak, at the extreme S.E., to the height of 3463 feet above the sea, but gradually slopes westwards to the valley of the Nerbudda, which flows through the middle of the territories from E. to W. This valley is inclosed on the N. by the Vindhya range, which is not very high, few summits exceeding the height of 2000 feet; and on the S. by the Mahadeo mountains, which have an average height of 2000 feet, and in some places are believed to attain to 2500 feet, or even higher. These ranges separate the waters of the Nerbudda from the affluents of the Ganges and Jumna on the one side, as well as from those of the Godavery on the other. Among the mineral productions of the land, iron and coal are the most important, and they are found in great abundance in various places. Good sandstone and limestone are also quarried in different parts of the territories. As to the soil, it is in the greater part of Saugor and Nerbudda productive of cotton; but some portions of the surface are covered with dense and gloomy forests, occupied by savage Indians of the Ghond tribes. There are few important events connected with the history of these territories. Ruled originally by Ghond princes, they were conquered by Akbar about 1599, and thus annexed to the empire of Delhi. On the fall of that empire, the peishwa obtained a nominal supremacy over these lands; but they were afterwards conquered by the Rajah of Berar, and finally ceded to the British in 1818.

SAUGOR, the capital of the British district of the same name, in a hilly region, 185 miles N. of Nagpore, 223 S.W. of Allahabad, and 500 N.E. of Bombay. It is built on three sides of a small lake, lying in a valley near the river Bessi or Bes, which is crossed by a fine suspension bridge 200 feet in span. The military cantonments are extensive, but occupy a low, swampy, and unhealthy situation. There is a large fort, used as an ordnance depôt; and the mint,

Satyrs || **Saugor.**

Saul
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Saumarez.

which formerly occupied a very handsome building, has been removed to Calcutta. Saugor has a Gothic church, recently erected; and a collegiate school, where both English and the vernacular languages are taught. It is the seat of the civil establishment, and has several hundred European inhabitants. The whole population, chiefly Mah-rattas, is estimated at 50,000.

SAUL, the son of Kish, of the tribe of Benjamin, was the first king of the Israelites; and, on account of his disobedient conduct, the kingdom was taken from his family and given to David.

SAUMAREZ, JAMES, BARON DE, *Admiral*, was born at St Peter Port, in the island of Guernsey, on the 11th of March 1757. He was descended from an old family which had originally come from France, and which had held a prominent place for centuries among the gentry of the Channel Islands. The family name, originally Sausmarez, was changed about 1700 to Saumarez. Not a few of his kin had already distinguished themselves in the naval service, and this circumstance probably fired the lad's ambition early to run the career peculiar to his house. At the age of thirteen, he accordingly entered the navy as midshipman, and served successively in the *Montreal*, *Winchelsea*, and *Levant* frigates. He distinguished himself at the attack on Charleston, in America, in 1775, on board the *Bristol*, for which he was raised to the rank of lieutenant. He rose successively under Lord Cornwallis, and Admiral Sir Hyde Parker, until he was promoted to the rank of commander for his gallant services off the Dogger Bank, on the 5th of August 1781. Captain Saumarez now placed himself under Admiral Kempenfeldt, and he subsequently, while commanding the *Russell*, a ship of the line, gained great distinction by his conduct at the battle of the 12th of August 1782. A lull of peace succeeded, and for the next ten years he enjoyed the society of his friends in the Channel Isles. On the breaking out of the war with France in January 1793, Saumarez captured *La Reunion*, a French frigate, for which he received the honour of knighthood. In the month of November following, Sir James received the command of a small squadron, which, on the 5th of June 1794, was attacked by a very superior French force on the way from Plymouth to Guernsey. But so great was the commander's knowledge of the soundings of the Guernsey coast, and so cool was his intrepidity, that he succeeded in gaining a safe anchorage in the harbour of that island, to the great chagrin of the French fleet.

Sir James Saumarez was promoted in 1795 to the *Orion*, of 74 guns, and engaged in a series of memorable victories under Lord Bridport, Sir John Jervis, and Sir Horatio Nelson. On his return from the battle of the Nile, where he was severely wounded, he received the command of the *Cæsar*, 84 guns, with orders to watch the French fleet in Brest, during the winters of 1799 and 1800. In 1801 he was raised to the rank of rear-admiral of the blue, was created a baronet, and received the command of a small squadron which was destined to watch the movements of the Spanish fleet at Cadiz. In the month of July, Admiral Saumarez had the satisfaction of preserving a fleet of British merchantmen from falling into the hands of the French. To effect this object he had to engage in two sharp contests with the French and Spanish fleets off Algeziras, which caused the enemy a loss of 3000 men in blown up, killed, and taken prisoners. This Saumarez effected with a small squadron, not half equal in size to the enemy's fleet. Of this contest Lord Nelson remarked that "a greater action was never fought." The admiral was rewarded by the Order of the Bath, and the freedom of the city of London was voted to him, together with a magnificent sword. In 1803 Sir James received a pension of L.1200 a year, and on the breaking out of hostilities with

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Russia, he was intrusted with the command of the Baltic fleet, where he had to bring into play all his diplomatic talent. Charles XIII. of Sweden bestowed upon him the Grand Cross of the Military Order of the Sword, as an expression of gratitude for his services. At the peace of 1814 he was made full admiral, in 1819 rear-admiral, and in 1821 vice-admiral of Great Britain. He struck his flag for the last time on the 10th of May 1827. He was raised to the peerage as Baron de Saumarez in 1831. The remainder of his life was spent in peaceful retirement on his estate at Guernsey, where he died on the 9th of October 1836. (See *Memoirs, &c., of Admiral Lord de Saumarez*, by Sir John Ross, 2 vols., 1838.)

SAUMUR, a town of France, capital of an arrondissement in the department of Maine-et-Loire, on the left bank of the Loire, 25 miles S.E. of Angers. It is a picturesque, cheerful, white town, occupying the side and foot of a hill by the river's side. The upper portion, called the high town, is very irregular, overhung by the old castle, with its tall donjon and terraced bastions, looking out on the rich flat country through which the Loire flows. The low town is more imposing in its architecture, and contains a good quay, and a quaint old town-hall, with high sloping roof and embattled walls. On the other side of the river stands a suburb, to which access is gained by a very fine stone bridge of twelve arches. The streets of Saumur are in general crooked, and many of them steep. Besides those already mentioned, the principal buildings are two churches, that of St Pierre, in the pointed style, but disfigured by a modern Italian front; and that of Notre Dame de Nantilly, which has some portions as old as the eleventh century, and is hung with curious antique tapestry from the Flemish looms. There are here a public library, museum, theatre, baths, courts of law, a college, riding-school, &c. Linen, cambric, glass, enamelled articles, leather, and saltpetre, are produced here; and there is some trade in corn, flour, wine, hemp, &c. During the reign of Henri IV., Saumur was a flourishing town of 25,000 inhabitants, and a stronghold of the Protestant interest; but after the revocation of the Edict of Nantes, its population dwindled to one-fourth of its previous amount, by the loss of its most industrious inhabitants. During the revolutionary war, it was the scene of one of the most brilliant exploits of the Vendéans, under Larochejacquelin. With a very small force he stormed the heights, which were defended by a republican army of 15,000 men with 100 guns, and afterwards drove the enemy from the town, and compelled the castle to surrender. This took place in June 1793. Pop. (1856) 13,073.

SAUNDERSON, DR NICHOLAS, was born at Thurlstone, in Yorkshire, in 1682, and may be considered as a prodigy for his application and success in mathematical literature, in circumstances apparently the most unfavourable. He lost his sight by the small-pox before he was a year old. But this disaster did not prevent him from searching after that knowledge for which nature had given him so ardent a desire. He was initiated into the Greek and Roman authors at a free school at Penniston. After spending some years in the study of the languages, his father, who had a place in the excise, began to teach him the common rules of arithmetic. But he soon surpassed his father, and could make long and difficult calculations without having any sensible marks to assist his memory. At eighteen he was taught the principles of algebra and of geometry by Mr Richard West of Underbank, who, though a gentleman of fortune, yet, being strongly attached to mathematical learning, readily undertook the education of so uncommon a genius. Saunderson was also assisted in his mathematical studies by Dr Nettleton. These two gentlemen read books to him, and explained them. He was next sent to a private academy at Attercliff, near Shef-

Saunderson field, where logic and metaphysics were chiefly taught. But these sciences not suiting his turn of mind, he soon left the academy. He lived for some time in the country without any instructor; but such was the vigour of his own mind, that few instructions were necessary. He only required books and a reader.

His father, besides the place he had in the excise, possessed also a small estate; but having a numerous family to support, he was unable to give him a liberal education at one of the universities. Some of his friends, who had remarked his perspicuous and interesting manner of communicating his ideas, proposed that he should attend the university of Cambridge as a teacher of mathematics. This proposal was immediately put in execution, and he was accordingly conducted to Cambridge in his twenty-fifth year by Mr Joshua Dunn, a fellow-commoner of Christ's College. Though he was not received as a member of the college, he was treated with great attention and respect. He was allowed a chamber, and had free access to the library. Whiston was at that time professor of mathematics, and as he read lectures in the way that Saunderson intended, it was naturally to be supposed he would view his project as an invasion of his office. But, instead of meditating any opposition, the plan was no sooner mentioned to him than he gave his consent to it. Saunderson's reputation was soon spread throughout the university. When his lectures were announced, a general curiosity was excited to hear such intricate mathematical subjects explained by a man who had been blind from his infancy. The subject of his lectures was the *Principia Mathematica*, the Optics, and the *Arithmetica Universalis*, of Sir Isaac Newton. He was accordingly attended by a very numerous audience. It will appear at first incredible to many that a blind man should be capable of explaining optics, which requires an accurate knowledge of the nature of light and colours; but we must recollect that the theory of vision is taught entirely by lines, and is subject to the rules of geometry.

While thus employed in explaining the principles of the Newtonian philosophy, he became known to its illustrious author. He was also intimately acquainted with Halley, Cotes, Demoivre, and other eminent mathematicians. When Whiston was removed from his professorship, Saunderson was universally allowed to be the man best qualified to succeed him. But to enjoy this office it was necessary, as the statutes direct, that he should be promoted to a degree. To obtain this privilege, the heads of the university applied to their chancellor, the Duke of Somerset, who procured the royal mandate to confer upon him the degree of master of arts. He was then elected Lucasian professor of mathematics in November 1711. His inauguration speech was composed in classical Latin, and in the style of Cicero, with whose works he had been much conversant. He now devoted his whole time to his lectures and the instruction of his pupils. In 1728, when George II. visited the university of Cambridge, he expressed a desire to see Professor Saunderson. In compliance with this desire, he waited upon his majesty in the senate-house, and was there, by the king's command, created doctor of laws. He was admitted a member of the Royal Society in 1736.

Saunderson was naturally of a vigorous constitution, but having confined himself to a sedentary life, he at length became scorbutic. For several years he felt a numbness in his limbs, which, in the spring of 1739, brought on a mortification in his foot; and, unfortunately, his blood was so vitiated by the scurvy, that assistance from medicine was not to be expected. When he was informed that his death was near, he remained for a little space calm and silent; but he soon recovered his former vivacity, and conversed with his usual ease. He died on the 19th of April 1739, in the fifty-seventh year of his age, and was buried, at his own request, in the chancel at Boxworth. He mar-

ried the daughter of Mr Dickens, rector of Boxworth, in Cambridgeshire, and by her had a son and a daughter.

Dr Saunderson was rather to be admired as a man of wonderful genius and assiduity, than to be loved for his amiable qualities. He spoke his sentiments freely of characters, and praised or condemned his friends as well as his enemies without reserve. This has been ascribed by some to a love of defamation; but it has with more propriety been attributed by others to an inflexible love of truth, which urged him upon all occasions to speak the sentiments of his mind without disguise, and without considering whether this conduct would please, or the reverse. His sentiments were supposed to be unfavourable to revealed religion. It is said that he alleged he could not know God, because he was blind, and could not see his works; and that upon this Dr Holmes replied, "Lay your hand upon yourself, and the organization which you will feel in your own body will dissipate so gross an error." On the other hand, we are informed that he had desired the sacrament to be given him on the evening before his death. He was, however, seized with a delirium, which rendered this impossible.

He wrote a system of algebra, which was published in two volumes 4to, at London, after his death, in the year 1740, at the expense of the university of Cambridge.

Dr Saunderson had invented for his own use a palpable Arithmetic; that is, a method of performing operations in arithmetic solely by the sense of touch. It consisted of a table raised upon a small frame, so that he could apply his hands with equal ease above and below. On this table were drawn a great number of parallel lines, which were crossed by others at right angles; the edges of the table were divided by notches half an inch distant from one another, and between each notch there were five parallels, so that every square inch was divided into a hundred little squares. At each angle of the squares where the parallels intersected one another, a hole was made quite through the table; and in each hole were placed two pins, a large and a small one. It was by the various arrangements of the pins that Saunderson performed his operations.

His sense of touch was so perfect, that he could discover with the greatest exactness the slightest inequality of surface, and could distinguish in the most finished works the smallest oversight in the polish. In the cabinet of medals at Cambridge he could single out the Roman medals with the utmost correctness; and he could also perceive the slightest variation in the atmosphere. One day, while some gentlemen were making observations on the sun, he took notice of every little cloud that passed over his disk, and served to interrupt their labours. When any object passed before his face, even though at some distance, he discovered it, and could guess its size with considerable accuracy. When he walked, he knew when he passed by a tree, a wall, or a house. He had made these distinctions from the different ways his face was affected by the motion of the air.

His musical ear was so remarkably acute, that he could distinguish accurately to the fifth of a note. In his youth he had been a performer on the flute, and he had made such proficiency, that if he had cultivated his talents in this way, he would probably have been as eminent in music as he was in mathematics. He recognized not only his friends, but even those with whom he was slightly acquainted, by the tone of their voice; and he could judge with wonderful exactness of the size of any apartment into which he was casually conducted.

SAURAT, a village of France, in the department of Ariège, 7 miles S.S.W. of Foix. It has an old church, iron-works, saw-mills, and slate-quarries. Pop. 4456.

SAURIN, JACQUES, a celebrated preacher, was the son of a Protestant lawyer, and was born at Nismes in 1677.

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Saurin. He applied to his studies with great success; but being captivated with a military life, he relinquished them for the profession of arms. In 1694 he made a campaign as a cadet in Lord Galloway's company, and soon afterwards obtained a pair of colours in the regiment of Colonel Renault, which served in Piedmont. But the Duke of Savoy having made peace with France, he returned to Geneva, and resumed the study of philosophy and theology under Turretin and other professors. In 1700 he visited Holland, then went to England, where he remained for several years, and married. In 1705 he returned to the Hague, where he fixed his residence, and preached with the most unbounded applause. To an exterior appearance highly prepossessing, he added a strong and harmonious voice. The sublime prayer which he recited before his sermon was uttered in a manner highly affecting. Nor was the attention excited by the prayer, dissipated by the sermon. All who heard it were charmed; and those who came with an intention to criticise, were carried along with the preacher and forgot their design. Saurin had, however, one fault in his delivery; he did not manage his voice with sufficient skill. He exhausted himself so much in his prayer and the beginning of his sermon, that his voice grew feeble towards the end of the service. His sermons, especially those which were published during his life, are distinguished for justness of thought, force of reasoning, and an eloquent, unaffected style. Saurin died on the 30th of December 1730, aged fifty-three years.

He wrote, first, *Sermons*, which were published in 12 vols. 8vo and 12mo, some of which display great genius and eloquence, and others are composed with negligence. One may observe in them the imprecations and the aversion which the Calvinists of that age were wont to utter against the Roman Catholics. Saurin was, notwithstanding, a lover of toleration; and his sentiments on this subject gave great offence to some of his fanatical brethren, who attempted to obscure his merit and embitter his life. They found fault with him because he did not call the pope Antichrist, and the Church of Rome the whore of Babylon.

Secondly, he published *Discours*, historical, critical, and moral, on the most memorable events of the Old and New Testament. This is his greatest and most valuable work. It was first printed in 2 vols. folio. As it was left unfinished, Beausobre and Roques undertook a continuation of it, and increased it to four volumes. He also published *L'Etat du Christianisme en France*, 1725, 8vo, in which he discusses many important points of controversy, and calls in question the truth of the miracle said to have been performed on La Fosse at Paris; and an *Abrégé* of Christian theology and morality, in the form of a catechism, 1722, 8vo.

A *Dissertation* which he published on the *Expediency of sometimes Disguising the Truth* raised a multitude of enemies against him. He was immediately attacked by several adversaries, and a long controversy ensued; but his doctrines and opinions were at length publicly approved of by the synods of Cambray and the Hague. This work was translated into English by Chamberlayne, London, 1723. Five volumes of his *Sermons* were likewise translated by R. Robinson, 1775.

SAURIN, Joseph, a geometrician and member of the Academy of Sciences at Paris, was born at Courtaison, in the principality of Orange, in the year 1659. His father, who was a minister at Grenoble, was his first preceptor. He made rapid progress in his studies, and, when very young, was admitted minister of Eure in Dauphiné; but having made use of some violent expressions in one of his sermons, he was obliged to quit France in the year 1683. He retired to Geneva, and thence to Berne, where he obtained a considerable living. Scarcely was he settled in his new habitation, however, when some theologians raised a persecution

against him. Saurin, hating controversy, and disgusted with Switzerland, where his talents were entirely concealed, repaired to Holland. He returned soon afterwards to France, and surrendered himself into the hands of Bossuet, the bishop of Meaux, who obliged him to make a recantation of his errors. This event took place in 1690. His enemies, however, suspected his sincerity in the abjuration which he had made. It was a general opinion, that the desire of cultivating science in the capital of France had a greater effect in producing this change than religion. Saurin, however, speaks of the Reformers with great asperity, and condemns them for going too far. It is said, also, that Saurin appeased his conscience by reading Poiret's *Cogitationes Rationales*. This book is written with a view to vindicate the Church of Rome from the charge of idolatry. If it was the love of distinction that induced Saurin to return to the Church of Rome, he was not disappointed; for he there met with protection and support. He was favourably received by Louis XIV., obtained a pension from him, and was treated by the Academy of Sciences with the most flattering respect. At that time (1717) geometry formed his principal occupation. He enriched the *Journal des Savans* with many excellent treatises; and he added to the memoirs of the academy many interesting papers. These are the only works which he has left behind him. He died at Paris, of a fever, on the 29th of December 1737, in his seventy-eighth year. He married a wife of the family of Crousas, in Switzerland, who bore him a son, Bernard Joseph, distinguished as a writer for the theatre.

Saurin was of a bold and impetuous spirit. He had that lofty deportment which is generally mistaken for pride. His philosophy was austere; his opinions of men were not very favourable; and he often delivered them in their presence. This created him many enemies. His memory was attacked after his decease. A letter was printed in the *Mercure Suisse*, said to be written by Saurin from Paris, in which he acknowledges that he had committed several crimes which deserved death. Some Calvinist ministers published, in 1757, two or three pamphlets to prove the authenticity of that letter; but Voltaire, in his *Histoire Générale*, made diligent inquiry, not only at the place where Saurin had been discharging the sacerdotal office, but at the deans of the clergy of that department. They all exclaimed against an imputation so opprobrious. It must not, however, be concealed, that Voltaire, in the defence which he has published in his general history of Saurin's conduct, leaves some unfavourable impressions upon the reader's mind. He insinuated that Saurin sacrificed his religion to his interest, and that he played upon Bossuet, "who believed he had converted a clergyman, when he had only given a little fortune to a philosopher."

SAUSSURE, HORACE BÉNÉDICT DE, a celebrated naturalist, was a native of Geneva, and born in the year 1740. His father was an intelligent farmer, who lived at Conclies, about half a league from Geneva, and the youth seems early to have taken to the study of natural history. Botany, which was his favourite study, was the means of introducing him to the acquaintance of the great Haller, to whom he paid a visit in 1764, and who was astonished at his intimate acquaintance with every branch of the natural sciences. His attachment to the study of the vegetable kingdom was also increased by his connection with Charles Bonnet, who had married his aunt, and who put a proper estimate on the talents of his nephew. He was at that time engaged in the examination of the leaves of plants, to which Saussure was also induced to turn his attention, and published the result of his researches, under the title of *Observations sur l'écorce des Feuilles et des Pétales*, in 1762. About this time the philosophical chair at Geneva became vacant, and was given to Saussure, at the age of twenty-

Sauveur. one. During the first fifteen years of his professorship he was alternately engaged in discharging the duties of his office and in traversing the mountains in the vicinity of Geneva; and in this period his talents as a great philosopher were fully displayed. He extended his researches on one side to the banks of the Rhine, and on the other to the country of Piedmont. He travelled to Auvergne to examine the extinguished volcanoes, going afterwards to Paris, England, Holland, Italy, and Sicily. The first volume of his travels through the Alps, which was published in 1779, contains a circumstantial description of the environs of Geneva, and an excursion as far as Chamouni, a village at the foot of Mont Blanc. It contains a description of his *magnetometer*. In proportion as he examined the mountains, the more was he persuaded of the importance of mineralogy; and that he might study it with advantage, he acquired a knowledge of the German language.

During the troubles which agitated Geneva in 1782, he made his beautiful and interesting experiments on *Hygrometry*, which he published in 1783. This has been pronounced the best work that ever came from his pen, and completely established his reputation as a philosopher. De Saussure resigned his chair to his pupil and fellow-labourer, Pictet, who discharged the duties of his office with reputation. In 1786, he published his second volume of travels, containing a description of the Alps around Mont Blanc, the whole having been examined with the eye of a mineralogist, geologist, and philosopher. It contains some valuable experiments on electricity, and a description of his own electrometer. To him we are indebted for the *cyanometer*, for measuring the degree of blueness of the heavens, which is found to vary according to the height of the observer; his *diaphanometer*, for measuring the transparency of the atmosphere; and his *anemometer*, for ascertaining the force of the winds. He founded the Society of Arts, to the operations of which Geneva is very much indebted for its continued prosperity. Over that society he presided to the day of his death, and the preservation of it in prosperity constituted one of his fondest wishes.

In 1794, the health of this eminent man began rapidly to decline, and a severe stroke of the palsy almost deprived him of the use of his limbs. His intellect still preserved its original activity, and he prepared for the press the last two volumes of his travels, which appeared in 1796, under the title of *Voyages dans les Alpes*. They contain a great mass of new facts and observations, of the last importance to physical science. He was in general a Neptunian, ascribing the revolutions of the globe to water, and admitting the possibility of mountains having been thrown up by elastic fluids disengaged from the cavities of the earth. In the midst of his rapid decline he cherished the hopes of recovery; but his strength was exhausted. He tried in vain to procure the re-establishment of his health; for all the remedies prescribed by the ablest physicians were wholly ineffectual. His mind afterwards lost its activity; and on the 22d of March 1799, he finished his mortal career, in the fifty-ninth year of his age. His life has been written by Jean Senebier, entitled *Mémoire Historique sur la vie et les écrits d'Horace Benedict de Saussure*, Geneva, 1801; and his *Eloge* by Cuvier for the Institute in 1810, and for the *Biographie Universelle*.

SAUVEUR, JOSEPH, an eminent French mathematician, born at La Flèche in 1653. He was absolutely dumb until he was seven years of age; and even then his organs of speech were not so fully developed as to permit him to speak without great deliberation. Mathematics were the only studies he had any relish for, and these he cultivated with extraordinary success; so that he commenced teacher at twenty years of age, and rose so rapidly into vogue, that he had Prince Eugene for his scholar. He became mathematical professor in the royal college in 1686; and ten years

afterwards was admitted a member of the Academy of Sciences. He died in 1716; and his writings, which consist rather of detached papers than of connected treatises, are all inserted in the *Memoirs of the Academy of Sciences*. He was twice married; and by the last wife he had a son, who, like himself, was dumb for the first seven years of his life.

SAVAGE, RICHARD, a man rendered famous by the singularity of his misfortunes, and by the elaborate life which Dr Johnson has written of him, was the son of Anne Countess of Macclesfield and of the Earl of Rivers, and was born on the 16th of January 1696-97. His mother, after a strenuous defence by her counsel, was convicted of adultery, and having thus separated herself from her husband the Earl of Macclesfield, she resolved to disown her unfortunate offspring, and treated him ever after with the most unnatural cruelty. (See Cunningham's edition of Johnson's *Lives of the Poets*.) She delivered him to a poor woman to educate as her own, and after a vain endeavour to send him secretly to the plantations, she had him apprenticed to a shoemaker. Savage having discovered some letters which revealed to him his birth and the cause of its concealment, he became suddenly dissatisfied with the situation of a shoemaker, and resolved to solicit his unnatural parent for the means of pursuing a more distinguished career than had hitherto been afforded him. But he could neither soften the heart of this woman nor open her hand. Having received a tolerably good education, and being endowed by nature with a turn for poetry, he wrote *Woman's Riddle* and *Love in a Veil*, which, if they did not bring him much money, at least brought him friends. He next wrote the tragedy of *Sir Thomas Overbury*, which brought him in a sum of L.200. But Savage was a bad manager, and was ever in distress. He next published a volume of *Miscellanies*, and was on the fair way to fame, when he was suddenly condemned to be hanged for having killed a man in a drunken frolic. Despite his mother's anxiety to have the sentence of the law carried into effect, he was at last pardoned by the intercession of the Countess of Hertford. He now had his revenge upon his mother, by publishing his poem of the *Bastard*, 1728, which displays such an exalted tone of thought, an energy of expression, and a refined severity of sarcasm, which places it considerably ahead of his other writings. At last interest prevailed over maternal affection, and she resolved to allow him a pension of L.200 a year. He was taken into the family of Lord Tyrconnel, with whom he lived for some time in the greatest amity. He wrote a poem entitled the *Temple of Health and Mirth*, in 1730, on the recovery of Lady Tyrconnel from a languishing illness; he dedicated, in strains of the highest panegyric, a poem called the *Wanderer*, in 1729, to his noble benefactor. A poem on the birthday of the Queen, entitled the *Volunteer-Laureate*, and written in 1731-32, brought him a pension of L.50 a year, but her death, on the 20th November 1737, deprived him of all hopes from the court. But the friendships of Savage were not generally of very long duration. He suddenly quarrelled with Lord Tyrconnel in 1735, which again set him adrift penniless upon the world. His friends now resolved to procure him permanent relief, and he was accordingly despatched into Wales, where he was to live the rest of his life in quiet retirement, at the rate of L.50 a year. Whether it was that the destitute and profligate life which he had lately led had unconsciously enchanted him, or, what is more probable, that he entertained secret longings after that distinction to which he felt his birth entitled him, he, at all events, resolved to deceive his friends, by simply retiring to write another tragedy, and again return to London to bring it upon the stage. He at length reached Swansea, where, after living about a year, he returned to Bristol, on his way to London. While in Bristol he was feasted and caressed for a time, and money was even raised

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to carry him to London, but Savage had the misfortune to weary out his Bristol friends. His clothes were worn out: his appearance was shabby: his presence was disgustful. He was at last thrown into prison for a debt of L.8, which he owed to the mistress of a coffee-house. Here, notwithstanding much kindness, he chafed and pined away, till at last, being seized with a fever, he expired on the 31st of July 1743, in the forty-sixth year of his age. He was buried on the 2d of August, in the churchyard of St Peter, Bristol, adjoining the gaol, where his remains rest without any external mark to indicate them.

SAVAII, an island in the South Pacific, the largest of the Navigator's or Samoan group. S. Lat. (of the southern point) 13. 49., W. Long. 172. 29. Its length is about 50 miles, and its breadth varies from 20 to 30. The structure is volcanic; and the surface rises gradually from the shore to the peaks, thrown up by extinct craters. One of these, near the centre, rises to the height of 4000 feet, and is conspicuous to a wide distance round about. The interior has never been explored. Savaii enjoys a very fertile soil, which produces, without culture, coffee, sugar, indigo, and other plants. There is one safe harbour on the north shore. Pop. estimated at 20,000.

SAVAN DROOG, a strong hill fort of India, in the territory of Mysore, 19 miles W. of Bangalore, and 53 N.E. of Seringapatam. It occupies a bare granite rock, 4004 feet above the sea, in the midst of dense forest, and cleft into two distinct summits at the top. It is about 8 miles round, and the sides are very steep. It was stormed by the British in 1791; and after the fall of Tippoo Sultan in 1799, was garrisoned by a native force, but this was withdrawn on account of the unhealthiness of the place.

SAVANNAH, the largest town in the state of Georgia, United States of North America, on the right bank of the river of the same name, about 18 miles above its mouth and 90 W.S.W. of Charleston. It occupies a perfectly level site, on a bluff about 40 feet above the river, and consequently does not present, when viewed externally, a very striking appearance. The town, however, is one of the finest and best laid out in the southern States. Broad streets intersect each other at right angles, and at every alternate corner there is a public place, circular or oval in form. These, as well as the streets, are lined with shady rows of Pride of India trees, which give the town an exceedingly beautiful appearance, and have procured for it the title of the Forest City. Many of the houses are built of wood, but in others brick is employed. The public buildings are not very remarkable, the finest being a Presbyterian and an Episcopal church. A plain monument has been erected to General Green, and another of a very splendid appearance to Pulaski, who were both distinguished, while the latter fell, in the attack on the place when held by the British in 1779. Savannah has an exchange, theatre, court-house, jail, arsenal, market-house, and custom-house. There are also several academies, hospitals, banking establishments, and insurance offices. No important manufactures are carried on, but the commerce is much greater than the appearance and size of the town would lead the stranger to expect. The reason of this is to be found in the number and extent of lines of communication which centre at Savannah, and convey to it the produce of the inland country. Besides the river there are 1053 miles of railways in various directions, bringing down from the interior cotton and other goods; while steamers ply regularly to New York, Philadelphia, Bermudas, the British West Indies, &c. Savannah exports to the Northern States, Great Britain, and France, cotton, rice, and naval stores; to the Gulf ports, rice; and to Cuba and San Francisco, timber and rice; while it imports from England railway iron, hardware, salt, &c.; from the Northern States, groceries and dry goods; and from

New Orleans and the West Indies, molasses, sugar, whisky, fruits, &c. Between September 1st 1851 and September 1st 1852 the receipts of cotton at Savannah were 351,566 bales, and the exports 353,068 bales. In the same year there were exported 39,929 casks of rice, and 25,508,500 feet of timber. The harbour of the town is not equal to the accommodation of its rapidly-increasing business; and the river is obstructed about a mile below by some sunken wrecks. But great efforts are being made by the citizens, with some assistance from the United States government, for the improvement of the river. The shipping of the port, June 30th 1852, had an aggregate tonnage of 13,053 registered, and 10,909 enrolled and licensed. During the year ending on that day there arrived from foreign ports 117 vessels; tonnage, 49,270; and their cleared for foreign ports 147; tonnage, 61,516. Pop. (1850) 16,060; (1853) 23,458, of whom 13,714 were free, and 9744 slaves.

SAVARY, NICOLAS, a French traveller, was born at Vitre, in Bretagne, in 1750. He studied with distinction at Rennes, and in 1776 travelled into Egypt, where he remained nearly three years. During this period he was wholly engaged in the study of the Arabian language, in searching out ancient monuments, and in examining the national manners. After making himself acquainted with the antiquities of Egypt, he visited the islands in the Archipelago, where he spent eighteen months. On his return to France in the year 1780, he published *A Translation of the Koran, with a short Life of Mohammed*, in 1783, 2 vols. 8vo; *The Morality of the Koran, or a Collection of the most excellent Maxims in the Koran*, 1784; and *Letters on Egypt*, in 3 vols. 8vo, in 1785. The Arabic grammar of Savary will not bear comparison with that of De Sacy. Savary's descriptions are in general faithful, but are in some instances too much ornamented. He has been justly censured for painting modern Egypt and its inhabitants in too high colours. He died on the 4th of February 1788.

SAVE (anc. *Savus*, Germ. *Sau*), a river of the Austrian empire, rises in Carniola, near Laibach, on the eastern slope of the Carnic or Julian Alps; and flows eastward, separating for some distance Carniola from Styria, then traversing Croatia, and finally separating the Austrian Military Frontier from the Turkish provinces of Bosnia and Servia. It falls into the Danube at Belgrade, after a course of 550 miles. Its chief affluents, which all join it from the south, are the Kulpa, at its junction with which it becomes navigable for vessels of 150 tons, the Unna, Verbas, Bosna, Dvina, and Morava. The Save forms an important means of communication to the countries which it waters, and by it their agricultural productions are easily and cheaply conveyed to their proper markets.

SAVERNE (anc. *Taberna*, Germ. *Zabern*), a town of France, in the department of Bas-Rhin, on the Zorn, 19 miles N.W. of Strasburg. It stands on the east slope of the Vosges, where the Paris road descends the hill in zig-zags. The town is irregularly built and in no way remarkable, the principal building being the large castle of red sandstone, formerly a residence of the bishops of Strasburg, and now partly used for barracks; the old parish church; and the *château*, converted in 1852 into an hospital for widows. Woollen cloth, hosiery, leather, hardware, bricks, tiles, &c., are made here; and there is some trade in timber from the Vosges. Saverne is an ancient place, and was formerly fortified. It suffered very much during the Thirty Years' War; and its fortifications were destroyed in 1696. Pop. 6407.

SAVIGLIANO, a town of the kingdom of Sardinia, in the province and 8 miles E. of Saluzzo, in a fertile and beautiful region, watered by the Maira and other affluents of the Po. It is for the most part well built, and has a

Savary
||
Savigliano.

Savile. fine market-place, lined with colonnades, and another very handsome public square. There are four good churches, a very beautiful oratory, several convents, a college and various schools, an infirmary, foundling hospital, and other benevolent institutions. There are also here a theatre and large cavalry barracks. The manufactures of the town consist of woollen cloth, linen, silk, leather, candles, &c., and these articles, along with cattle, form the staple of the trade. Savigliano is a favourite place of residence of the nobility and gentry of the vicinity. It was formerly fortified, and has still some remains of the ancient walls. Here was fought a battle in 1799, in which the Austrians were defeated by the French. Pop. 16,500.

SAVILE, GEORGE, Marquis of Halifax, one of the greatest statesmen of his time, was born in 1630. Some time after his return from his travels he was created a peer, in consideration of his own and his father's merits. He was a strenuous opposer of the bill of exclusion, but proposed such limitations of the Duke of York's authority as should disable him from doing any harm either to church or state; as the taking out of his hands all power in ecclesiastical matters, the disposal of the public money, and the power of making peace and war, and lodging these in the two houses of parliament. After that bill was rejected in the House of Lords, he pressed them, though without success, to proceed to the limitation of the duke's power, and began with moving that, during the king's life, he might be obliged to live 500 miles out of England. In August 1682 he was created a marquis, and soon after made privy-seal. Upon King James's accession he was made president of the council; but on his refusal to consent to the repeal of the test act, he was dismissed from all public employments. In that assembly of the Lords which met after King James's withdrawing himself the first time from Whitehall, the marquis was chosen their president; and upon the king's return from Feversham he was sent, together with the Earl of Shrewsbury and Lord Delamere, from the Prince of Orange to order his majesty to quit the palace. In the convention of parliament he was chosen speaker of the House of Lords, and strenuously supported the motion for the vacancy of the throne, and the conjunctive sovereignty of the prince and princess, upon whose accession he was again made privy-seal. Yet, in 1689, he quitted the court, and became a zealous opponent of the measures of government till his death, which happened in April 1695. Grainger observes that "he was a person of unsettled principles and of a lively imagination, which sometimes got the better of his judgment. He would never lose his jest, though it spoiled his argument, or brought his sincerity or even his religion in question. He was deservedly celebrated for his parliamentary talents; and in the famous contest relating to the bill of exclusion, was thought to be a match for his uncle Shaftesbury. The pieces he has left us show him to have been an ingenious, if not a masterly writer; and his *Advice to a Daughter* contains more good sense in few words than is perhaps to be found in any of his contemporary authors." His lordship also wrote the *Character of a Trimmer*; *Anatomy of an Equivalent*; *A Letter to a Dissenter*; *A Rough Draught of a New Model at Sea*; and *Maxims of State*; all which were printed together in 1 vol. 8vo. Since these there were also published under his name, *The Character of King Charles II.*, 8vo.; *The Character of Bishop Burnet*; and *Historical Observations upon the Reigns of Edward I., Edward II., Edward III., and Richard II., with Remarks upon their Faithful Counsellors and False Favourites.*

SAVILE, Sir Henry, a learned Englishman, was the second son of Henry Savile, and was born at Over Bradley, near Halifax, in Yorkshire, on the 30th of November 1549. He entered Merton College, Oxford,

in 1561, where he took the degrees in arts, and was chosen fellow. When he took his degree of master of arts in 1570, he read for that honour in the *Almagest* of Ptolemy, which procured him the reputation of a man eminently skilled in the mathematics and the Greek language, in the former of which he voluntarily read a public lecture in the university for some time. In 1578 he travelled into France and other countries, where, diligently improving himself in all useful learning, he returned a most accomplished gentleman. On his return he was made tutor in the Greek tongue to Queen Elizabeth, who had a great esteem for him.

In 1585 he was made warden of Merton College, which he governed thirty-six years with great honour, and improved it by all the means in his power. In 1596 he was chosen provost of Eton College. James I., upon his accession to the crown of England, expressed a great regard for him, and would have preferred him either in church or state; but Savile declined it, and only accepted the ceremony of knighthood from the king at Windsor, in 1604. His only son Henry dying about that time, he thenceforth devoted his fortune to the promotion of learning. In 1619 he founded two lectures or professorships in Oxford, one in geometry and the other in astronomy, which he endowed with a salary of L.160 a year each, besides a legacy of L.600 to purchase more lands for the same use. He also furnished a library with mathematical books, near the mathematical school, for the use of his professors. He gave besides several rare manuscripts and printed books to the Bodleian Library, and a quantity of Greek types to the printing press at Oxford. After a life thus spent in the encouragement and promotion of science and literature, he died at Eton College on the 19th of February 1622, in the seventy-third year of his age, and was buried in the chapel there. On this occasion the university of Oxford paid him the greatest honours, by having a public speech and verses made in his praise, which were soon afterwards published in quarto, under the title of *Ultima Linea Savilii*.

The highest encomiums were bestowed on Savile by all the learned of his time; by Casaubon, Mercerus, Meibomius, Joseph Scaliger, and especially the learned Bishop Montague, who, in his *Diatribæ* upon Selden's *History of Tythes*, styles him "that magazine of learning, whose memory shall be honourable amongst not only the learned but the righteous for ever." His works are *Four Books of the Histories of Cornelius Tacitus, and the Life of Agricola, with Notes upon them*, in folio, dedicated to Queen Elizabeth, 1581; *A View of certain Military Matters, or Commentaries concerning Roman Warfare*, 1598; *Rerum Anglicarum Scriptores post Bedam*, 1596, a collection of the best writers of our English history; *The Works of St Chrysostom, in Greek*, in 8 vols. folio, 1613. This is a very fine edition, and composed with great cost and labour. In 1618 he published a Latin work, written by Thomas Bradwardin, archbishop of Canterbury, against Pelagius, entitled *De Causa Dei contra Pelagium et de virtute Causarum*, to which he prefixed the life of Bradwardin. In 1621 he published a collection of his own *Mathematical Lectures on Euclid's Elements*, in 4to; *Oratio coram Elizabetha Regina Oxoniæ habita*, anno 1592, printed at Oxford in 1658, in 4to. He translated into Latin *King James's Apology for the Oath of Allegiance*. He also left several manuscripts, written by order of King James, all which are in the Bodleian Library. He wrote notes likewise upon the margin of many books in his library, particularly Eusebius's *Ecclesiastical History*, which were afterwards used by Valesius in his edition of that work in 1659. Four of his letters to Camden are published by Smith, among Camden's Letters, 1691, 4to.

Savile.

SAVINGS BANKS.

Introductory Remarks.

A SAVINGS BANK may be defined as an institution for the receipt of small sums of money, to be placed at compound interest, and returned on demand. It may, and in practice it frequently does, embrace other and collateral objects—such, for example, as the granting of annuities—but its primary characteristics are (1), the capitalization of interest on the sums deposited; (2), the holding of those sums at call—whether with or without notice, as the specific rules may prescribe.

Pithy sayings about the universal duties of frugality and foresight are much older than the earliest attempts to broaden the path of their performance by giving increased facilities of access to the multitude. The first essays of this kind, when at length they were made, seem always to have connected themselves with ideas of compulsion rather than of persuasion. In England, in the first half of the eighteenth century, for instance, the most favourite project was to effect a legislative substitution of savings for poor's-rates; by passing "acts of Parliament which," as Defoe says, "shall make drunkards take care of wife and children; spendthrifts lay up for a wet day; lazy fellows diligent; and thoughtless, sottish men careful and provident."¹ Francis Maseres, in 1771, took a somewhat wiser course when he proposed to give powers to incorporate the ratepayers of any parish for the purpose of receiving "some part of the money people could save out of their wages," of investing this money in stock, and of granting deferred annuities to the depositors. A bill based on this proposal, open as it was to grave objections of detail, passed the Commons, but was rejected by the Lords. Precisely the same fate attended another, but compulsory, scheme advocated a few years later by the Rev. John Acland, of Exeter, for establishing a great "Provident Society," to which all persons between twenty-one and thirty years of age, not being landowners, were by law to belong.

The earliest "savings banks," properly so called, with which we are acquainted are those of Hamburg, founded in 1778, and of Berne, about nine years later in date. Both were restricted, more or less closely, to the use of domestic servants, handicraftsmen, and the like. The Hamburg bank, too, formed part of a general scheme for the administration of poor's funds. Neither of them appears to have attracted any attention in England.

For the first British savings bank we must look to the suburban village of Tottenham, near London, where a "children's bank" was begun by Priscilla Wakefield, in 1798, followed by one for adults in 1804. The first in Scotland was established by the Rev. John Muckersy, of West-Calder in Mid-Lothian, in October 1807, under the title of "West-Calder Friendly Bank." But the virtual founder of savings banks in the British empire was Dr Henry Duncan, minister of Ruthwell, in Dumfriesshire, whose attention was first attracted to the subject in reading one of the many tracts on matters of social economy written by John Bone.

I. HISTORY AND STATISTICS OF THE SAVINGS BANKS OF GREAT BRITAIN AND IRELAND.

Savings banks of Great Britain and Ireland.

Between the little experiment for children at Tottenham in 1798, and that decisive experiment at Ruthwell, in Dumfriesshire, in 1810, which placed the value and success of savings banks beyond question, the only very noticeable institution of this kind was that founded at Bath, exclusively

for domestic servants, in 1808. The originator was Lady Isabella Douglas. The sums receivable from any one depositor were limited to L.50. On the attainment of that sum facilities were offered for its investment in the public funds, so that a new account might be immediately opened. Interest was allowed at the rate of 4 per cent. per annum. The scheme was for a time so prosperous that, in 1813, an endeavour was made to convert the "servants' bank" into a general bank for savings, but the attempt did not then succeed, apparently from the want of satisfactory channels for investment. It was not until 1815 that the "Provident Institution of Bath," afterwards designated the "Bath Savings Bank," was effectively established.

History and Statistics.

Bank for servants at Bath.

When Dr Duncan began his enterprise at Ruthwell he had for his encouragement the general good character and industrious habits of the people amongst whom he laboured. On the adverse side was the want of resident heritors to support the scheme at its outset, and also the circumstance that a majority of the best parishioners were already members of friendly societies, the obligations of which they were barely able to meet. In about four years, however, the benevolent and energetic founder had the satisfaction of seeing in his bank a fund amounting to L.1160, and bearing interest at 5 per cent. Dr Duncan started with the wise axioms that "the very prejudices of the people should be carefully consulted, and treated with tenderness and delicacy," and that they should themselves take a share in the management. As to the time and amounts of the deposits, his first intention was to leave them to the depositors, and to avoid any fines or forfeitures, such as were imposed by the Friendly Societies; but eventually he found it desirable to make a regulation, that upon any account being once opened with the bank, there must be a deposit of at least four shillings annually, under the penalty of forfeiting one shilling. At Ruthwell, as at most other places in which savings banks were established at an early period, there were many considerable deposits in single sums, which had been long hoarded, without interest and without security.

The Ruthwell savings bank.

Edinburgh followed in December 1813, but, curiously enough, without knowing what had been done at Ruthwell, although the proceedings there had already attracted attention in many other parts of the United Kingdom. The chief mover in the matter at Edinburgh, Mr J. H. Forbes, was familiar with the experiments at Tottenham and at Bath many years before, but knew nothing of Dr Duncan's exertions in Dumfriesshire, just as Dr Duncan himself was unacquainted (until after the first appearance of his *Essay on Parish Banks*) with the little bank at West-Calder, established by the Rev. John Muckersy three years earlier. Within the first nine months, the Edinburgh bank—which, for a considerable period, continued to be a branch or section of the "Society for the Suppression of Beggars"—numbered 106 depositors. Within three years, it had received savings from 1837 several depositors, amounting in the whole to L.8316, 14s., of which sum L.1460 had been exchanged for interest notes of L.10 each, on the bank of Sir William Forbes and Company. During the first year, 4 per cent., but afterwards 5 per cent., was the rate of interest both on current accounts and on the notes. No deposit of less than one shilling was received. The transfer to Messrs Forbes' bank, or withdrawal by the depositor, became necessary as soon as the amount standing to the credit of any account reached L.10. The yearly summary for this initiative period ran thus:—

Foundation of the Edinburgh savings bank.

¹ *Giving Alms no Charity, 1704.*

History
and Statis-
tics.History
and Statis-
tics.

Date.	New Depositors.	Amount of Deposits.			Amount of Repayments.		
		<i>L.</i>	<i>s.</i>	<i>d.</i>	<i>L.</i>	<i>s.</i>	<i>d.</i>
Jan. 1 to Oct. 1, 1814.....	106	221	6	6	101	9	0
Oct. 1, 1814, to Oct. 1, 1815..	643	2202	11	6	993	0	6
Oct. 1, 1815, to Oct. 1, 1816..	915	4677	3	0	3582	1	6
Oct. 1, 1816, to Jan. 1, 1817 } [i.e., three months only.] }	173	1215	13	0	1239	13	6
Total of three years.....	1837	8316	14	0	5916	4	6

Savings
banks of
various
English
towns.

The banks of Bath (on the establishment of its "Provident Institution" in January 1815), Southampton (in November of the same year), Exeter (in February 1816), and Hertford (in the following March), rank at once amongst the earliest and amongst the most successful of those which were established in English towns prior to the legislative regulation of savings banks. The early experience of all of them presents matter which has still its interest; but we restrict ourselves to the two latter. The rules adopted at Exeter limited the sums to be paid in by any one depositor during the first year to L.50; to the like amount during the second year; and to L.25 in each succeeding year. It allowed 4 per cent. interest. But its characteristic feature was the establishment of about sixty receiving offices in all parts of Devonshire, on a plan which entailed little expense—the only item of charge being for printing and postage or portage—and which largely increased the business of the parent institution in the county town. Most of the receivers were clergymen. The expenses were defrayed out of a fund which had been raised by voluntary subscription. Within two years this bank had received 1380 deposits from 946 depositors, amounting in the aggregate to L.14,525, and bearing interest amounting to L.246. It had repaid the sum of L.984 to 73 depositors, leaving a balance to depositors' credit of L.13,709, in addition to a surplus of L.372 on the establishment and expenses fund. The bank at Hertford had been preceded by one of a peculiar kind, called "The Sunday Bank," which had been established by a benevolent vicar—the Rev. Thomas Lloyd—some two or three years earlier. Sums from sixpence to two shillings, paid by parishioners, chiefly of the labouring class, to the vicar, after morning service on Sundays, amounted for several years to upwards of L.300 a year; but these sums (prior to March 1816) were always returned to the depositors every New Year's Day, with interest, usually at the rate of *twelve per cent.*, a rate arising, not of course from profitable investment exclusively, but from the addition of certain benefactions to the legitimate interest. On the establishment of the savings bank, the "Sunday Bank" became, so to speak, a feeder to it. In the evidence given by Mr Lloyd before the Lords' Committee on the Poor Laws of 1817, he assigned, as one of the causes which had promoted the success of the banks, the evils arising from Benefit Clubs or Friendly Societies as then constituted:—"For there is almost always," he said, "a regulation that when two-thirds of the members chose to assemble and unanimously agree to break up the clubs, they can; the consequence is, that the other third, the old members, who ought to be deriving an assistance during the last period of their lives from these clubs, are deprived of it. We have had . . . six clubs broken up within these two years in the neighbourhood of Hertford." He also stated, as one of the difficulties he had to contend with, a very general fear on the part of the labourers "of the persons employing them knowing what they can save; that is, what they can live upon. There certainly always has been a fear that, if it were known, their masters and employers would reduce their wages. . . . It almost invariably happens that, when a deposit is made by a labourer, the great anxiety is, that nobody should know it; and . . . one of

our regulations is . . . secrecy. The man at the next door does not know that his neighbour puts into the savings bank. . . . The labourers bring their book on Sunday instead of Saturday; they bolt the door regularly, and bring the book out with great secrecy, for the entry to be made in it."

The first savings bank established (in March 1815) in Ireland was that of Stillorgan, called the "Parochial Bank," and was due to the exertions of the Rev. John Reade, who, on removing shortly afterwards to Clondalkin, established a second bank there. In both places the small deposits of the peasantry were kept in the bank, each depositor having his special receptacle,—("the poor," wrote Mr Reade, "are always pleased to see their money at every period they make their deposit")—until they amounted to L.1, when they were invested in stock. Both these original banks, like the earliest banks of England and of Scotland, have long since been absorbed in larger institutions of later date. The third Irish bank, that of Belfast, was opened in January 1816, and received, within the first year and three-quarters, 3428 deposits from 646 depositors, amounting in the aggregate to L.4416. The sums withdrawn during this period amounted but to L.1518. "The class of people," says the first report, "who generally deposit money in this bank is that of servants; there were a great many spinners at the commencement, but the misfortunes of their trade obliged them to desist." The Belfast bank continues to flourish.

At the end of the year 1816, there were in England and Wales 74, and in Ireland 4 savings banks, each managed according to its particular rules, and all resting, as respects the security of the deposits, upon personal knowledge and confidence between depositors and managers. In July 1817, the first parliamentary enactments for the regulation of savings banks were passed, the one being 57 Geo. III., c. 130, intitled "An Act to Encourage the Establishment of Banks for Savings in England;" the other, 57 Geo. III., c. 105, intitled "An Act to Encourage the Establishment of Savings Banks in Ireland." Both measures required that the rules of every savings bank should be deposited with the clerk of the peace. In England, every depositor was restricted to the investment of sums not exceeding L.100 in the first year, and L.50 in each succeeding year; in Ireland, the limit was L.50 in any year. The trustees and managers of the banks were prohibited from receiving any profits, and were empowered to pay over the monies received from depositors into the Bank of England or of Ireland respectively (in sums not less than L.50 in England, or L.100 in Ireland), to the account of the Commissioners for the reduction of the National Debt, and as "the fund of the banks for savings." The Commissioners were to invest the monies so received in 3 per cent. bank annuities, and were to issue debentures bearing interest at 3d. per cent. per diem (L.4, 11s. 3d. per annum), payable twice a year, in May and November, and were to lay annually before Parliament an account of all monies received and stock purchased. Finally, in Ireland, the trustees might place a portion of their deposits on interest with bankers, provided the sums so placed did not exceed one-fifth of the whole amount of deposits, but no similar power was given by the English act.

The next session brought its "Act to amend an Act 58 Geo. III., c. 48. passed in the last Session of Parliament to Encourage the Establishment of Banks for Savings in England" (58 Geo. III., c. 48), by which the forms of the debentures were altered; power was given to the justices at sessions to reject the rules deposited with the clerk of the peace; and the payment into any savings bank by ticket or number, without disclosing the name of the depositor, of any sums exceeding L.10 in the year, was prohibited.

In March 1818, 164 banks in England and Wales had

Early his-
tory of the
Hertford
savings
bank.

History
and Statis-
tics.

State of the
savings
banks in
England
and Wales
in 1818.

Further
alterations
of the law.

Statistics
of savings
banks in
Great Bri-
tain and
Ireland,
Nov. 20,
1824.

The "Go-
verning
Statutes"—
9 Geo. IV.,
c. 92.

paid to the account of the National Debt Commissioners sums amounting in the aggregate to L.657,187, with which stock had been purchased to the amount of L.816,547. The largest payment—viz., L.32,000—was that of the Exeter Bank; the smallest—viz., L.160—that of the bank at St John's, Wapping, near London. Two months later, the number of banks in England and Wales had increased to 227, the amount of payments to L.949,835, bearing an annual interest of L.43,336, and the stock purchased to L.1,182,385. The sums similarly invested by seven Irish banks amounted in March 1818 to L.12,553, producing in stock L.13,322. In the year ending 5th January 1819, the payments from Irish banks, the number of which is not stated in the parliamentary return, amounted to L.50,030, producing in stock L.55,304.

An act of 1820 (1 Geo. IV., c. 83) repealed so much of the preceding acts as related to the issuing of debentures; directed that interest should be calculated twice in the year, and carried to account as additional principal; and enabled charitable societies to deposit with the Commissioners either the whole or any portion of their funds. The Irish banks continued to be regulated by 57 Geo. III., c. 105, until, in 1824, one act, for the first time, comprised both kingdoms. This act (5 Geo. IV., c. 62) extended to Ireland the main provisions of the act last mentioned. It repealed so much of the 57 Geo. III., c. 105, as limited the deposits to L.50 in one year, and permitted trustees to place any portion of their funds, not exceeding a fifth, in the hands of a banker. It also repealed so much of the 57 Geo. III., c. 130, as provided that deposits should not exceed L.100 in the first year, and L.50 in any succeeding year; and also so much of the 58 Geo. III., c. 48, as allowed deposits by ticket or number to the amount of L.10 a year, and enacted that in future no anonymous deposits should be made. The deposits of any one depositor, either in England or in Ireland, were thenceforth restricted to L.50 in the first year, and to L.30 in any year afterwards; and it was provided that the whole should not exceed L.200, exclusive of interest. This act further repealed that recent provision of 1 Geo. IV., c. 83, which authorized charitable societies to deposit their funds.

The new law came into force on the 20th November 1824. The aggregate investments of each depositor were then first subjected to legal restriction. At that date there had been received by the National Debt Commissioners, from the trustees of savings banks and friendly societies (during a period of seven years and a quarter), a total sum of L.12,361,919, 6s. 4d.—viz., in Great Britain, L.11,636,271, 4s. 4d.; in Ireland, L.725,648, 2s. The repayments, during the same period, interest included, amounted to L.632,670, 18s. The total amount of stock standing to savings bank account in the Commissioners' names was L.13,384,350, 17s. 7d., the actual cost of which had been L.11,544,017, 8s. 2d.; the gross amount of interest received thereon by the Commissioners was L.1,317,382, 3s. 10d., and the gross amount of interest paid or credited by the Commissioners to savings banks and friendly societies was L.1,540,557, 4s. 11d.

We now arrive at the first of the present "governing statutes" of savings banks, viz., the 9 Geo. IV., c. 92, passed on the 28th July 1828, and intitled, "An Act to Consolidate and Amend the Laws relating to Savings Banks," which repealed all the statutes previously in force. This act then provided that the rules of every savings bank should be entered in a book, be deposited with the clerk of the peace for the county in which such bank was held, and be then submitted to a barrister appointed by the Commissioners, to be by him certified and laid before the justices in quarter-sessions, who might reject the same or any part thereof. If admitted, the rules became binding on

depositors and officers. Such of its minor enactments (still in force) as appear to be important, will be mentioned in a subsequent section of this article.

The following table will show the progress of the banks (exclusive of friendly societies) under the working of the legislation of 1824 and 1828, until the period (1833) of the passing of the important act of 3 Will. IV., c. 14:—

Year ending 20th Nov.	Amount received by the Commis- sioners from Sav- ings Banks.	Interest Paid or Credited to Savings Banks.	Total Amount Credited to Savings Banks in the Year.	Total Amount of Repay- ments dur- ing the Year.	Balance to Credit of Savings Bank at close of each Year.
	L.	L.	L.	L.	L.
1817-1824...	10,814,379	1,538,456	12,352,836	632,208	11,720,629
1825...	1,207,229	562,759	1,769,988	232,909	13,257,708
1826...	539,268	592,390	1,131,659	1,254,149	13,135,218
1827...	859,734	615,516	1,475,250	421,759	14,188,708
1828...	1,058,621	675,753	1,734,374	564,579	15,358,504
1829...	396,159	563,983	960,142	1,527,151	14,791,495
1830...	501,105	555,478	1,056,584	987,890	14,860,188
1831...	487,512	550,116	1,037,629	1,199,182	14,699,635
1832...	556,355	543,013	1,099,368	1,381,118	14,416,885
1833...	894,493	554,257	1,448,751	540,842	15,324,794
Total of 17 years...	17,314,855	6,751,721	24,066,581	8,741,787	...

A more striking illustration of the value of the savings bank system can hardly be conceived than that which is afforded by the figures of the memorable years 1826 and 1829-32, as they stand in this table. These are the only years in which the nett funds of savings banks *decreased*, until we reach the commercial crisis of 1847.

The salient provisions of the act of 1833, intituled, "An 3 Will. IV., Act to enable depositors in Savings Banks and others to c. 14 purchase Government Annuities through the medium of (1833). Savings Banks," &c., are—(1.) The powers given to the National Debt Commissioners for the purchase of government annuities, not exceeding L.20 per annum, nor to be granted on the life of any nominee under fifteen years of age, on depositors' account. This portion of the act occupies clauses 1 to 24 inclusive, and clauses 26 and 27, and has since been repealed. (2.) The obligation imposed on all executors, administrators, and assignees of savings bank officers to pay any money owing by such officers to any savings bank before any other debt. (3.) The repeal of so much of the 9 Geo. IV., c. 92, as relates to the withdrawing of deposits and re-depositing; and the enactment in lieu thereof, that no sums exceeding L.30 in the aggregate shall be deposited in any one year. (4, and finally.) The enactment, in clause 25, "That it shall be lawful for the said Commissioners . . . from time to time, and as they shall think fit, to sell and dispose of the bank annuities and Exchequer bills, or any part thereof which may be now standing, or may hereafter stand in their names, . . . in pursuance of the said act, . . . and with the proceeds thereof to purchase in lieu thereof any other description of Bank annuities, or annuities for terms of years, or Exchequer bills." Another act, 5 and 6 Will. IV., c. 57, intituled, "An Act to extend to Scotland certain provi- 5 and 6 sions of an Act of His late Majesty to consolidate and Will. IV. amend the Laws relating to Savings Banks," &c., repealed c. 57 the 59 Geo. III., c. 62, except in relation to such savings (1835). banks as had been established under it, and had not conformed to the provisions of 9 Geo. IV., c. 92. With respect to such banks, the former act was to continue in force until the time of such conformation.

In each year, from 1834 to 1841 (which year completed the first quarter of a century from their legal establishment), the nett amount of the deposits in savings banks continued to increase, as will be seen if we resume the table of their transactions with the Commissioners for the reduction of the National Debt, in similar form:—

History
and Statis-
tics.

History
and Statis-
tics.Statistics
of the sav-
ings banks,
1834-41.History
and Statis-
tics.

Year ending 20th Nov.	Amount received by the Commis- sioners from Sav- ings Banks.	Interest paid or Credited to Savings Banks.	Total Amount Credited to Savings Banks during the Year.	Total Amount of Repay- ments dur- ing the Year.	Balance to credit of Savings Banks at close of the Year.
1817-1833...	L. 17,314,855	L. 6,751,721	L. 24,066,581	L. 8,741,787	L. 15,324,794
1834...	982,928	592,087	1,575,016	513,775	16,386,035
1835...	1,024,017	630,878	1,654,896	571,314	17,469,617
1836...	1,324,297	682,291	2,006,588	541,615	18,934,591
1837...	929,212	720,479	1,649,691	872,485	19,711,797
1838...	1,433,717	766,946	2,200,663	466,119	21,446,341
1839...	1,310,885	826,617	2,137,502	1,097,290	22,486,553
1840...	1,086,937	862,189	1,949,126	885,963	23,549,716
1841...	1,053,194	897,557	1,950,751	963,496	24,536,971
Totals of 25 years.....	26,460,042	12,730,765	39,190,814	14,653,844	...

The total number of savings banks in the United

Kingdom at this date (20th November 1841) was 555, viz., in England (including Guernsey and Jersey), 428; in Wales, 23; in Scotland, 28; in Ireland, 76. The total number of current accounts in these banks was 841,204; of which 824,162 belonged to individual depositors, 8778 to charitable institutions, and 8624 to friendly societies. The aggregate amount of the deposits, with interest, in 554 of these banks (the remaining bank having made no return), was L.24,474,680, of which sum L.22,915,940 stood to the account of individual depositors, L.478,096 to that of charitable institutions, and L.1,080,653 to that of friendly societies. The average amount standing to the credit of each individual depositor was L.28; to that of each charitable society, L.54; to that of each friendly society, L.131. The details for the respective portions of the United Kingdom were as follows:—

Class.	Number of Depositors in each Class.				Total Amount of Deposits in each Class.				Average Amnt. held by each Depositor.			
	In England.	In Wales.	In Scotland.	In Ireland.	England.	Wales.	Scotland.	Ireland.	England.	Wales.	Scotland.	Ireland.
Depositors not exceeding L.20 each.....	384,634	8186	41,045	36,537	L. 2,528,654	L. 64,183	L. 203,155	L. 271,676	L. 6	L. 7	L. 5	L. 7
" 50 "	175,697	4835	7,127	28,196	5,438,897	149,576	217,019	860,823	30	30	30	31
" 100 "	76,498	1769	1,578	9,042	5,283,164	122,307	107,918	606,923	69	69	68	67
" 150 "	26,483	545	226	2,531	3,191,335	65,278	27,063	295,364	116	119	120	117
" 200 "	14,849	236	42	1,094	2,533,055	40,062	6,932	180,853	170	161	165	165
of 200 & upwards.	2,836	54	none	122	681,028	12,888	none	27,787	240	238	none.	228
Total number of De- positors.....	680,997	15,625	50,018	77,522	19,656,133	454,294	562,087	2,243,426	28	29	11	29
Do., Friendly Societies...	7,225	419	225	395	967,414	62,525	30,923	19,791	130	149	82	50
Do., Charitable Institu- tions.....	7,569	176	376	657	412,643	10,869	15,499	39,085	54	62	41	61
Total number of Ac- counts.....	695,791	16,220	50,619	78,574	21,036,190	527,688	608,509	2,302,302	...	...	...	...

The Depositors of the whole United Kingdom, collectively, at the end of 1841, may be classified thus:—

Depositors.	Number of Depositors.	Amount of Deposits.	Average held by each Depositor in each class respectively.
1. Not exceeding L.20 each	470,402	L. 3,067,668	L. 7
2. " " 50 "	215,855	6,666,315	31
3. " " 100 "	88,887	6,120,312	69
4. " " 150 "	29,785	3,579,040	120
5. " " 200 "	16,221	2,760,902	170
6. Exceeding 200 "	3,012	721,703	240
Total.....	824,162	22,915,940	28
Friendly Societies.....	8,264	1,080,653	54
Charitable Institutions.....	8,778	478,096	131
Total number of accounts...	841,204	24,474,689	29*

* Mean average.

As compared with the population, there was at this period, in England, 1 depositor to every 22 inhabitants; in Wales, 1 to 58; in Scotland, 1 to 52; in Ireland, 1 to 105.

The remarkable success of the savings bank system, so greatly beyond any the most sanguine expectations that could have been preconceived of it, had of course its alloy. There had been several instances of defalcation by actuaries of the banks. Although not covered by the guarantee bonds exacted by law, the amount of these defalcations was inconsiderable. But it was none the less obviously important that effective precautions should be taken to preclude their recurrence. Other points of anxiety presented themselves in respect to the exercise of the powers vested in or

assumed by the National Debt Commissioners of varying, for other than savings bank purposes, the securities held in trust by them on savings banks account; and also in respect to the considerable and increasing difference between the total amount of the debt owing by the Commissioners to the savings banks, and that of the securities in which that debt was invested. In the course of the eager controversy which was then carried on, it was alleged, on the one hand, that the deficit was the inevitable consequence of the parliamentary enactments as to the interest to be allowed by the Commissioners to the banks; and, on the other, that no deficiency would have existed had there been no trafficking for extraneous purposes in the securities in which the money of depositors was invested.

It is obvious that the immediate, or almost immediate, investment of the deposits as they are received by the Commissioners—which investment is the fundamental principle of our savings banks' legislation—entails the frequent purchase of stock at high prices in prosperous times, when deposits are pouring in; and that immediate repayment of deposits on demand—which repayment is also and equally fundamental—must, conversely, involve the frequent sale of stock at low prices in times of depression, when deposits fall off and withdrawals are numerous.

The following table exhibits (1) the amount of interest received by the National Debt Commissioners on account of the investments made for savings banks in each year from 1817 to 1843 inclusive; and (2) the amount of interest paid and credited by the Commissioners to the trustees of savings banks during the same period, at the parliamentary rate of L.4, 11s. 3d. per cent., until the year 1828 inclusive; and at that of L.3, 16s. 0³d. from 1829 to 1843 inclusive:—

Circum-
stances
which qua-
lified the
success of
the savings
banks.

History
and Statis-
tics.Comparative state-
ment of the
dividends
received by
the Com-
missioners,
and the in-
terest paid
by them to
the banks,
1817-43.

Year ending November 20.	Dividends on Savings Bank Stock, and other Securities, received by the Commis- sioners.			Interest Paid or Credited by Commissioners to Savings Banks.			Excess of In- terest Paid to Savings Banks.		
	L.	s.	d.	L.	s.	d.	L.	s.	d.
1817 and 1818	32,071	1	5	44,909	5	1	12,838	3	8
1819	92,865	13	7	106,763	4	9	13,897	11	2
1820	124,278	8	2	141,488	1	3	17,209	13	1
1821	163,631	1	1	182,649	13	3	19,018	12	2
1822	225,252	6	1	253,629	4	11	28,376	18	10
1823	298,270	10	1	340,757	0	2	42,486	10	1
1824	379,411	6	7	468,261	12	1	88,850	5	6
1825	450,027	13	0	562,759	6	4	112,731	13	4
1826	478,286	5	3	592,390	18	11	114,104	13	8
1827	480,851	13	0	615,516	1	7	134,664	8	7
1828	515,569	9	4	675,753	16	7	160,184	7	3
1829	514,094	16	3	563,983	11	2	49,888	14	11
1830	492,403	12	6	555,478	17	1	63,075	4	7
1831	455,541	0	6	550,116	8	10	94,575	8	4
1832	440,677	8	0	543,013	13	8	102,336	5	8
1833	544,216	6	3	554,257	17	11	10,041	11	8
1834	454,788	15	10	592,087	19	11	137,299	4	1
1835	538,984	7	5	630,878	10	7	91,894	3	2
1836	596,934	0	11	682,291	18	7	85,357	17	8
1837	654,835	2	7	720,479	16	11	65,644	14	4
1838	688,211	9	6	766,946	6	6	78,734	17	0
1839	731,230	8	4	826,617	16	9	95,387	8	5
1840	762,607	18	10	862,189	8	10	99,581	10	0
1841	791,654	5	11	897,557	4	5	105,902	18	6
1842	804,273	4	5	929,446	12	2	125,173	7	9
1843	853,184	8	8	982,188	6	11	129,003	18	3
Total of 27 years.....	12,564,152	13	6	14,642,412	15	2	2,078,260	1	8

The total *excess* paid to the banks under the L.4, 11s. 3d. per cent. rate was L.744,362, 17s. 4d.; that paid under the L.3, 16s. 0½d. rate, to the year 1843 inclusive, was L.1,333,897, 4s. 4d. In 1844, Mr Goulburn's Act (7 and 8 Vict., c. 83), reduced the rate of interest to be allowed to the trustees, from the close of the then current year, to L.3, 5s. per cent.; and enacted that the rate to be allowed to depositors should not exceed L.3, 0s. 10d. per cent. per annum. As that act was at first framed, it proposed to reduce the interest to trustees to L.3, 1s. 4d. per cent., and the maximum interest to depositors to L.2, 13s. 9d. per cent.; but the opposition of the principal banks led to a compromise.

The excess of interest paid to the banks during the last year of the old rate (ending 20th November 1844) was L.101,673, 7s. 3d., making the total excess up to that date L.2,179,933, 8s. 11d. The like excess paid during the first year of the new rate (ending 20th November 1845) was L.20,185, 4s. 3d.

Provisions
of 7 and 8
Vict., c. 83,
with re-
spect to re-
sponsibi-
lity of trus-
tees.

Another important alteration in the law of savings banks, introduced by the Act of 1844, was that relating to the responsibilities of trustees and managers. The Act of 1828 declared that no such officer "should be personally liable, *except for his own acts or deeds*, or for anything done by him . . . *in cases where he should be guilty of wilful neglect or default*." Prior to that Act of 1828, it had been judicially declared that "deposits are made by parties, not on the faith of the person acting as actuary or cashier, but upon the faith of the gentlemen who act as trustees. . . . If, therefore, the clerk or other person employed by them is guilty of peculation, they are themselves liable for any defalcation which may ensue." The Act of 1844 provides "that no trustee or manager of any savings bank shall be liable to make good any deficiency which may hereafter arise in the funds of any savings bank, *unless such persons shall have respectively declared, by writing under their hands*, and deposited with the Commissioners for the reduction of the National Debt, *that they are willing so to be answerable*; and it shall be lawful for each of such persons, or for such persons collectively, to limit his or their responsibility to such sum as shall be specified in any such instrument. Provided always that the trustee or manager of any

such institution shall be, and is hereby declared to be, personally responsible and liable for all monies actually received by him on account of, or to and for the use of such institution, and not paid over or disposed of in the manner directed by the rules of the institution; and an abstract of the above provisions shall be enrolled as one of the rules of the institution." This change also was opposed—but apparently on insufficient grounds—by some of the leading banks. It was further enacted that deposits not exceeding L.50, exclusive of interest, belonging to persons dying intestate, and to whom no letters of administration shall be taken out within one month of decease, may be paid to the widow or other person entitled; and that disputes arising between any bank and a depositor, or the representatives of a depositor, shall be referred to the barrister appointed under the act.

As far as relates to *Ireland*, the provision of 7 and 8 Vict., c. 83, which we have just recited, with respect to the responsibility of trustees and managers, was repealed, four years afterwards, by the 11 and 12 Vict., c. 133, for the purpose of enacting in lieu thereof, "that after the 20th November 1848, any trustee or manager of a savings bank in Ireland who has declared or shall declare, in writing under his hand, deposited with the Commissioners for the reduction of the National Debt, that he is willing to be answerable for a specific amount only, *such amount being in no case less than L.100*, shall not be liable to make good any deficiency which may thereafter arise in the funds of such savings bank, beyond the amount specified in such writing:" with a like proviso to that contained in the preceding act with respect to monies actually received by any individual trustee. This act of the 11 and 12 Vict. also provided that the rules of every savings bank in Ireland shall specify certain days, not less than two in every year, for the production at the bank of the pass-book of every depositor, subject to the penalty of the surceasing of interest in case of failure; and it further enacted, "that if it shall appear to the satisfaction of the Commissioners that the clauses of the said recited act and of this act, or the orders, directions, and regulations of the said Commissioners, signified by the comptroller-general to the trustees of any savings bank in Ireland, have not been complied with . . . it shall be lawful for the Commissioners to close the account of such savings bank, and to discontinue the keeping any further account with the trustees thereof," until they shall see cause to determine otherwise.

The latest enactment bearing upon the law of savings banks is the 16 and 17 Vict., c. 45, intitled "An Act to Consolidate and Amend the laws; and to grant additional facilities in relation to the Purchase of Government Annuities through the medium of Savings Banks, and to make other provisions in respect thereof. This act permits contracts to continue to be made by depositors for the purchase of annuities through the medium of savings banks, but practically it severs such contracts from the ordinary business of those institutions, and makes them a special section of that of the National Debt Commission.

The extensive discussions to which the introduction of the act of 1844 gave rise, have had very important consequences. Until the date of those discussions, no account of savings banks' transactions had ever been rendered by the Commissioners in detail, either to Parliament or to the public. It then, for the first time, appeared by papers laid before the House of Commons by Mr Goulburn (then Chancellor of the Exchequer), that transactions in stock, to the amount of several millions, had been effected, not for savings bank purposes, but for the general financial purposes of the State. Thus, it was shown, that in the years 1828-44, savings bank stock, amounting to L.8,166,551, was sold, and other stock, amounting to L.8,557,000, was purchased. Of the stock sold, considerably more than half (viz.,

History
and Statis-
tics.11 and 12
Vict., c.
133.Summary
of transac-
tions in
savings
bank stock,
1828-44.

SAVINGS BANKS.

661

History and Statistics. L.4,156,901 three per cents.) was sold at prices ranging from 86 to 90. Of the stock bought, one-sixth (viz., L.1,420,000 three per cents.) was bought at prices ranging from 96½ to 100½, and nearly two-sevenths more (viz.,

L.2,379,900 three per cents.) at prices ranging from 92½ to 98. The details, as laid before the House of Commons, are as follows:—

History and Statistics.

STOCK SOLD, 1828-44.				STOCK PURCHASED, 1828-44.			
Three per Cents.	Prices.	Three and a half per Cents.	Prices.	Three per Cents.	Prices.	Three and a half per Cents.	Prices.
L. 572,000	80 to 95	L. 1,011,500	...	L. 720,400	92½ to 95 (1838)	L. 587,500	89 to 95
4,156,901	86 to 90	...	...	399,300	Do. do. (1839)	2,871,600	96 to 100
2,426,150	90 to 94	...	...	593,500	88½ to 95	697,300	101 to 103
				666,700	94½ to 98	...	...
				1,420,000	96½ to 100½	...	...
				519,600	...	81,100	...
Total...7,155,051	...	1,011,500	...	4,319,500	...	4,237,500	...

During the same period, about L.19,888,100 exchequer bills were held, of which about L.13,041,550 were disposed of. Both stock and cash-balances were frequently employed in the purchase of exchequer bills when at a discount; and it is shown by the returns that such purchases were continued daily for considerable periods of time. We have here a serious element imported into savings bank finance, as heretofore managed, which stands wholly apart from those contingencies of investment and repayment that are inseparable from the savings bank system.

In 1842, the total amount which had been paid by the banks to the National Debt Commission was L.26,460,042,¹ and the total amount of interest paid or credited to the banks, L.12,730,765, making, in the aggregate, L.39,190,814. The total repayments made by the Commission to the banks amounted to L.14,653,844, and the total balance standing to the credit of the banks was L.24,536,791. At this period the number of savings banks in the United Kingdom was 555, and the aggregate number of their depositors 824,162, exclusive of 17,402 societies. The progress from 1842 to 1857 may be thus epitomized:—

clusive), in which the sums *withdrawn* have exceeded the sums deposited. In the two years, 1847-48, the amount of the withdrawals was more than five millions (L.5,201,433) in excess of the amount of the deposits. Nor has the state of affairs in this respect at any subsequent period at all approached that which existed prior to 1846. So that, on the whole seventeen years there has been a nett excess of *withdrawals* over deposits, amounting to L.3,114,436; the aggregate deposits having been but L.116,159,005, against an aggregate of L.119,273,441, deposits and interest withdrawn. No better exemplification of the power of compound interest need be desired than that which results from the juxtaposition of these figures, with those which indicate the comparative balances held by the National Debt Commissioners to the credit of the savings banks, at the beginning and end of the period referred to. That balance, at the close of the year 1841, was L.24,536,971; at the close of the year 1857 it was L.35,255,722.

The specific progress of the interest on the savings banks' fund has been shown in detail up to the close of the year 1843 inclusive, at which period an excess of the interest credited to the banks beyond that realized by the Commissioners had accumulated to the amount of L.2,078,260, 1s. 8d. We now resume that account to the close of the year 1857:—

Continuation of comparative statement of interest on savings banks securities received and credited by the Commissioners.

Year ending 20th Nov.	Amount received by the Commissioners from Savings Banks.	Interest paid or Credited to Savings Banks.	Total Amount Credited to Savings Banks during the Year.	Total repayments during the Year.	Balance to Credit of Savings Banks at Close of the Year.
	L.	L.	L.	L.	L.
1817-1841	26,460,042	12,730,765	39,190,814	14,653,844	24,536,971
1842	1,045,267	929,446	1,974,713	1,105,042	25,406,642
1843	1,591,753	982,188	2,573,941	736,317	27,244,266
1844	1,988,875	1,073,004	3,061,879	652,966	29,653,180
1845	1,503,931	971,282	2,475,213	1,177,411	30,950,983
1846	1,211,050	999,685	2,210,735	1,310,480	31,851,238
1847	632,124	1,002,362	1,634,487	3,249,093	30,236,632
1848	465,139	922,909	1,388,048	3,391,648	28,233,032
1849	843,296	905,654	1,748,950	1,282,433	28,699,550
1850	936,057	919,301	1,855,358	1,425,703	29,129,205
1851	1,108,370	953,005	2,061,375	745,012	30,445,568
1852	1,106,980	995,438	2,102,418	635,573	31,912,413
1853	1,346,437	1,053,959	2,400,396	802,038	33,510,771
1854	747,085	1,078,106	1,825,291	1,426,759	33,909,302
1855	659,053	1,091,226	1,750,279	1,248,887	34,410,694
1856	897,303	1,109,502	2,006,805	1,297,914	35,119,585
1857	741,053	1,134,161	1,875,214	1,739,077	35,255,722
Total...	43,283,815	28,851,993	72,135,916	36,880,197	...

Year ending 20th Nov.	Dividends on Savings Banks' Stock and other Securities received by the Commissioners.	Interest Paid or Credited by Commissioners to Savings Banks.	Excess of Interest Paid to the Banks.
	L. s. d.	L. s. d.	L. s. d.
1817-1843...	12,564,152 13 6	14,642,412 15 2	2,078,260 1 8
1844...	971,331 3 5	1,073,004 10 8	101,673 7 3
1845...	951,097 12 5	971,282 16 8	20,185 4 3
1846...	982,408 10 11	999,685 15 3	17,277 4 4
1847...	984,698 2 2	1,002,362 16 6	17,664 14 4
1848...	893,658 16 8	922,909 13 7	29,250 16 11
1849...	868,797 19 6	905,654 14 0	36,856 14 6
1850...	882,617 14 5	919,301 2 5	36,683 8 0
1851...	909,856 9 6	953,005 12 11	43,149 3 5
1852...	949,211 9 6	995,438 4 3	46,226 14 9
1853...	995,862 14 1	1,053,959 5 10	58,096 11 9
1854...	1,051,743 1 1	1,078,106 6 4	26,363 5 3
1855...	989,407 9 5	1,091,226 3 7	101,818 14 2
1856...	1,008,711 12 1	1,109,502 4 4	100,790 12 3
1857...	1,074,406 10 6	1,134,161 6 11	59,754 16 5
Total...	26,077,961 19 2	28,852,013 8 5	2,774,051 9 3

Comparison of aggregate deposits with aggregate withdrawals, 1841-57. During the seventeen years, 1841 to 1857 inclusive, there have been nine years (viz., 1841 to 1846 inclusive, and 1851-53 inclusive), in which the sums *deposited* with savings banks have exceeded the sums *withdrawn*; and eight years (viz., 1847 to 1850 inclusive, and 1854-57 in-

The following official table will exhibit in detail the transactions, during the seventeen years 1841-57, of the depositors with the banks on the one hand, and of the banks with the Commissioners on the other:—

¹ Disregarding the fractions of a pound, which, here and elsewhere, occasion a trivial difference between the sums severally and their aggregate as stated in the text and tables.

History
and Statis-
tics.Compara-
tive state-
ment of the
accounts of
savings
banks—
(1) with de-
positors;
(2) with Na-
tional Debt
Commis-
sion.

Year ending 20th Nov.	TRUSTEES OF SAVINGS BANKS.				COMMISSIONERS.			
	Received from Depositors.	Paid to Depositors.	Excess.		Received from Trustees.	Paid to Trustees.	Excess.	
			Received.	Paid.			Received.	Paid.
	L.	L.	L.	L.	L.	L.	L.	L.
1841	5,694,908	5,487,723	207,185	...	1,053,194	934,960	118,234	...
1842	5,789,203	5,656,160	133,043	...	1,045,267	1,080,532	...	35,265
1843	6,327,125	5,333,015	994,110	...	1,591,753	712,468	879,285	...
1844	7,166,465	5,716,275	1,450,190	...	1,988,875	637,216	1,351,659	...
1845	7,153,176	6,697,042	456,134	...	1,503,931	1,151,140	352,791	...
1846	7,300,367	7,255,654	44,713	...	1,211,050	1,290,258	...	79,208
1847	6,649,008	9,060,075	...	2,411,067	632,124	3,209,033	...	2,576,909
1848	5,862,742	8,653,108	...	2,790,366	465,139	3,349,958	...	2,884,819
1849	6,196,883	6,522,760	...	325,877	843,296	1,255,062	...	411,766
1850	6,363,690	6,760,328	...	396,638	936,057	1,396,404	...	460,347
1851	6,782,059	6,305,566	476,493	...	1,108,370	725,863	382,507	...
1852	7,281,178	6,684,908	596,270	...	1,106,980	617,393	489,587	...
1853	7,659,390	7,120,642	538,748	...	1,346,437	786,192	560,245	...
1854	7,400,141	7,956,347	...	556,206	747,185	1,410,390	...	663,205
1855	7,209,802	7,665,160	...	455,358	659,053	1,234,123	...	575,070
1856	7,741,453	8,023,583	...	282,130	897,303	1,282,784	...	385,481
1857	7,581,415	8,375,095	...	793,680	741,053	1,717,529	...	976,476
Total of 17 years...	116,159,005	119,273,441	4,896,886	8,011,322	17,877,067	22,791,305	4,134,308	9,048,546

History
and Statis-
tics.“Separate
surplus
fund” ac-
count.

The amount standing to the credit of the “separate surplus fund” appears (by a return dated 16th March 1857) to have reached, at the close of the year 1855, L.335,598, 10s. 2d., of which sum L.322,288, 17s. 10d. belonged to the English and Welsh banks; L.318, 1s. 9d. to Scottish banks; L.10,691, 10s. 7d. to Irish banks; and L.2300 to banks in the smaller islands of the British seas. On this surplus account no interest is paid by the National Debt Commissioners.

Classifica-
tion of de-
posits in
the United
Kingdom,
according
to amount.

In 1857 the total number of banks in the United Kingdom was 597, with 1,341,752 depositors, of whom 1,139,919 had sums not exceeding L.50—viz., in the

aggregate, L.13,960,203, being on the average L.12, 4s. 11d. for each depositor; 130,204 had sums exceeding L.50, but under L.100—namely, in the aggregate, L.8,982,919, being on the average L.68, 19s. 9d. for each depositor; 70,159 had sums exceeding L.100, but under L.200—viz., in the aggregate, L.9,719,339, being on the average L.138, 10s. 8d. for each depositor; and 1470 had sums exceeding L.200—viz., in the aggregate, L.321,562, being on the average L.218, 15s. for each depositor. The average deposit for the whole number of depositors was L.24, 11s. 7d. The details stood thus:—

Class of Depositors in the order of their respective amounts.	No. of Depositors in each Class.	Amount Deposited in each Class.	Average Deposit in each Class.	Proportion per cent. of Depositors in each Class.	Proportion per cent. of Deposits in each Class.
1. Not exceeding L.20	846,203	L. 4,848,447	L. 5.729	63.067	14.699
2. Exceeding L.20, but not exceeding L.50.....	293,716	9,111,756	31.022	21.890	27.624
3. Exceeding L.50, but not exceeding L.100.....	130,204	8,982,919	68.991	9.704	27.234
4. Exceeding L.100, but not exceeding L.150.....	44,339	5,330,002	120.210	3.304	16.158
5. Exceeding L.150, but not exceeding L.200.....	25,820	4,389,337	169.997	1.924	13.307
6. L.200 and upwards	1,470	321,562	218.750	.109	.974
Totals.....	1,341,752	32,984,023	24.582	...	...

Social
classifica-
tion of de-
positors.

On the interesting point of the social classification of depositors, the attainable information is but partial. A return of this kind was made to the House of Commons in 1853, but out of the whole number of savings banks then existing in the United Kingdom—namely, 576—172 failed to make the return required. It appears, however, that

the returns made by the other 404 banks embrace not only 70 per cent. of the whole number of savings banks, but 78 $\frac{3}{4}$ per cent. of the whole deposits in savings banks in the United Kingdom, and 79 $\frac{1}{2}$ per cent. of the whole number of individual depositors. These returns may be thus epitomized:—

I.—Number of Depositors in each Class.

Social Classification of Depositors in 404 Savings Banks of the United Kingdom.	IN ENGLAND.				IN WALES.	IN SCOTLAND.	IN IRELAND.	Total in the United Kingdom.
	(1.) Metro- politan Counties.	(2.) Agricul- tural Coun- ties.	(3.) Manu- facturing and Mixed Counties.	Total.				
1. Persons of independent means.....	4,402	4,134	381	8,917	344	1,096	1,347	11,704
2. Professional men and their wives.....	1,996	1,536	485	4,017	137	750	346	5,250
3. Persons engaged in education	3,350	2,975	1,396	7,721	2	59	675	8,457
4. Tradesmen and their assistants, small farm- ers, clerks, mechanics and artisans not de- scribed as journeymen, and their wives...	55,707	70,758	63,090	189,555	4,373	23,541	17,864	235,333
5. Soldiers, mariners, fishermen, and their wives.	2,018	8,893	1,966	12,877	300	413	1,283	14,873
Carry forward.....	67,473	88,296	67,318	223,087	5,156	25,859	21,515	275,617

SAVINGS BANKS.

663

History
and Statis-
tics.

I.—Number of Depositors in each Class—Continued.

History
and Statis-
tics.

Social Classification of Depositors in 404 Savings Banks of the United Kingdom.	IN ENGLAND.				IN WALES.	IN SCOTLAND.	IN IRELAND.	Total in the United Kingdom.
	(1.) Metro- politan Counties.	(2.) Agricul- tural Coun- ties.	(3.) Manu- facturing and Mixed Counties.	Total.				
Brought forward.....	67,473	88,296	67,318	223,087	5,156	25,859	21,515	275,617
6. Policemen, letter-carriers, revenue-officers, pensioners, railway men, and their wives	704	660	546	1,910	3	75	279	2,267
7. Labourers, farm-servants, journeymen mechanics and their wives.....	12,447	54,375	32,743	99,565	2,100	14,809	3,231	119,705
8. Domestic servants, charwomen, nurses, and laundresses.....	60,357	81,076	35,589	177,022	2,778	19,379	6,602	205,781
9. Dressmakers, milliners, shopwomen, and female artisans.....	9,223	7,087	2,862	19,172	17	338	499	20,026
10. Females described only as married women, widows, or spinsters.....	19,179	45,879	23,126	88,184	1,893	12,193	8,131	110,401
11. Minors having accounts in their own names, including apprentices.....	25,936	72,283	30,927	129,146	1,363	10,533	3,720	144,762
12. Trust accounts, principally for minors, including all joint accounts.....	3,413	9,168	4,304	16,885	180	122	461	17,648
13. Miscellaneous, and persons undescribed.....	21,519	10,395	8,449	40,363	300	7,627	252	48,542
Total.....	220,251	369,219	205,864	795,334	13,790	90,935	44,690	944,749

II.—Amount of Deposits in each Class.

Social Classification of the Depositors in 404 Savings Banks of the United Kingdom.	IN ENGLAND.				IN WALES.	IN SCOTLAND.	IN IRELAND.	Total of the United Kingdom.
	(1.) Metro- politan Counties.	(2.) Agricul- tural Coun- ties.	(3.) Manu- facturing and Mixed Counties.	Total.				
1. Persons of independent means	L. 89,869	L. 145,349	L. 14,651	L. 249,869	L. 8,285	L. 12,967	L. 44,683	L. 315,804
2. Professional men and their wives	54,527	43,929	17,609	116,065	3,516	18,504	12,943	151,028
3. Persons engaged in education.....	97,038	95,038	49,867	241,943	87	902	18,269	261,201
4. Tradesmen and their assistants, small farmers, clerks, mechanics and artisans not described as journeymen, and their wives	1,242,136	2,244,538	1,839,353	5,326,027	150,161	382,556	535,335	6,394,079
5. Soldiers, mariners, fishermen, and their wives	70,931	301,537	74,933	447,401	8,853	7,271	46,380	509,905
6. Policemen, letter-carriers, revenue officers, pensioners, railwaymen, and their wives	21,538	23,166	18,999	63,703	112	998	10,907	75,720
7. Labourers, farm-servants, journeymen mechanics, and their wives	279,094	1,704,938	1,067,309	3,051,341	54,619	219,393	59,024	3,384,377
8. Domestic servants, charwomen, nurses, and laundresses	1,594,011	2,446,485	963,028	5,003,524	71,214	267,194	134,321	5,476,253
9. Dressmakers, milliners, shopwomen, and female artisans.....	197,333	169,496	81,660	448,489	433	5,056	8,257	462,235
10. Females described only as married women, widows, or spinsters.....	550,212	1,488,364	676,069	2,714,645	57,588	180,222	234,173	3,186,628
11. Minors having accounts in their own names, including apprentices	304,760	972,023	422,538	1,699,321	22,171	87,551	101,573	1,910,616
12. Trust accounts, principally for minors, including all joint accounts	67,744	163,377	74,460	300,581	7,386	1,390	12,960	327,317
13. Miscellaneous, and persons undescribed	328,401	339,128	278,470	945,999	12,352	136,906	6,747	1,102,004
Total.....	4,897,594	10,137,368	5,578,946	20,613,908	396,777	1,320,910	1,225,572	23,557,167

Unquestionably valuable as is this classification of the social position and employment of depositors, it would absorb too much of our space to pursue it into further detail. In the *Report of the Select Committee on Savings Banks* of 1858, the tables we have quoted are supplemented by a calculated abstract of the depositors and the deposits in the 172 banks which omitted to make returns on this point, on the basis of those made by the other banks; and also by a general summary, comprehending alike the returns actually made and those so calculated. To these we must refer the reader who may be desirous of pursuing the inquiry.

During the last few years the expenses of local management have varied from an average of 6s. 6d. to one of 6s. 8d. per cent. throughout the United Kingdom. Thus,

in 1852, there were 479 banks in England and Wales, Expenses with an aggregate expenditure of L.91,800, or, on the average of the whole, at the rate of 6s. 6d. per cent. In Scotland, 43 banks expended L.5500, or at the rate, over the whole, of 6s. 8d. per cent. In Ireland, the expenditure of 51 banks amounted to L.7200, or on the average, 9s. 11d. per cent. For the whole United Kingdom there were then 575 banks, expending L.104,500, or on the average 6s. 8d. per cent. In 1856, when the banks of England and Wales numbered 498, instead of 479, their aggregate expenses amounted to L.101,800 (against L.91,800 in 1852), being at the rate of 6s. 7d. per cent. In Scotland, 46 banks expended L.7400, being at the rate of 7s. 8d. per cent.; and, in Ireland, 51 banks expended L.7600, being at the rate of 9s. per cent. The details are as follow:—

of local
manage-
ment.

History
and Statis-
tics.History
and Statis-
tics.

	No of Banks, Nov. 20, 1856.	No. of Officers.		Amount of Security given.		Salaries and Allowances of the Paid Officers, year ended Nov. 20, 1856.	Total Expenses of Management, year ended Nov. 20, 1856.	No. of Open Accounts, Nov. 20, 1856.	Total Amount due to Depositors, Nov. 2, 1856, (disregarding fractions of L.1).	Per Cent- age of Ex- penses.
		Paid.	Unpa d.	By Paid Officers.	By Unpaid Officers.					
England and Wales	498	1020	525	L.285,500	L.346,670	L.74,598	L.101,802	1,140,551	L.30,725,782	s. d. 6 7
Scotland.....	46	106	46	32,450	15,800	5,320	7,420	119,281	1,936,495	7 8
Ireland	51	131	45	34,810	9,500	5,671	7,683	57,050	1,710,179	9 0
Islands in the British Seas...	2	4	2	1,300	1,400	860	1,049	14,487	388,475	5 5
Total of United Kingdom..	597	1261	618	L.354,060	L.373,370	86,449	L.117,954	1,331,369	L.34,760,931	6 9½

Defalca-
tions from
the funds of
savings
banks.

The many defalcations from the funds of savings banks by the frauds of their officers, sometimes followed by the failure and dissolution of the banks concerned, have been attended with an amount of public mischief which cannot be estimated by the mere sums of money that have been actually lost to the depositors. These, if compared with the aggregate of savings bank transactions, will seem of small amount; and in most instances vigorous exertion has been used, by trustees and others, to lighten the burden to the shoulders least capable of sustaining it. But the suffering thus occasioned to individuals and to families has still been great, and the hindrance to the good working of the system yet greater and more lasting. In some districts the discouragement thus given to provident frugality will outlive the existing generation.

We believe that a review of all the cases of defalcation that have occurred since the commencement of savings banks would lead to the conclusion that, in nearly every instance, the most common and obvious precautions against fraud have been disregarded. The necessary limits of this article will not admit of such a review, even in its briefest form. But we may glance at a few of the more conspicuous cases.

Failure of
the Roch-
dale Bank,
1849.

No case in the annals of savings banks is more deplorable than the failure of the Rochdale Bank in 1849, through the frauds of George Howarth, who had been its actuary from 1822 until 1849, and died in that office, without any suspicion of his malpractices having been excited. Here (it has been proved in evidence before a parliamentary committee) the *sole control* of the bank was left to its actuary ("who represented himself," said one witness, "as filling the office really as a matter of charity," and who "managed to deceive every body by an appearance of wealth") for a period of at least twelve years, and the official returns to the National Debt Commissioners were sometimes signed by men "*who did not know that they were managers*" until the actuary assured them they were so at the moment that they were asked to sign. No real audit of the accounts ever took place. When Howarth died the liabilities of the bank to depositors were L.100,403; its deposits with the National Debt Commissioners were L.26,898; its cash in hand, L.1788; making the total assets L.28,686, and leaving a deficit of L.71,717. Ultimately the trustees and managers raised by subscription a sum of about L.17,000; and the sale of the actuary's property produced about L.17,000 more,—raising the total assets to nearly L.63,000, which paid the depositors 12s. 6d. in the pound.

Other de-
falca-
tions
in savings
banks,
1851-57.

Between 1851 and 1857, inclusive, defalcations occurred in the savings banks of the following towns:—Bradford (Wilts), Bromley, Dunmow, Leicester, Ongar, Newport (Isle of Wight), Rugby, Runcorn, Southport, West London, and Yoxall. In all these cases an investigation was instituted,—in the majority of them by the employment of Mr W. H. Grey, an accountant very conversant with the business of savings banks, and recommended for the task by the National Debt Commissioners. The general result of these inquiries is quite in harmony with the obvious conclusions from the Rochdale case. Great laxity of book-

keeping; absence of any effective audit; signature of the annual returns without even cursory examination,—these are the common features of almost every case. At Dunmow (where the defalcations were small and much more than savings covered by the surplus fund), reports Mr Grey, "I find that in one instance a balance of about L.80 stood for several years in duplicate in the books, and must therefore have been counted twice over in the classified lists of those years; . . . and the required total must, on these occasions, also have been made up fictitiously." . . . "For several years most of the ledger entries were made with pencil only; and although the accounts so posted which remained open were afterwards copied with ink into another book, yet those which were closed during that period still remain only in pencil." At Newport, Isle of Wight (where the deficiency amounted to L.8156), "Fictitious documents, purporting to be signed by depositors, giving notice of their intention to withdraw a part, or the whole of their deposits, have been produced by the secretary, on the faith of which cheques have been signed by the attending director without seeing the pass-book, and without ascertaining whether such sums were really standing in the ledger or not. These cheques have been entrusted to the secretary for delivery to the depositors at any time they might call for them, instead of insisting on personal attendance during bank hours. . . . Some of the sums for which cheques were thus obtained were not standing at all in the bank books; or, having formerly stood there, had already been withdrawn; others were standing there, but no real notice of withdrawal had been given by the depositors, who never received the cheques so obtained. . . . In some cases fictitious accounts have been raised in the ledgers, and closed again immediately with fraudulent repayments, and in other cases, in which the amounts had been previously withdrawn, the dates of the real withdrawals have been altered into those of the fraudulent ones." After illustrating other fraudulent practices at this bank, Mr Grey adds that no comparison of the cash-book and the ledgers had ever been instituted, and that "the system pursued has practically left the whole control of the receipt and payment of about L.30,000 a year to one individual." But in 1849, when the failure of the Rochdale bank, and several frauds in other banks, aroused the closer attention of the National Debt Commissioners and of their comptroller to the methods pursued in the transaction of the local business, it was suggested to all the trustees of savings banks throughout the kingdom that depositors' pass-books should be called in and compared with the bank ledgers. The trustees at Newport speedily adopted this suggestion, and established the practice of having the "balance-book" (*i.e.*, the list of balances due to depositors prepared at close of each year) always on the table when the bank was open, and of comparing it with every pass-book that came in, marking both pass-book and balance-book with the attending manager's initials. This made it necessary that the balance-book should contain *all* the open accounts, which it had never done before. Mr Grey thus explains the new deception that was adopted to conceal the deficiency in the funds:—"At the annual examination both ledger and balance-book were duly placed in

Effect of
the Roch-
dale fail-
ure on the
fraudulent
methods
pursued at
Newport.

History
and Statistics.

the hands of the trustees or directors; but when they had satisfied themselves that all the balances had been correctly transferred, they shrank from the laborious task of adding together two or three thousand amounts, and invariably left that duty to the secretary . . . trusting to the correctness of his addition. . . . In point of fact the addition of each page was correct, but the total of each page was brought into a summary-page at the end; and in doing so L.1000 was dropt in one place, L.1000 in another, in the capital column, and L.20 here and L.30 there, in the interest column, with some odd money to make up the required difference, and thus the total amount was made to agree with the actual assets of the bank. In 1852 a still bolder step was taken. Instead of altering the sums brought forward in so many different places, only two sums were reduced by L.1000 each, but L.6000 was miscast in the addition of one of the columns of the summary-sheet, and the total amount was thus kept down to the required sum. From these practices it will be perceived how imperfect a system has been pursued, and how little it was calculated to prevent or discover fraud." In this Newport case the amount received from the surety of the late actuary was but L.100. The assets of the bank were L.58,622, its liabilities L.66,778. No subscription appears to have been made towards supplying the deficiency. The depositors received a dividend of 17s. 6d. in the pound.

Rugby
bank.

As to the Rugby Bank, Mr Grey reported that the former actuary "annually fabricated the classified statement of balances required by the National Debt Office, so as to make it appear that the liabilities of the bank corresponded exactly with its assets;" and as to the Farringdon Street, or "West London" Bank, that "there is no sign whatever that the ledger entries have ever been called over with the cash-journal. The consequence is, that the ledgers are full of errors;" . . . and added that "the scattered manner in which about 5000 open accounts are mixed with more than 18,000 closed ones, in twelve large volumes," increased the difficulty of investigating them. In this case, in fact, the investigation was never fully carried out. The amount due to depositors on the 20th November 1855, appeared to be L.96,577, and the total amount of assets L.95,024, leaving a gross deficiency of L.1553, a portion of which was known to exist independently of the fraud which had been committed. The reporter had good reason to tell the trustees: "You may congratulate yourselves that the deficiency is not greater than it appears to be; with the opportunities which have been afforded, and with so large a fund to work on, a great deal more mischief might as easily have been done; that which has been accomplished is not irremediable."

This, indeed, as respects the actual magnitude of the losses, might be alleged of nearly all the cases of savings bank defalcation. The trustees and managers of the S. Martin's Bank, accordingly, in their petition to the House of Commons against the proposed bill of 1853, said that "out of the 522 savings banks then established in Great Britain, there have been only six at which any loss whatever has been sustained by depositors since the year 1844 (comprising the entire period within which all the much-talked-

of failures, with the exception of the more recent case in the Isle of Wight, have occurred;)" and proceeded to show that the amount of loss sustained by the depositors of those six banks amounted in the aggregate to but L.49,373,—viz. Rochdale, L.37,433; St Helens, 4000; Spilsby, L.2436; Reeth, L.147; Poole, L.5176; Newtown (Wales), L.180; that in 14 other cases of default occurring during the like period, "all the depositors are stated to have been paid in full, either out of the assets of the banks, or by subscription raised amongst the trustees and managers, or the inhabitants of the neighbourhood where the banks were located;" and, finally, that "the percentage of these losses, when taken upon the gross total of sums received and paid by the savings banks in Great Britain, including interest credited, since their first establishment in 1817 (amounting to upwards of L.73,000,000), will be found not to exceed 1s. 4d. upon every L.100;" and they add the inquiry,—“Where, in this or in any other country, in any public or commercial institutions, involving money transactions of equal number and extent, can so just and satisfactory account of a stewardship be rendered, as is here shown?” But it must not be forgotten, that it would be at least equally difficult to produce an analogous series of defalcations so largely facilitated, if not absolutely caused, by the neglect of elementary principles of precaution and supervision. And pecuniary loss (we repeat) is not, in this matter, the just measure of public injury. Nor can it be very difficult to do in *all* savings banks (with more or less of completeness) what has already been so effectively done in the best of them. Improved organization and methods of working need to be diffused, not invented. To this part of the subject we have now to turn.¹

Organiza-
tion and
Manage-
ment.

II. ORGANIZATION AND MANAGEMENT OF THE SAVINGS BANKS OF GREAT BRITAIN AND IRELAND.

The legislation which at present governs the savings banks of the United Kingdom is contained, or chiefly contained, in the several statutes, 9 Geo. IV., c. 92; 3 Will. IV., c. 14; 5 and 6 Will. IV., c. 57; 7 and 8 Vict., c. 83; 11 and 12 Vict., c. 133; and 16 and 17 Vict., c. 45. The main provisions, and the immediate circumstances of each of these acts of Parliament, have been recited in the course of our historical summary. No consolidated statute as yet exists. It is necessary, therefore, to give a connected view of these various and scattered enactments, in their direct bearings upon the daily business of a savings bank.

I. Formation.—Savings Banks are only to be established with the approval of the Commissioners for the reduction of the National Debt, or, on their behalf, of the comptroller-general, or assistant-comptroller, acting under the said commissioners. The proposed rules of the bank to be established are to be submitted, in duplicate, to the consulting barrister appointed by such Commissioners, who, on approval, is to return one copy to the originators, and to transmit the other to the Commissioners. A fee of one guinea is payable to the barrister. The rules are then to be filed in the National Debt Office, and to be preserved in a book at the bank. The trustees are to forward a certificate of their own ap-
Formation of a sav-
ings bank.
c. 92; and
7 and 8
Vict., c. 83.

¹ John Bone, *Outline of a Plan for reducing the Poor's Rate, &c.* (1805); *The Principles and Regulations of "Tranquillity," &c.* (1806); *The Wants of the People and the Means of the Government* (1807); *The Friend of the People, &c.* (1807); Hansard's *Parliamentary History and Debates*, 1808–1857; Duncan, *An Essay on the Nature and Advantages of Parish Banks* (Edinb. 1815, and 2d edit., 1816); *A Short Account of the Edinburgh Savings Bank* (3d edit., 1815); *Reports of the Society for Bettering the Condition of the Poor*, No. 59, et seq.; Beaumont, *An Essay on Provident or Parish Banks* (1816); Rose, *Observations on Banks for Savings* (1816); Charles Taylor, *A Summary Account of the London Savings Bank* (1816); Horace Twiss, *A Tract on Savings Banks* (1816); Bowles, *Reasons for the Establishment, and Suggestions for the Formation and Management of Banks for Savings* (1817); Wm. Davis, *Friendly Advice to Industrious and Frugal Persons* (4th edit., 1817); *Annals of Banks for Savings* (1818); Woodrow, *Remarks on Banks for Savings* (1818); *Parliamentary Returns relating to Savings Banks*, 1818–1857; *Statutes at large* (1817, 1818, 1824, 1828, 1833, 1835, 1844, 1848, 1853); Pratt, *History of Savings Banks in England, &c.* (1842). [In an appendix to this volume, the Parliamentary returns from 1818 to 1841 are reprinted.] *Report from the Select Committee on Savings Banks; together with the Proceedings of the Committee, Minutes of Evidence, and Appendix*, 19th July 1858; various Reports and other papers of the savings banks specifically referred to.

Organiza-
tion and
Manage-
ment.

Manage-
ment.

9 Geo. IV.,
c. 92;
7 and 8
Vict., c. 83.

11 and 12
Vict., c.
133.

Investment
of deposits.

9 Geo. IV.,
c. 92, §§ 11
to 15.

Methods,
limitations,
&c., of de-
posits.
9 Geo. IV.,
c. 92.

Form of
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pointment, together with their signatures duly authenticated. They have then to apply for the form of instructions with respect to their appointment of a London agent, who alone is to transact their pecuniary business with the Commissioners, both in the payment and the withdrawal of deposits into or from the Bank of England.

II. *Management*.—Savings banks are usually governed by trustees and managers, at first elected by the founders, and duly registered in the Office of the National Debt Commissioners; and empowered to fill up vacancies in their own body from time to time, subject to like registration. In some banks the managers are styled a "committee," and are elected annually by the founders and other "patrons" of the bank. Such trustees and managers are not to have any salary or benefit whatever from the bank they administer. They may appoint and dismiss all needful officers for the transaction of the business, and may fix their respective salaries or other remuneration. All paid officers so appointed and all treasurers must give security to the comptroller-general of the National Debt Commission for the just execution of their respective trusts, on a form of bond furnished to the trustees by the Commissioners, and to such amount as may be determined by not less than two trustees and three managers, which determination shall be recorded on the minutes of the acting committee, and the bond be lodged with the comptroller-general. But neither Commissioners nor comptroller have any power to question the validity or adequacy of the security offered. It has been—as we have shown in our historical retrospect—expressly enacted that no trustee or manager shall incur personal responsibility, otherwise than for acts of personal and wilful neglect or default, *unless* he shall have declared in writing, under his own hand, to the National Debt Commissioners his willingness to be so responsible, which responsibility he may limit to a certain amount. This is the present state (1859) of the law as respects England and Scotland; but, *in Ireland*, every trustee and manager is liable, *ex officio*, and indefinitely, for any deficiency that may occur in the funds of his bank, unless he shall have signed a document limiting his liability to any sum not less than L.100.

III. *Investment of Deposits*.—Monies deposited in savings banks are to be invested, to the credit of the Commissioners for the reduction of the National Debt, in the Bank of England or Bank of Ireland exclusively. Trustees are empowered to make their investments with the Commissioners in any sums not less than L.50, after notice signed by two trustees, and to retain in their hands such sums only as may from time to time be required to meet withdrawals and other exigencies. The Commissioners are empowered to invest the monies paid to their account either in bank annuities or in exchequer bills.

IV. *Methods, Limitations, and Conditions of Deposits, and of their Withdrawal*.—All persons who are about to become depositors in a savings bank must state their names and residences, together with their respective profession, business, occupation, or calling; and must sign a declaration of the following purport:—

"In pursuance of an Act of Parliament of the 9 Geo. IV., c. 92, § 34, I, A—B—, of —, do hereby declare to the Trustees and Managers of the Savings Bank established at —, that I am desirous, on my own behalf, to become a depositor in the said savings bank, and that I am not, directly or indirectly, entitled to any deposit in, or benefit from, the funds of this or of any other savings bank in Great Britain or Ireland, nor to any sum or sums standing in the name or names of any other person or persons in the books of the said savings bank above mentioned." [If the depositor belong to any friendly society, he must then add:—"Save and except such benefit as I may be entitled to from being a member of a friendly society, legally established."] Witness my hand this day

of 18 . Signed by the said A—B— in pre-
sence of me —."

If the declaration so made shall be false, or if the depositor shall afterwards place money in more than one savings bank at a time, the whole of his deposits become forfeited. The *minimum* deposit is not fixed by law, but ranges in the various banks from 1s. to 5s., according to their respective regulations. The *maximum* of the deposits of any one year is L.30 (exclusive of interest thereon, and irrespectively of any withdrawals during the year); and that of the total sums receivable from any one depositor (inclusive of interest) is L.150. When, by the addition of compound interest thereto, such maximum sum shall have reached L.200, interest thereon shall cease. In respect, however, of accounts which, prior to the passing of the act of 9 Geo. IV., c. 92, viz., on the 28th July 1828, already amounted to or exceeded the sum of L.200 in the whole, interest and compound interest are still payable. Every depositor, on making his or her first deposit, is to receive a copy of the rules, and a depositor's book or pass-book, in which shall be entered such first deposit, and all subsequent deposits; all notices of withdrawal, and sums withdrawn. The pass-book must be produced at the bank whenever any business is transacted, and must also be exhibited once at least in every year for the purpose of being examined. This book is the depositor's receipt and voucher; and its production by 7 and 8 the depositor, or by any person authorized by the depositor, Vict., c. 83, § 5. is at all times, in the absence of any previous claim to the deposit-money made in writing, a sufficient authority for the repayment of money, notwithstanding the bankruptcy, insolvency, or other legal disability of such depositor. On the closing of the account, the book is to be re-delivered to the bank. Persons under twenty-one years of age are empowered to make and withdraw deposits in the same 9 Geo. IV., manner as if they were of full age. Any married woman c. 92, § 25. may receive money in respect of any deposit made by her, 7 and 8 unless her husband shall have given notice in writing of Vict., c. 83, § 12. the marriage, and shall claim payment to himself. Trust- deposits are to be invested, jointly, in the name of the trustee and of the person interested; and the receipts, or joint-receipt, of both must be given in order to the validity of a repayment, except in case of the insanity or imbecility of the person on whose behalf the deposit shall have been made; upon proof of which, repayment may be made to the trustee. Friendly societies, legally established, may invest their funds in savings banks to any amount; and charitable 9 Geo. IV., societies or institutions may deposit to the amount of L.100 c. 92, § § 27, 28. in any one year, and to the amount of L.300 in the whole, exclusive of interest. Disputes between the trustees of a savings bank and any depositor, or any executor, administrator, next of kin, or creditor or assignee, of a depositor, who may have become bankrupt, are to be referred in writing to the barrister appointed under the acts of Parliament 7 and 8 Vict., c. 83, to certify the rules of savings banks; who, on such refer- § 14. ence, may inspect books and documents, and administer an oath to witnesses; and whose decision shall be final. Deposits may be transferred to or from other savings banks upon due notice. The regulations applicable to the withdrawal of deposits differ, more or less, in the various banks. At Glasgow, for example, no notice is required. But usually a notice of from seven to twenty-one days, according to the amount involved, must be given of the claim to repayment.

V. *Interest on Deposits*.—Since the 20th of November 1844, the rate of interest payable by the Commissioners for the reduction of the National Debt to the trustees of savings Interest on banks has been fixed at L.3, 5s. per cent. per annum, and deposits. the maximum rate to be paid by the banks to depositors at L.3, 0s. 10d. per cent. per annum. The precise rate per cent. assigned to depositors depends, therefore, on the rules of each 7 and 8 bank respectively, provided always that it shall not exceed Vict., c. 83, L.3, 0s. 10d. on deposits invested with the National Debt Com- § 2.

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9 Geo. IV.,
c. 92, § §
35, 36;
3 Will. IV.,
c. 14, § 29.

9 Geo. IV.,
c. 92, § §
25, 26;
7 and 8
Vict., c.
83, § 12.

9 Geo. IV.,
c. 92, § §
27, 28.

7 and 8
Vict., c. 83,
§ 14.

Interest on
deposits.

7 and 8
Vict., c. 83,
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missioners; and the precise rate actually received by depositors depends on the methods of calculation, which in various banks have a wide range of difference. At Edinburgh, for instance, interest at L2, 17s. 9d. per cent. is allowed on sums of 1s., 2s., 3s., 4s., and 5s., and on multiples of 5s., not only by months and weeks, but by portions of a week. Thus, the date of "Tuesday" in each week is used for *Monday, Tuesday, and Wednesday*; and that of "Friday" for *Thursday, Friday, and Saturday*; and interest is credited wherever it amounts to the tenth of a penny. On Mondays or Thursdays the depositor of course loses one day's interest; on Wednesdays or Saturdays he gains one day's interest. At Cork, again, interest at the rate of L2, 17s. 0 $\frac{3}{4}$ d. is calculated every four days on all deposits of 5s. and upwards; no sum less than 5s. being received at that bank. At Manchester, depositors receive L3 per cent. per annum on every entire sum of 10s. sterling, calculated only by calendar months, and from the 20th day of each month; no interest being allowed on any less sum than 10s., or on any fractional part of 10s., or for any less period than one month. Finally, the Perth savings bank—a quite exceptional instance—paid interest to most of its depositors, in the year 1857, at the rate of L4, 5s. per cent. per annum, having transferred more than four-fifths of its capital from the National Debt Commissioners to the Union and Central Banks of Scotland, under the powers of a special proviso introduced into its rules in the year 1847 (at which period a very high rate of interest was given by the Scottish joint-stock banks), in these terms:—"It shall be lawful for the trustees of this bank, at the request of any depositor or depositors, to invest the monies deposited, or to be deposited, by them, in any of the banks of Scotland, incorporated by statute or royal charter, for the benefit of the several depositors, under the powers contained in the 12th section of the Act of the 9 Geo. IV., c. 92; and the interest to be paid on the deposits so invested will be fixed from time to time by resolutions of the committee of management, and which will be binding on the depositors without the necessity of the rate of interest being entered in their pass-books. The interest fixed by the committee of management will be computed yearly, up to the 20th day of November in each year, and added to the principal; the whole sum bearing interest thereafter." The average rate of interest paid by English and Welsh banks to their depositors is L2, 18s. 9d.; that paid by Scottish banks, L2, 17s. 9d.; and that paid by Irish banks, L2, 16s. 5d.; the average of the United Kingdom being L2, 18s. 8d.

Annuities.

3 Will. IV.,
c. 14;
7 and 8
Vict., c. 83,
§ 8.

VI. *Annuities*.—The trustees and managers of savings banks may receive from depositors, or from any other persons, any sum or sums of money (subject to the limitations hereafter mentioned), for the purchase of government annuities, immediate or deferred. All such sums received shall be entered in a book provided for that purpose, in the presence of the payer, who shall sign a declaration, in the form directed by the Commissioners for the reduction of the National Debt, that he or she neither possesses nor is entitled to any annuity or annuities under the statutes 3 Will. IV., c. 14, and 7 and 8 Vict., c. 83, exceeding in the whole, with the annuity now applied for, the sum of L30 per annum. The purchaser shall then receive a book containing an abstract of the rules, with a certificate of the contract for the annuity, signed by two trustees or managers, and also an account of the money paid, attested by the signature of the actuary. No annuity can be contracted for upon the life of any person who is under the age of fifteen; and no annuity or annuities can be possessed by any one individual exceeding, in the whole, the sum of L30 per annum; nor can any annuity be granted of less amount than L4 per annum. Should any individual become possessed at any one time of annuities granted under the provisions of the Acts of 3 Will. IV., c. 14, or 7 and

8 Vict., c. 83, exceeding in the whole the sum of L30 per annum, such annuities will immediately cease and be forfeited. Provided, nevertheless, that any married person may purchase or be possessed of an annuity not exceeding the amount last named, although an annuity of like amount may have been granted to or may be possessed by the wife or husband of such person. All contracts for annuities must be sanctioned by the National Debt Commissioners, for which purpose proof of age must be furnished to the managers of the savings bank contracted with. The money received for annuities must be paid to the Commissioners, to whom, fourteen days previous to the demand for payment of any life annuity, proof must be afforded of the existence and identity of the annuitant. All annuities when due are payable by two equal half-yearly payments; namely, on the 5th of January and 5th of July, in respect of all purchases which were completed at any time during the quarter ending on the 10th of the preceding October; and on the 5th April and 10th October, in respect of all purchases which were completed at any time during the quarter ending on the 5th of the preceding January; and so, conversely, with respect to purchases completed during the other quarters of the year. No annuity thus purchased can be transferred or assigned by the purchaser, so as to enable the assignee to receive the same during the purchaser's lifetime. If the intending purchaser of a deferred annuity, having made one or more payments on account, shall give due notice of his inability to continue such payments, the amount of the payments actually made shall (but without interest) be returned to such intending purchaser; and, in like manner, if any person who shall have contracted for the purchase of a deferred annuity shall die before the said annuity shall have become payable, the amount of his previous payments shall be repaid to his executors or administrators without interest. The acts recited, together with that of 10 Geo. IV., c. 24, §§ 40-44, impose heavy penalties for false statements, or for receiving annuities after the death of the person entitled.

VII. *Bookkeeping*.—The bookkeeping of savings banks will be best illustrated by describing *seriatim* the systems severally pursued at some of the principal banks of the United Kingdom:—

(1.) *St Martin's Place Savings Bank, London*.—Three distinct sets of journals or day-books are kept: the first, that of the auditors; the second, that of the cashiers; the third, that of the ledger-clerks; each of which sets records the entire business of the day, and all of which are compared at its close. In addition to his specific journal, each clerk has a certain number of ledgers, each of them corresponding with a certain numerical series of depositors' books. No other clerk is allowed to make any entry in these, without the express permission of the comptroller or weekly auditor. All "cash transactions with depositors," proceed the rules relating to bookkeeping (as given in evidence by Mr Boodle, the comptroller, before the Commons' Committee of 1858), "shall be first entered in the clerks' journals, cash-books, and managers' [elsewhere called auditors'] journals; and such books at the close of the business of each day shall be called over, and compared with each other by the weekly auditors and clerks, and all variations be rectified before the clerks be dismissed; and after the depositor's book has left the office, no alteration shall be permitted in the clerks' journals or cashiers' books, without reference to the managers' journal, and a careful examination of the number, name, and amount. Any alteration required to be made in a depositor's book is to be referred back to the ledger-clerk, to make the necessary correction in his journal. The ledger-clerks shall post the several entries from their respective journals into their ledgers, carefully examining the name as well as the number of each account, inserting at the same time in the 'ledgers'

Organiza-
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check journal' the number of each account in which the transaction is so posted. The cashiers, each taking another's division, shall enter from the ledgers into the separate ledgers' check journals, against the number of each account, the amount so posted, whether receipts or payments, checking the accuracy of the additions or subtractions; such entries in the check journals being first carefully examined, both as to the numbers and the amounts, with the corresponding entries in the cashiers' journals, and then cast, and the castings checked; the officers examining such entries and checking the castings signing their initials in the check journal; every variation either in numbers or amounts, before correction, being carefully examined with the managers' [elsewhere called auditors'] journals, and all errors being noted in a separate 'error-book,' kept for each division, and weekly examined and checked by the chief cashier and accountant. The total of the entries so made from the ledgers into the separate ledgers' check journals shall be collected by the comptroller, and ascertained, by a weekly examination, to agree with the total amounts of each week's receipts and payments." Further, with respect to the comparison from time to time of depositors' books with the ledgers, another rule—the twenty-fourth—directs, "That in all cases, when a depositor's book shall be first brought to the office after each 20th of November, the balance standing in the depositor's book on such 20th of November shall be ascertained by a careful examination, and by a separate addition of the interest extracted from the ledger account, to agree with the checked balance in the ledger to such period; and to certify to such correctness, and to record the date of the production of the depositor's book, the ledger-clerk examining the same shall sign his initials against such balance in the depositor's book, and also in the ledger." And the 25th rule directs, "That upon any variance, occasioned either by an error of commission or omission being found to exist between the balance in a deposit-book and the ledger, the same be at once reported to the comptroller, or in his absence to the chief cashier and accountant, before the deposit-book be returned to the depositor; and if the error shall be found to be in the ledger, a record shall be kept of the same, explaining the nature and particulars of the error occasioning such variance." It must be added, however, that *no means are taken to ensure the production from time to time of the depositors' books*, and that, in fact, a very large number remain unexamined, uncomparred, and unseen for many years.

Edinburgh
savings
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(2.) *Edinburgh Savings Bank*.—The bookkeeping of the admirably managed bank at Edinburgh was thus described to the Commons' Committee of 1858 by Mr Maitland, its honorary treasurer, and the author of an excellent tract on the accounts of savings banks, published in 1841:—Depositors are received by (1) the *actuary* or his assistant, who, having obtained satisfactory answers to the needful inquiries, makes the requisite entry in the depositor's book, and passes it on to (2) the *accountant*, or his assistant, who makes the new entry in the appropriate ledger account, with the interest—to credit for a deposit, or to debit for repayment—to the 20th November next following, puts the check mark, and passes the book on to (3) the *cashier*, who has before him "two cash-books, one for division No. 1; the other for No. 2 of the ledgers," makes the new entry in his cash-book, initials the depositor's book, and passes it on to (4) the *teller*, who enters the number and sum—debtor or creditor—in his cash jotting-book, announces the depositor's name and the new-made entry, initials or gets initialed, receives or pays the amount accordingly, and returns the depositor's book to the depositor. Thus far, it will be seen, the entries in the bank's books have all been made from the depositor's book: that book has been confronted with its duplicate in the ledger, and the depositor has approved of the last entry by acting on it. No money

can be received or paid *until* these entries are so made. Mr Maitland adds, that about 250 depositors can be thus disposed of in one hour. Then, when the bank-door is shut to the public for the day: *1st*, The cash is counted; the cash-book-keeper and the teller balance with each other, and each signs his own book; *2dly*, The accountant disperses to their proper sections the reference numbers or accounts that day operated upon; and by these, from the ledgers (which are all kept in sections of thousands), obtains the individual sums; these sums he transfers to the section check-sheets, and thus has obtained in sections, from the ledgers, a balance with the cash-book to the close of that day. On each Saturday this result is recorded by sections, in a formal way, for the weekly report; in the ledgers, however, an error of one kind—namely, of addition or subtraction—might escape this check, as well as the daily check, by direct inspection; therefore, *3dly*, The ledgers are brought, once in every quarter, to a general trial balance; and *4thly*, comes the general annual balance at the 20th of each November for the annual return.

The reader will perceive that the Edinburgh system bases the bank accounts upon the pass-books; ensures the reciprocal check of four several officers in the record of each transaction; and provides, first, a weekly summary; secondly, a quarterly trial balance; thirdly, a general annual balance. Nor have the benefits of this system been confined to the place of its birth. The improvements made at Edinburgh have been copied by other savings banks, and sometimes with modifications which have been themselves further steps in advance.

(3.) *Manchester Savings Bank*.—At Manchester the depositor's pass-book goes through the hands of *five* several savings clerks on the receipt of each deposit, and of *four* on occasion of each repayment; the receipt of the deposit-money occurs at the first manipulation of the pass-book instead of the last, as at Edinburgh; the receiving-clerk and the pay-clerk are always different officers; and a monthly audit is made by a professional accountant, not attached to the staff of the bank. The routine of receiving runs thus:—(1) The *counter* or *receiving clerk* takes from the depositor the money to be deposited and also his pass-book, in which he enters the amount both in figures and in words, and then hands the book and the money to (2) the *cashier*, who receives deposits, but makes no repayments. This officer enters the amount and the depositor's progressive number in the actuary's cash-book, signs the pass-book with his name in full, and then transmits it to (3) that particular *ledger-clerk* within whose section of progressive numbers it falls, who, first, posts the entry from it into the sectional ledger, and initials the pass-book to indicate such posting; and, secondly, enters in the ledger the amount of interest which will have accrued on this deposit up to the 20th of the following November. The pass-book proceeds (4) to the *cash-book-keeper*, who enters in the cash-book the depositor's number and name, and the amount of the deposit; he also writes his initials in the pass-book, and then hands it (5) to the *pay-clerk*, who calls out the name and the amount deposited, and returns the book to the responding depositor. The routine of repayment runs thus:—(1) The *counter* or *receiving clerk* takes from the depositor his pass-book, writes in it the date and the sum to be repaid, and hands it to (2) the *ledger-clerk* (as above), who deducts that sum from the depositor's ledger-account, and writes beneath it the balance, if any, remaining in the bank; sending on the pass-book (after attaching his initials to the entry) to (3) the *cash-book-keeper*, who enters in the cash-book the amount to be repaid, and adds his initials in the pass-book, which is then handed to (4) the *pay-clerk*, who takes a receipt from the depositor in a book kept on the counter for that purpose, pays the amount, signs the pass-book, and returns it to the depositor.

Organiza-
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Organiza-
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As soon as the bank has closed its doors to the public, a daily balance is taken by the following process:—The deposits and the repayments of the day are entered on prepared "sectional slips," at present forty-two in number (the number of open accounts at the date of the last return having been 41,398),—each representing a section of the accounts in sequent thousands of their progressive numbers, and a certain group of them corresponding precisely with each of the "sectional ledgers." These prepared slips—each having its column for receipts, its column for repayments, and its initial thousand printed upon it—are distributed amongst the clerks, to whom the actuary calls over from the cash-book the whole of the transactions of the day. When, for example, he calls over the deposit made by a depositor whose pass-book is numbered 21,225, the clerk who has the slip headed "21,000" writes down "225" in the margin, and so with the remainder of the numbers, as respects both the receipts and the repayments of the day. When these have been wholly called over each clerk takes his group of slips to the corresponding sectional ledger, and copies therefrom, upon the slips, each *amount* therein entered against its appropriate progressive number, using of course the deposit-column for sums received, and the repayment-column for sums repaid. The total of each column upon each slip is then handed to the actuary, and is proved to be correct when it agrees with the aggregates of deposits and repayments of the day, as recorded in the cash-book. Each day's account being added to the aggregate of all the preceding days in the current financial year, every sectional slip shows the total amount deposited and the total amount repaid upon its specific thousand of sequent accounts during the year. It is, therefore, a cheque both on the accuracy of the daily posting and on the periodical balance-sheets, and is so taken that, whilst every clerk works in its preparation, no clerk reviews his own entries. In addition to these precautions, an independent monthly audit is made by a professional accountant, who examines every cash transaction between the depositors and the bank, and between the bank and its treasurer, and every payment for expenses, and makes a monthly report to the trustees.

(4.) *Cork Savings Bank.*—The banks of Cork, Limerick, and Carlisle have a method of bookkeeping which differs in some important particulars from those which have been mentioned, and is known as the "Craig system," having been devised by Mr John Craig, manager of the Cork Branch of the Bank of Ireland, and treasurer of the savings bank there. Mr Craig's own account of it is as follows:—"The first and distinguishing feature upon which all the others depend . . . is, that we amalgamate the interest with the principal, besides calculating it in the prospective form; we amalgamate the interest with the principal on every occasion either of a receipt or a payment. That is one point. The second point is, that each separate sum received is, with its interest, at once added to the balance which stands in the pass-book, and each repayment, with interest thereon, is deducted. . . . Further, we have duplicate or 'check-ledgers,' posted entirely by the auditor; no other person is ever permitted to make a figure in them. They are kept in a very concise manner, occasioning very little trouble, . . . from a check-journal also kept by himself. By the keeping that check-ledger, after the balance of the 20th November has been abstracted by the bookkeepers and clerks from the deposit-ledgers, the auditor is able to make a balance of all the accounts in the bank, and to make out a book showing the amount due upon each account, which book is laid upon a table in the hall, and every depositor that enters the bank has nothing to do but to look at that book, refer to his number, and see whether his balance is accurate or not. That has the advantage of being a double balance, and made from other materials. . . . Then, besides that, there is a 'separate ledger balance-book' kept . . . not

made up directly from the cash paid and received, but always by the difference between the past and the present balance; . . . the auditor's book consists of two columns,—in the first he enters the past balance, and in the next the present balance. . . . I have also to state that the check which is kept upon the cashier consists of a book which has four columns. In the book he enters the past balance, the cash, the interest, and the present balance; at the end of the day every page is toted up. If you add the receipts of cash and the interest to the past balance, that will make the present balance; if it be repayments, then if you add the cash and interest to the present balance, it will be the past balance." Such is Mr Craig's exposition of his methods, as given to the Select Committee of 1858.

VIII. *Accounts and Returns to National Debt Commissioners.*—At the close of every four weeks the trustees of every savings bank have to return to the Commissioners for the reduction of the National Debt the receipts and payments of each week severally, the expenses of management, and the certified balances. Complete annual accounts are also to be rendered, made up to the 20th of November in each year, and transmitted to the Commissioners within nine weeks next thereafter. If the trustees neglect to render such accounts within the prescribed term, the Commissioners are empowered to close their account, and also (by another enactment) to publish the name of the defaulting savings bank in the *London Gazette*. A copy of the annual account is to be affixed in the savings bank office, and every depositor is entitled to receive a printed copy on payment of one penny. The Commissioners are to lay an abstract of the accounts rendered annually before Parliament; and they or their comptroller may require from trustees a detailed statement of all the expenses whatsoever which shall have been incurred in the management of any bank. In 1858 the annual accounts for the preceding financial year were due by law, on or before the 22d of January. On that day 502 banks had duly lodged them at the National Debt Office, and 102 banks had yet to furnish them. Of these, 45 were furnished during the remaining days of January; 49 others between the 1st and 22d of February; and, at the last-named date, 8 were still outstanding.

IX. *Dormant Deposit Accounts.*—There is no provision in the law of savings banks of the United Kingdom for the extinction of accounts lying dormant, however long the interval which may have elapsed since the last operation upon them, or however small the balances which they may respectively show. No complete returns, with respect to such accounts, have ever been prepared; but in 1851 Sir A. Y. Spearman, comptroller-general, called for a partial return of this kind, selecting 47 of the larger banks for the purpose, by which it appeared that in those 47 banks only there were about 52,000 accounts, which had been neither increased (otherwise than by accretion of interest) nor diminished during the five years ending on the 20th November 1850, and that the amount standing at the credit of those accounts was L.665,000.

X. *Separate Surplus Funds.*—Prior to the passing of the Governing Statute of 1828, the trustees of savings banks were authorized to make rules for the application of increased stock or property; but no application of such surplus funds was to be made until ten years had elapsed from the establishment of the bank to which they belonged; one-half of such surplus was always to be reserved to answer deficiencies, and thirty days' notice was to be given to the Commissioners of any intended appropriation. The statute of 1828 directed that, within six weeks after the 20th November next following, the trustees should ascertain the amounts of their respective surplus funds, and appropriate the same in the manner provided for by their respective rules; and in the event of there being no such provision, then according to the judgment of the trustees

Organiza-
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Accounts
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9 Geo. IV.,
c. 92, § 46;
7 and 8
Vict., c. 83.

3 Will. IV.,
c. 14.

Dormant
deposit
accounts.

1 Geo. IV.,
c. 83; and
5 Geo. IV.,
c. 62.

9 Geo. IV.,
c. 92.

Cork sav-
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Improvements in Organization and Management.

in general meeting assembled; and it was then enacted that from 20th November 1828 the surplus was to be paid over annually to the Commissioners, and that trustees and managers might claim and receive from the Commissioners, for the purposes of the institution, upon such certificate as the Commissioners should appoint, any sum of money equal to the whole, or to any part of the principal monies which might have been discharged from the account of the savings bank concerned, as surplus.¹

III. SUGGESTED IMPROVEMENTS IN THE ORGANIZATION AND MANAGEMENT OF THE SAVINGS BANKS OF GREAT BRITAIN AND IRELAND.

(1.) Consolidation of the savings bank statutes.

The elaborate inquiries of the Commons' Committee of 1858, although they have not as yet led to any amended legislation, appear sufficiently to have established certain facts and principles which may usefully govern such legislation, whenever the subject shall be fairly grappled with by Parliament hereafter. Amongst all the varieties of opinion which the recent inquiry elicited, no one will be found to have affirmed the advantage of leaving the law of savings banks scattered, as it is at present, in a multitude of statutes, many of them partially repealed, and some of them conflicting. It may be taken, therefore, as admitted on all hands, that, as a first point of improvement, the law of savings banks should be consolidated into a single act for the whole kingdom.

(2.) Creation of a special commission for the general control of savings banks.

Again, however opinions may differ on the question, whether the terms of the existing statutes do or do not really confer on the Commissioners for the reduction of the National Debt, or on the Chancellor of the Exchequer as chief acting Commissioner, that large control over the investments of savings banks, which it has been in practice, for more than thirty years past, assumed that they confer, there is small likelihood of disagreement on the recommendation of the Select Committee of 1858, that, for the future, the powers and duties of the Commissioners—be they whom they may—entrusted with the superintendence of savings banks and the investment of their funds, shall be strictly and accurately defined in the consolidated statute; and that no sale, transfer, or conversion of savings bank stock shall thereafter be permitted, except for savings bank purposes, nor any addition be made to the funded national debt, without the sanction of Parliament. It may be true that in 1835, by Lord Althorp, and again in 1844, by Mr Goulburn, the sale of savings bank stock provided a fund “under the safeguard of which great reductions were made in the interest of the national debt, and the nation was relieved of an annual charge of many thousand pounds.” It may also be true that, at a much more recent period, the purchase of exchequer bills on savings bank account furnished the government with necessary supplies at a critical moment—the commencement of the Crimean war—when a loan could not have been obtained, except at a serious discount. But it is equally true that the power of thus relieving the exchequer “withdraws from the cognizance of Parliament large financial transactions during the time when they are in a course of being accomplished; and also occasions discredit to savings banks by putting them in the light of institutions burdensome to the country, when, in truth, it is plain that if their money were duly invested in consols and bills as it accrued, little or no deficiency would now exist.”² The Committee recommends that for the future the National Debt Commissioners shall be relieved from the office of investing the monies of savings banks, and that this duty shall be confided to a new

commission of five members, of whom the Chancellor of the Exchequer and the Governor of the Bank of England shall always be two; the other three being nominated by the crown, and one of them being a paid member; that the expenses of the commission shall be paid out of the surplus funds belonging to the banks, that fund being invested in public securities, and the interest carried to its account. The Committee further recommends that three members of this commission shall be a quorum; that its ordinary meetings shall be held at fixed intervals; that all rules and regulations relating to the receipt and payment of monies, and the purchase and sale of stocks and other securities, shall be framed at meetings specially convened, and be subject to the approval of the Lords of the Treasury; that no sale, purchase, or variation of securities shall be made except when required for the purposes of the savings banks; and that no exchequer bills held by the commission shall be funded without the special authority of an act of Parliament.³

The amount due to the trustees of savings banks on the 20th November 1857 was L.35,255,722; the amount of the securities held by the National Debt Commissioners, at the same date, was L.34,399,082, Os. 3d., in addition to which they held an uninvested balance of L.53,200, 2s., making an aggregate of assets amounting to L.34,452,282, 2s. 3d., against an aggregate of claims amounting to L.35,255,722, which leaves a deficiency of L.803,439, 17s. 9d.⁴ Whilst, on the other hand, it has been shown, by the figures which we have already had occasion to quote in a preceding section of this article, that an excess of interest has been paid or credited by the Commissioners to the banks, beyond that received by the Commissioners *upon their own investments*, an excess amounting, in the aggregate, to L.2,774,051, 9s. 3d. On this point, the Committee expresses its opinion that the payment of interest and expenses of management ought not to be the source of annual loss to the State, and that by investing a portion of the capital of the savings banks in such parliamentary securities as will yield a larger return than 3 per cent., and by applying to the purpose of a “management fund” the interest of the present unappropriated surplus, and of *all dormant claims after the expiration of ten years*, the present rate of interest (viz. L.3, 5s.) might be provided, all expenses of the commission be defrayed, and even “a balance put by yearly, towards liquidating the deficiency arising from the transactions of former years.” Be this as it may, a review of all the circumstances of the case will, we think, go far to justify the claim advanced on the part of the banks to a parliamentary liquidation of that deficiency, irrespectively of mere expedients and possibilities.

The question as to the parliamentary replacement of the money of depositors in cases of defalcation is a widely different one. However generally the impression may have prevailed that government is in some way bound to make good such losses, it is an impression unwarranted by the existing law. On this point, however, says the Committee of 1858, “It is difficult to maintain that Parliament *having released local trustees from their liability*, should not be a “Parliament bound to provide some other guarantee for the money of depositors who have no share themselves in the management of their bank;” and it then adds the opinion that “an alternative ought to be given and freely offered to the choice of trustees, either to secure the guarantee of Parliament upon such conditions as the commission shall prescribe, or *themselves to undergo the same liability in regard to savings banks as was enacted in the 9 Geo. IV., c. 92, § 9.*”

Improvements in Organization and Management.

(3.) Prohibition of any sale or variation of stock for other than savings bank purposes.

(4.) Investment of a portion of savings bank capital in Parliamentary securities yielding higher interest than consols, &c.

(5.) Transfer of dormant accounts after ten years' lapse.

Opinions expressed as to replacement of defalcations, and guarantee.

¹ Rules, Regulations, and Reports of the principal banks; *Minutes of Evidence taken before the Select Committee of 1858*, passim.

² *Report from the Select Committee on Savings Banks*, p. ix.

³ *Ibid.*

⁴ The Commons' Committee states this deficiency at L.856,642 (*Report*, &c., p. ix.), but that statement overlooks the uninvested balance. Compare the stock accounts printed in *Appendix to Report*, p. 349.

Improvements in Organization and Management.

Proposed re-enactment of liability clause, 9 Geo. IV., c. 92, § 9.

This proposition does not go far. The Act of the 9th of Geo. IV. simply declares that no trustee or manager shall be personally liable, except for his own acts and deeds, and not then, *except in cases of wilful neglect or default.*" This enactment it was which limited the responsibility of trustees, although neither it nor any subsequent enactment can be truly said to have "released local trustees from their liability." Mr Tidd Pratt's definition of the existing law, as given in evidence before the Committee, was thus expressed:—"In the case of an English trustee or manager, he is not liable to make good any deficiency, unless he has signed a paper limiting the amount; and he may limit the amount. In Ireland, every trustee and manager is liable for any deficiency, except he has signed a document limiting his liability, and which limit must not be less than L.100." These words can have no reference whatever to cases of "wilful neglect or default." To revert to the enactment of 1828 (9 Geo. IV., c. 92, § 9) would, of course, remove the anomaly, whatever its extent, between the law for English and that for Irish banks, but would in no way impose on trustees that personal liability for the default of their officers, which was asserted from the bench of the Bankruptcy Court in 1826. That the existing law is doubtful and confused, the evidence of the consulting barrister under the acts abundantly proves.¹ That to return to the liability clause of the 9th Geo. IV., c. 92, would not, of itself, have the effect the Committee attributes to it will, we think, become equally obvious on closer examination.

The evidence given by the actuaries of the principal banks of the United Kingdom, however it may differ on minor points, entirely accords on the fact that the receipt and payment of deposits may be so regulated both in large and small banks as to make fraud exceedingly difficult, even in isolated cases, and impossible in systematic continuance. The regulations by which this high degree of security has been here and there attained should be universally prescribed by law, and enforced by an official inspection and audit, wholly independent of the individual banks. On the report of the inspectors and the effectual audit of the accounts by the Commissioners, each bank should receive a special parliamentary guarantee for the whole amount of its deposits.

Prescribed rules for the receipt and payment of deposits to be uniformly observed, under penalty; frequent independent inspection and audit of banks by officers of the Savings Bank Commission; such an appropriation of surplus income as may, in course of time, form a guarantee fund against casual and unavoidable losses; publication and diffusion of full and distinct accounts of the progress of savings banks;—these are measures which will go far to preclude malversation, and to maintain the invaluable public advantages of savings banks in their integrity. It will also be desirable to include in the new act an express prohibition of the use of the term "Savings Bank" by any banking partnership, or other persons, not embodied under the act. It was shown in the evidence of 1858 that banking concerns in Scotland—of unhappy celebrity—were in the habit of designating their branches as "savings banks," and did actually receive deposits from persons, who believed that they were dealing with establishments legally authorized to

receive them. The Western Bank of Scotland went to the length of issuing pass-books, which bore the name, "National Security Savings Bank."²

If we include the funds of friendly societies, a sum of L.37,000,000 is already so invested, that any portion of it may be demanded from the State at any moment of pressure. The possibility of public inconvenience thus arising was one of the points which came before the recent Committee. Its deliberations on that topic resulted in the recommendation to Parliament, that whenever any deposit shall amount to L.150, the Commissioners may, with the consent of the depositor, invest a portion of that deposit in the purchase, on his behalf, of L.100 stock, the interest on which shall be received by the Commissioners, and be placed to the depositor's account.

IV. SAVINGS BANKS OF FOREIGN COUNTRIES.

In the brief space which remains for this concluding section of our article, our summary notices of foreign savings banks must needs be restricted to those countries only in which they have attained a wide development; and, even of these, a prominent part must sometimes be allowed to stand for the whole. Thus New York must represent the United States, and Prussia must almost suffice for Germany at large.

America possessed savings banks within a very few years of their solid establishment in Great Britain. The earliest, for example, of the sixteen banks which now exist in the city of New York dates from 1819. The aggregate amount of the 223,860 deposits paid into these banks during the year 1856 was L.3,465,512 sterling. The withdrawals during the same period amounted to L.2,707,261, showing an excess of payments over repayments amounting to L.758,251. The total amount of the accumulated deposits of 167,250 depositors, at the close of that year, was L.7,564,569; which, taking the population at that date to have been 850,000 persons, gives an average deposit of L.8, 17s. 10d. to each head of population, and of L.45, 4s. 6½d. to each depositor: the depositors being nearly as one in five of the entire population. In New York the annual expenses were L.30,957; being 17s. 7d. per cent. on the receipts of the year, and 8s. 2d. per cent. on the aggregate of the deposits held at its close.

The rates of interest allowed by these New York banks to depositors vary. The largest banks allow 5 per cent. to depositors on sums not exceeding 500 dollars, and 4 per cent. on larger sums. Some banks allow 6 per cent. and 5 per cent., respectively, on like sums. The rate is by law determinable according to the actual profits upon the investments of each bank, which must be made either (1) in the public stocks (of the Union, of the respective States of the Union, or of the incorporated cities of the State of New York); or, (2) in bonds and mortgages on real estate, worth double the amount lent upon them. Investments of the latter class usually realize from 6 to 7 per cent. per annum. Most of the savings banks, it is stated, restrict their investments on bond and mortgage to one-half of their aggregate deposits. As the law does not permit a greater accumulation of surplus than 10 per cent., some banks pay extra interest to their depositors from time to time, as their

Savings Banks in Foreign Countries.

(10.) Power to the Commissioners to purchase stock on depositors' account, with consent.

United States of America,—New York.

¹ e. g. "69. Chairman.—Therefore, am I to understand that every Irish trustee is liable to an unlimited extent, unless he has limited it voluntarily to the sum of L.100? Yes.

"70. Whereas, in England and in Scotland, no trustee is liable, unless he has signed a paper declaring that he is willing to be so? Yes.

"71. That is the state of the law? Yes; I have put it shortly thus: in Ireland, the liability of trustees and managers for deficiencies previously to the 28th July 1828 is unlimited, unless by the rules the trustees and managers had limited their liability.

"72. . . . For deficiencies in Ireland between the 28th July 1828 (which is the date of the Act of 9 Geo. IV.) and the 9th August 1844, the liability is limited by the 9 Geo. IV., c. 92, § 9. Since the 9th August 1844 until 20th November 1848, the liability is the same as in England. Since the 20th November 1848 the liability is under the 9th Geo. IV., c. 32, § 9, except the trustee or manager has availed himself of the power to limit his liability under the 11th and 12th Vict., c. 133."

² Minutes of Evidence before Select Committee on Savings Banks (Mr W. Meikle), 2412-2436.

(6.) Legal prescription of rules.
(7.) Official inspection.
(8.) Parliamentary guarantee.

(9.) Prohibition of the unauthorized use of the title "savings bank."

Savings
Banks in
Foreign
Countries.

profits augment. The amount of deposits is not ordinarily restricted; but in some of the New York banks any one account is limited to L.200, depositors being free to open as many accounts as they please, either in one bank, or in more banks than one.

According to a report presented to the Legislature of New York in 1858, the total amount of deposits in all the savings banks of the State, on the 1st of January of that year, was L.8,284,534, and the total amount of their assets L.8,777,198, showing an aggregate surplus of L.492,664. Of the collective assets, L.4,046,917 was invested in freehold securities, and L.3,901,838 in stocks; L.657,488 was cash deposited, by way of reserve, in various joint-stock banks; and L.170,954 was cash in the hands of the respective treasurers.

In drawing the attention of the recent Committee on savings banks to these statistics of the New York banks, Mr C. W. Sikes, of Huddersfield, added, that during the severe commercial crisis of 1857, "the savings banks weathered the storm without one single suspension; and that, in consequence of their having invested their money judiciously and safely, they were enabled to realize sufficient, without any sacrifice of principal, to meet every claim made upon them."¹

France.

Early history of
French
savings
banks.

The earliest French savings bank is that of Paris, which was incorporated on the 29th July 1818; Bordeaux followed the example in 1819, and Marseilles in 1821. All these banks were founded as joint-stock companies, and came, consequently, under the supervision of the Council of State. That body, however, having repeatedly expressed the opinion that a municipal organization was better suited to the character and objects of the new institutions, the fourth (in order of date) of the French savings banks was established by the town council of Troyes in August 1821. This plan has since been very generally followed; and for many years past it has been the only legal one. Three several banks—those, namely, of Avignon, Metz, and Nancy, and those only—have been formed upon a third method, being made branches of the *Monts-de-Piété*, or public pawnbroking establishments.

Until the commencement of the year 1834, the progress of savings banks in France was slow. They were then (after the lapse of sixteen years) only twenty-seven in number; but during that year the number was raised to seventy-five. Early in the following year (1835) the legislation affecting them was revised and codified; and, in its course, eighty-three new banks were founded, making the total number 158, with 121,527 depositors, and an aggregate deposit of 62,185,676 francs (L.2,487,427).

The nine years which succeeded the improved legislation of 1835 carried up the total number of banks to 347; that of depositors to 638,984; and the aggregate deposits to 392,552,467 francs (L.15,702,098). This very rapid growth was thought to need some legislative check; the maximum of deposits, on any one account, was therefore lowered, by a law of the 22d June 1845, from 3000 francs to 1500; the holding of more accounts than one was prohibited, and increased facilities were given for the conversion of deposits into stock, for the individual account of the depositor. On this last-named head, the desired result was speedily in course of attainment. At the close of 1848, the Paris bank alone had so invested L.102,392. At the eve of the Revolution of 1848, the banks were 354 in number, with 175 branch banks; the depositors were 636,951; and their deposits 358,405,924 francs (L.14,336,237). The "Days of February" brought a run upon the savings banks, and induced, on the 9th March, a decree of the Provisional Go-

vernment, raising the interest from 4 to 5 per cent., and declaring the banks to be placed "under the guarantee of national faith." But the run continued. Two days later another decree suspended cash payments, as respected all accounts exceeding 100 francs; and offered, instead, one moiety of the amount in treasury bonds, at four or six months' date, and the other moiety in 5 per cent. stock at par. The bonds at this time were at a discount of from 30 to 40 per cent.; the 5 per cents. were quoted at 73, and were rapidly declining. The Constituent Assembly, in July, decreed the total and immediate conversion into stock of all deposits anterior to 24th February, and exceeding 80 francs, the price at which the conversion was to be effected. In November, another decree opened a special "compensation account" for every depositor concerned, which credited him with the difference between the price fixed in July, and the average market price (*i.e.*, 71 francs 60 cents) of the three preceding months. "This measure," said M. Francois Delessert, president of the Paris bank, "was not merely an act of reparation; it was the salvation of the savings banks."

The immediate operation of these various enactments cannot be precisely shown. The ordinary returns for 1848 were never published. Those for 1848 and 1849, together, did not appear until 1853, and then only in a modified and incomplete form. But we gather from those returns, that during the two years above named, the accounts of 340,677 depositors were closed, and that 189,528 new accounts were opened. The aggregate amount of deposits converted into stock in the course of 1848 was 211,426,336 francs (L.8,457,053); in 1849, 101,813,184 francs (L.4,072,527). The aggregate of deposits in the savings banks at the end of 1849 was 73,917,556 francs (L.2,956,702). It appears that at this date, twenty banks only had yet to complete their funding operations under the law of July 1848. When these were finally completed, the stock account stood thus:—

Savings Banks of	No. of Stock Accounts Opened.	Amount of Capital Funded.	Amount of the Annual Dividends.
Paris	107,899	L.2,687,054	L.167,916
Departments	386,490	9,855,305	615,956
Total	494,389	L.12,542,359	L.783,872

It deserves remark, that at the periods of greatest excitement, even during the terrific combats of June 1848, the deposit-receiving business of the savings banks was never really at a stand-still. The smallest sum ever received by the Paris bank on a deposit day, from the date of its first establishment, was that which came in on the 2d July 1848, immediately after the great struggle. But even on that day 121 depositors made small payments, which amounted, in the aggregate, to 12,749 francs (L.510). The year 1850 witnessed a rapid progress throughout the country, or nearly throughout it,—for twenty-five of the banks are not included in the official accounts. The total deposits of the 340 banks which made returns amounted at the close of 1850 to L.5,396,680. In 1851, the whole legislation of the subject came under the review of the Assembly, and a law was passed which enacted, (1) That no new deposit shall be received on any account already amounting to 1000 francs, interest included; (2) That whenever by accretion of interest any account shall exceed that maximum, it shall be reduced, if not by the depositor himself, then by an investment in stock on his account; and, (3) That the interest should be reduced from 5 to 4½ per cent. In May 1853, a further reduction of interest was made to 3½ per

Savings
Banks in
Foreign
Countries.

Statistics.

Effects of
the Re-
volution of
1848.

¹ Letter of Mr A. Warner to Mr C. W. Sikes, printed in *Appendix to the Report on Savings Banks of 1858*, pp. 384, 385; Evidence of C. W. Sikes, Esq., in *Minutes of Evidence*, 2717-2797.

Savings Banks in Foreign Countries. Statistics of 1855-56.

cent., subject, as before, to an obligatory reserve of one-fourth per cent., and to an optional one of another fourth, if needed.

Under the operation of this law very large sums were funded on depositors' account. The total number of banks in activity throughout France, at the end of 1855, was 368; that of their depositors, 893,750; and the aggregate of deposits, 272,182,542 francs (L.10,887,301). At the end of 1856 the banks had increased to 373; the depositors to 936,188; and the deposits to 275,342,913 francs (L.11,013,716). The population of France at this date was 35,781,628. The depositors, therefore, were as 1 in 38. Locally, the extremes are widely apart. In the metropolitan departments the depositors are 1 in 14; in the department of the Ariège they are 1 in 478. The average amount of deposits ranges between 504 francs (L.20) in the department of the Var, and 190 francs (L.7, 12s. 6d.) in the department of the Vosges. The accounts not exceeding 500 francs formed, in 1856, nearly 76½ per cent. of the whole number of accounts, and 37 per cent. of their sum-total; those from 500 to 1000 francs were 19½ per cent. of the number, and 48 per cent. of the sum; the accounts of 1001 francs and upwards were as 4½ and 15 per cent. respectively. Of these only one-half per cent. in number, and 2⅓ per cent. in amount, were legally exempt from compulsory conversion into stock.

Organization and management of the French banks.

The main points of organization and working may be briefly indicated thus:—(1.) *Formation*.—The initiative belongs to the municipal councils. An imperial decree establishes the new bank, on advice of the Council of State, and invests it with the power of receiving gifts and bequests. (2.) *Management*.—The board is chosen by the town-council, includes a certain proportion of councillors, and is renewable by thirds annually. (3.) *Expenses*.—The expenses are defrayed from reserve of interest; from municipal or other grants; from unclaimed or lapsed accounts; from interest of endowment funds, if any, and from surplus, if any. (4.) *Deposits*.—No sum less than a franc; no aggregation of sums exceeding L.12 in a week, or L.40 in the whole, are receivable from individual depositors (with certain exceptions in favour of soldiers and sailors). Friendly societies may invest up to L.320. (5.) *Interest*.—The usual net rate of interest is 3½ per cent.; in a few instances it is 3¾ per cent. (6.) *Investments*.—All savings banks (the three attached to *Monts-de-Piété* excepted) are bound to pay over, within twenty-four hours, to the public department called *Caisse des Dépôts*, all deposits received, retaining such a balance only as may be indispensable for the ordinary service until next receipt-day. (7.) *Withdrawals*.—Deposits are repayable at a fortnight's notice; they may be converted into stock free of charge; they may be transferred (in totality) to any other bank. (8.) *Unclaimed Accounts*.—Accounts neither claimed nor operated upon during thirty years pass in stock to the *Caisse des Dépôts*, and the savings bank is released from all responsibility in respect of them. (9.) *Superintendence*.—All savings banks in the departments are under the review of inspectors, who report both to the Minister of Finance and to the Minister of Agriculture and Commerce. An inspection and audit must be made at least once in every three months. Full accounts must be transmitted through the prefects to the Minister of Agriculture, &c., annually, and be officially distributed. The Paris bank is under the direct control of the Minister of Finance.¹

The Swiss banks date from 1787. The example set by Berne was followed by Geneva in 1789, and by Basel in 1793. But in all these cantons the operations of the first twenty or twenty-five years were inconsiderable. In 1815 or 1816, they began to be importantly developed. In 1835 there were in the whole of Switzerland 100 banks, with 65 branches, or dependent "receiving-houses," and 60,028 depositors, to whose credit there stood, in the aggregate, a sum of 11,513,712 Swiss *livres* (L.537,306). At the end of 1852 the banks had increased to 167, exclusive of branches; the depositors to 181,172; the deposits to 60,368,759 francs (L.2,414,745). In 1835 the Swiss population appears to have been 2,179,526. At the end of 1852, it was 2,392,000. The depositors, therefore, were, in 1835, as 1 in 36; in 1852, as 1 in 13. The average amount to each depositor was, in 1835, L.11, 10s. 7d.; in 1852, L.13, 6s. 6d. Finally, the aggregate deposits gave a sum of 6s. 6d. per head of population in 1835, and a sum of L.1 per head in 1852.

The management of the Swiss banks seems to be in some points lax, as compared with the prevalent systems of England and France, but the chief point of difference lies in the investments. Most of the cantons have no public debt worthy of mention. None of them, save Neuchâtel, permits a savings bank to invest money in foreign funds. Tessin and Glaris admit of government investments; but in all the other cantons the deposits are used in the way of loan upon mortgages, and in the discounting of mercantile bills. M. de Candolle, who, some years since, examined the Swiss system very elaborately, thus sums up his opinion as to its working:—"Throughout all the changes of government the savings banks have continued their useful career. Whatever the extent to which the government were compromised, private persons continued to find in those institutions a safe provision against all contingencies. Losses arising from the difficulty of recovering debts in disturbed times were met by the reserve funds previously created."²

The earliest savings banks of Germany were, as such, on a very narrow scale. Usually, they were directly connected with the administration of poor's funds. Often they were also loan banks. The Berlin bank, founded in 1818, gave an impulse to the improvement and diffusion of a better system, although it has itself suffered many modifications. Its original regulations guaranteed to the depositors interest at the rate of 4½ per cent. on ordinary deposits, a rate which was reduced to 3½ in 1827. In 1829, its aggregate deposits amounted to 1,229,413 thalers (L.179,289). In 1837, the amount of individual deposits was limited to 20 thalers (L.2, 18s. 4d.) in any one month, and to 300 (L.43, 15s.) in the whole. Eighteen months later, the existing bank was wound up, and a new one established in its place. At the close of the year 1839, the new bank held deposits amounting to 469,354 thalers (L.68,447). At the close of 1840, the amount was 576,528 thalers (L.84,077). Although seven years elapsed before the aggregate deposits in the new bank attained the sum held by the old bank in 1829, it appeared that investments by a plurality of accounts continued to be made by persons of a class different from that for which the bank was designed; and, to check this practice, another dissolution and re-organization was determined on in August 1850. The minimum deposit was now reduced to sixpence (5 silbergroschen), and the maximum deposits to L.1, 9s. 2d. (10

Savings Banks in Foreign Countries. Switzerland.

Prussia. Statistics of the Berlin savings bank.

¹ B. Delessert and F. Delessert, *Comptes rendus des opérations de la Caisse d'Epargne de Paris, 1819-1857*, passim; Lefort, art. "Caisses d'Epargne," in the *Dictionnaire de l'Administration Française*, passim; Auguste de Boudard, *Institutions de prévoyance: Les Caisses d'Epargne, Histoire, Législation, Statistique* (Valence, 1858), passim; C. A. von Malchus, *Die Sparkassen in Europa*, 315-329, and Beilagen 52-59; *Journal des Economistes*, xviii. 170-177; xxvii. 374-385; xxxvi. 282-291, 436-450; 2ème série, i. 423-428; iv. 97-109, 276-282.

² De Candolle, *Les Caisses d'Epargne de la Suisse*, passim; C. A. von Malchus, *Die Sparkassen, &c.*, 251-300; De Boudard, *Les Institutions, &c.*, 29, 30; Appendices to the *Comptes rendus, &c.*, ut supra.

Savona. thalers) in any one month, and L.14, 11s. 8d. (100 thalers) in the whole. If any person shall open more accounts than one, the first account only bears interest. The deposits paid into the new bank during 1851 amounted to 351,765 thalers (L.51,299); the transfers from the old bank to 510,846 thalers (L.74,498); whilst the withdrawals were 104,384 thalers (L.15,222); leaving an aggregate sum to depositors' credit, at the close of the year, of 901,289 thalers (L.131,438). At the close of 1852, this aggregate capital stood at 1,076,000 thalers (L.156,916), and belonged to 30,929 depositors. At the close of 1853, it had increased to 1,230,000 thalers (L.179,375), and the number of depositors to 34,842. On the 1st January 1855, the depositors were 35,590, and the total amount at their credit 1,249,000 thalers (L.182,145). On the 1st January 1857, the depositors were 40,700, and their aggregate deposits 1,424,000 thalers (L.207,666). At this date, therefore, the average sum possessed by each depositor was somewhat more than L.5, 2s., and the depositors were as 1 in 11 of the whole population of Berlin.

**Savings
banks of
Prussia
generally.**

Throughout the Prussian dominions there were founded, during the first decade from the beginning of the Berlin bank (1818-27), 31 savings banks; during the next (1828-37), 37; and during the third (1838-47), 123. Even in the disturbed years 1848 and 1849, 20 new banks came into being. The total number on the 1st January 1850 was 211, to which 4 more were added during the year. At its close, these 215 banks comprised 278,147 depositors, holding an aggregate deposit of 18,119,851 dollars, or L.2,642,464. The relative proportion of banks to population varied from 1 in 502,984 in the circle of Düsseldorf, to 1 in 25,207 in the circle of Arnberg; the mean proportion for the whole of the kingdom being 1 in 70,091, and that of depositors 1 in 59. The average amount held by each depositor throughout the kingdom was, in 1849, L.9, 3s. 9d.; in 1850, L.10, 4s. 2d. The rates of interest varied considerably. In 23 banks it was 2½ per cent.; in 35 other banks, 3 per cent.; in about 150 others, 3½ per cent.; whilst in 5 banks it ranged from 4 to 5 per cent.

SAVONA, a town of the kingdom of Sardinia, capital of a division of the same name, on the shore of the Mediterranean, 25 miles S.W. of Genoa. It stands at the foot of a hill to the W., and is partially surrounded by ancient walls, and defended by a citadel of no great strength. The town itself has some good houses; but, for the most part, it is not well built, and has extremely narrow streets. There is a fine cathedral, built in 1604, when the former one was removed to make room for the citadel. Many valuable works of art adorn the present edifice. The Sistine chapel was erected by Pope Sixtus IV. as a burial-place for his family. The Dominican church contains paintings by Albert Durer and Antonio Semini; and the church of San Giacomo contains the tomb of Chiabrera, a celebrated lyric poet, and a native of this place. Savona has several convents, an episcopal seminary, two colleges, hospitals, and other charitable institutions. The harbour, which was once very good, was partially filled up by the Genoese, out of jealousy of the commerce of Savona. It is still safe, though only accessible to small vessels. A considerable trade is carried on in silk, wine, and fruit. Savona is the seat of a bishop, public offices, and law courts, and many of the nobility have fine palaces in the town. Pop. 17,000.

The administrative division of Savona comprises the three provinces of Acqui, Savona, and Albenga, the first

In some banks the rate varies with the amount of the deposit.

Savonarola.

In the German provinces of Austria, the proportion of depositors to population was, according to the latest returns to which we have access, 1 in 49; in Hanover, 1 in 42; in Bavaria, 1 in 18; in Saxony, 1 in 16; in Frankfurt-on-the-Maine, 1 in 11·4; in Hamburg, 1 in 7·8; in Altona, 1 in 2·6. In Austria, the average aggregate deposit was, to each depositor, L.19, 6s. 9d.; and to each inhabitant 7s. 10d. In Bavaria, it was, respectively, L.5, 18s., and (nearly) 6s. 8d.; in Hanover, L.9, 10s., and 4s. 5d. The savings bank statistics of the last-named country are remarkable for the rapid growth they indicate of the aggregate deposits since 1848.¹

In most of those parts of Europe which are yet unnoticed, the development of savings banks is comparatively recent and immature. This cannot, however, be said of Italy. In Piedmont and in Lombardy, for example, they have long formed an important feature of the economical condition of the country. But the institution which in Italy is called *Cassa di risparmio* differs materially from those which elsewhere bear that name. Its regulations attract the investments of persons of a much higher class than those for whom savings banks are usually intended. There are some exceptions to this rule; but, on the average, it has been estimated that hardly more than one-fourth of the deposits in Italian savings banks are held by depositors who would be ranked, socially, with those of the United Kingdom, of France, or of Germany. In Spain and Portugal, these institutions are yet in the cradle. In Russia, they have scarcely advanced beyond St Petersburg and Moscow. A wider intercommunication of the progress and results of the savings banks of different countries would doubtless give an increased impulse to the diffusion of establishments which have proved themselves to be powerful agents in the social elevation of the masses, even when very imperfectly organized and worked. Taken as a whole, their past history warrants high anticipations of the future. (E. E.)

lying inland, and the other two along the coast. The principal mountains are the Apennines, which have in this division a considerably lower altitude than in the other parts of the range. They stretch nearly parallel to the coast, at no great distance from it, and send down numerous small streams and torrents to the sea. The northern part of Savona is occupied with ramifications of the Apennines, and watered by many small affluents of the Po. The whole division is very fertile, especially the valley of Albenga, producing corn, wine, oil, fruit, hemp, &c. The division is subdivided as follows:—

Province.	Area in Square Miles.	Pop. (1857.)
Savona.....	311	79,643
Acqui	444	106,819
Albenga	263	58,485
Total.....	1018	244,947

SAVONAROLA, GIROLAMO, a famous Italian monk, was born at Ferrara in 1452, being descended of a noble family. At the age of twenty-two he assumed the habit of a Dominican friar, without the knowledge of his parents, and distinguished himself in that order by his piety and ability as a preacher. Florence was the theatre where he chose to appear, and where he preached, confessed, and wrote. He had address enough to place himself at the head of the faction which opposed the family of the Medici. He explained the Apocalypse, and there found a prophecy

¹ Art. "Sparkassen," in the Supplement to Meyer's *Conversations-Lexicon*, v. 882-889; De Boudard, *Institutions de prévoyance*, &c, ut supra, 30-33; Appendices to the Paris Reports.

Savoy.

Savoy.

which foretold the destruction of his opponents. He predicted a renovation of the church, and declaimed with much severity against the clergy and the court of Rome. Alexander VI. excommunicated him, and prohibited him from preaching. He derided the anathemas of the Pope; yet he forbore for some time from preaching, and then resumed his employment with more applause than before. The Pope and the Medici family then thought of attacking him with his own weapons. Savonarola having posted up a thesis as a subject of disputation, a Franciscan, at their instigation, offered to prove it heretical. The Franciscan was seconded by his brother friars, and Savonarola by his; and thus the two orders were at open war with each other. To settle the dispute, and to convince their antagonists of the superior sanctity of Savonarola, one of the Dominicans offered to walk through a fire; and in order to prove his wickedness, a Franciscan agreed to the same experiment. The multitude, eager to witness so extraordinary a spectacle, urged both parties to come to a decision; and the magistrates were constrained to give their consent. Accordingly, Saturday the 7th of April 1498 being fixed for the trial, the Dominican pretended he could not enter the flames without the host in his hand. This the magistrates obstinately refused to allow; and the Dominican's fortitude was not put to the test. The Franciscans incited the multitude against their opponents, who accordingly assaulted their monastery, broke open the gates, which were shut against them, and entered by force. Upon this, the magistrates thought it necessary to bring Savonarola to trial as an impostor. He was put to the torture and examined, and the answers which he gave fully evinced that he was both a cheat and a fanatic. He boasted of having frequent conversations with God, and he found his brother friars credulous enough to believe him. One of the Dominicans who had shared in his sufferings, affirmed that he saw the Holy Ghost in the shape of a dove, with feathers of gold and silver, twice in one day alight on the shoulder of Savonarola and peck his ear; and he pretended also that he had violent combats with demons. John Francis Picus, count of Mirandola, who wrote his life, assures us that the devils which infested the convent of the Dominicans trembled at the sight of Friar Jerome, and that out of vexation they always suppressed some letters of his name in pronouncing it. At length the Pope, Alexander VI., sent the chief of the Dominicans, with Bishop Romolino, to degrade him from holy orders, and to deliver him up to the secular judges, with his two fanatical associates. They were condemned to be hanged and burned on the 23d of May 1498. According to some accounts, Savonarola submitted to the execution of the sentence with great firmness and devotion, and without uttering a word respecting his guilt or his innocence; but others say his firmness failed him, and he acknowledged the falsehood of his pretensions to supernatural powers. He was in the forty-sixth year of his age. His works have been published at Leyden in six vols. 12mo.

SAVOY (Ital. *Savoja*, Fr. *Savoie*), DUCHY OF, a portion of the kingdom of Sardinia, lying between N. Lat. 45. 4. and 46. 24., E. Long. 5. 37. and 7., bounded on the N. and N.E. by Switzerland, E. and S.E. by Piedmont, S.W. and W. by France. Length from N. to S. 92 miles, breadth 66; area 4197 square miles. Geographically, Savoy belongs rather to Switzerland than to Italy; as it is separated from the latter country by the Graian and Pennine Alps, the loftiest chains of those mountains, while all the rivers that water the country discharge their waters ultimately or immediately into the Rhone. From Switzerland it is only separated by the lake of Geneva; from France on the W. by the Rhone, and on the S.W. by the Maurienne Alps, an off-set of the Cottian Alps, extending westwards from Mont Cenis. The country thus inclosed is one of the most mountainous in Europe; for the moun-

tains which border it send out numerous ramifications, which make the whole surface a continual series of lofty elevations and deep valleys. The Graian Alps extend from Mont Cenis to Mont Blanc, forming a curve with the convex side towards Piedmont. They contain not only the highest peaks, but the most gigantic glaciers and the wildest passes that are to be found in the whole of the Alps. The summits of Mont Iséran and the Little St Bernard, the glaciers of Mont Iséran, of Clou, of Ruitors, and the passes of Galesia, Galetta, and Little St Bernard, are among the most important. The mountains which border upon Savoy consist, as we have seen, of the main ridge, and one large ramification of the Alps; those which occupy the centre of the country, consist of three important branches of the same great mountain system. Furthest south, the mountains of La Vanoise diverge from the main ridge at Mont Iséran, and occupy the whole region between the Isère and its affluent the Arc, curving to the southwards, along the banks of the latter river, and forming by their off-sets to the north the valleys of the upper tributaries of the Isère. From the Little St Bernard extends another great branch, called the Alps of Savoy, which covers with its ramifications all the country between the Arve, the Rhone, and the Isère. This chain extends for some distance to the W. and N.W., till at a point called Grande Crête, S.W. of Sallenches, it divides into two branches, the one continuing a N.W. course, till it terminates at the Rhone opposite the end of the Jura on the French side; the other and more important branch turns to the S.W., and, after a zigzag course along the lake of Annecy, skirts the Isère, and terminates in the Grande Chartreuse in France. The third branch, called the Alps of Savoy and Valais, diverges from the Pennine Alps at Mont Crapillon, and stretches N.W. to the lake of Geneva, occupying, with its off-shoots, the country between that lake, the Arve, and the Rhone. This is the most northerly of the mountain-chains that traverse Savoy. The principal valleys in the country are those traversed by the rivers already mentioned; but there are innumerable others, down which flow streams of less size and importance. There are only two lakes of any size in Savoy, those of Bourget and Annecy, neither of which are to be compared with that of Geneva. The former discharges its waters by a canal into the Rhone, the latter into the Fier, an affluent of that river. From the natural character of the surface, the amount of arable land in Savoy is necessarily very limited; but the insufficiency of the grain raised is in a large measure supplied by chestnuts, which form an important article of food for the lower classes. Vines are cultivated in a few places, in the lower valleys and slopes. Cattle and dairy produce, however, form the principal riches of the country, along with the timber which clothes the lower portions of many of the mountains. Some minerals are found, but not anywhere in large quantities. The only articles manufactured are coarse woollen stuffs, leather, and hardware. The produce of the country is exported; and there is a considerable transit trade carried on through Savoy between France and Italy, chiefly by way of Mont Cenis. Savoy forms in the kingdom of Sardinia the divisions of Annecy and Chambéry, and is subdivided into provinces as follows:—

Provinces.	Area in Sq. Miles.	Pop. (1857.)
Annecy	620	103,763
Faucigny	786	103,986
Chablais	326	60,193
Division of Annecy.....	1722	267,942
Chambéry	633	155,916
Upper Savoy	346	49,276
Maurienne.....	798	64,063
Tarantaise	698	44,636
Division of Chambéry	2475	313,891
Total of Savoy.....	4197	681,833

Saw.

The leading events in the history of Savoy are mentioned in the Article *SARDINIA*.

SAW, a well-known instrument for cutting asunder.

The saw is of unknown antiquity, being figured on the ancient monuments of Egypt and Babylon. It is probable that saws were first made of copper, hardened by the admixture of a little tin. But after the invention of steel that substance has come, almost exclusively, to be used in their manufacture.

The common saw consists of a steel plate, on the edge of which teeth are formed: these teeth, when drawn over a piece of timber, act as a succession of chisels, and so make a cut or saw-draft. When the teeth are left in the plane of the plate, and when the saw has entered a little way into the timber, the sides of the cut come to rub against the plate, thus causing a friction, which soon arrests the operation. There are two ways in which this evil is remedied: the one is by making the plate thin towards the back, as in the key-hole saw; the other is by bending some of the teeth to the one side, some to the other side of the saw-plate, so that they make a draft considerably wider than the thickness of the plate. This bending is called the *set* of the saw. It is obvious that the best method is to set the teeth alternately to the right and to the left; but in the East, where ancient practices are scrupulously adhered to, the teeth of the large saws are bent aside in groups of perhaps a dozen each. The quantity of set is regulated by the nature of the material to be cut; for soft and fibrous woods, more set is needed than for hard woods. Since the labour of cutting and the waste of material are increased by the set and consequent width of the saw-draft, it is an object to give to the saw as little set as possible, and the friction is reduced in some cases by bending the halves of the log asunder by means of wedges; in other cases by the use of soap, tallow, or oil, to lubricate the sides of the saw.

Although it seems to be a very simple affair, the sharpening and setting of a saw require considerable skill of hand and accuracy of eye, for if any one of the teeth project, either edgewise or sidewise, beyond the general line, it takes hold of the wood and renders the sawing harsh and difficult. The form of the tooth, also, is a matter of some importance. When the teeth of the saw become blunted by use, they are sharpened by means of a file, which is three-sided, or, as the workmen call it, *three square*. This is the most economical form of saw-file, because all its edges and faces are equally available. The angles of a four-sided file are too great, and an isosceles three-sided one would, although the angle might suit better for some purposes, have only one or at most two edges available. Hence for common use we are compelled to adopt the ordinary equilateral three-sided file, and, in consequence, the angle of the saw-tooth is sixty degrees.

Let ABCDEFGHI represent part of the edge of a saw, of which the notches BCD, DEF, &c., have been made by a three-cornered file; then if the sides AB, BC of the tooth be equally inclined (as in fig. 1) to the general line of

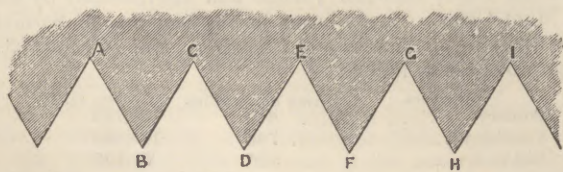


Fig. 1.

the edge, the instrument acts equally well in either direction; but in this case the teeth can hardly be said to cut, they only scrape away the material. Saws of this kind are used in cross-cutting, being worked by two men—one at each end; but as the teeth are large, they are punched

out at the fly-press, and are made deeper than an equilateral trgon.

Saw.

In order that the tooth have a proper cutting edge, the front BC must be (as in fig. 2) at least perpendicular to the

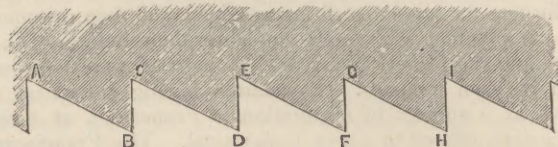


Fig. 2.

line of the cut, and therefore the back AB must, at most, make an angle of thirty degrees with that line. For many kinds of timber it would be advantageous to have the front of the tooth leaning forward (as in fig. 3), but this form

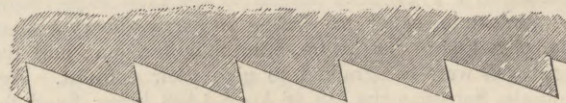


Fig. 3.

allows little room for the saw-dust, and is accompanied by a tendency to drag the tool in upon the wood, thus causing the strain to be too great for the hand-saw; nevertheless, a slight inclination forward is, in certain cases, advantageous.

When a saw is to be sharpened, it is convenient to draw the file gently along the tops of the teeth, and so reduce them all to an even line: we then take care, in filing out the notches, to do no more than remove the bright surfaces thus exposed: by this precaution we secure the even lining of the teeth edgewise. The setting is a more difficult affair; it is done sometimes by the hammer and sometimes by a saw-key. When the hammer is to be used, the saw is laid upon an iron plate, so that the teeth may project over its chamfered edge. Each alternate tooth is lightly struck by a hammer, the weight of which must be adapted to the size of the teeth; the saw is turned over and the intermediate teeth struck on the other side; the lining is examined by the eye, and any errors are corrected. The setting key is a piece of steel, having notches of various widths cut in it to suit the different thicknesses of saw-plates; by means of these notches the teeth can be bent to the required degree. It has been proposed to fix a stop upon the set-key, which stop, coming against the plate of the saw, may regulate the degree of bending; but the elasticity of the steel carries the tooth back somewhat from the extreme angle of flexure, so that the residual set depends partly upon the temper of the steel; thus, after all, the eye becomes the ultimate judge.

In filing the teeth we must pay attention to the set; thus, if the tooth B be bent to the left, the left edge of the face BC should be made acute, as should also the right edge of DE. Hence the alternate spaces BCD, FGH, &c., should be filed out from the right, and the intermediate spaces, DEF, &c., from the left, the point of the file being, in both cases, inclined a little forward.

The saw-plate should be left as hard as is consistent with its being bent; if it be too hard, the teeth are apt to break off in being set; if it be soft, the teeth are rapidly blunted.

To the one end of the saw-plate a handle is fixed, by means of which it can be moved backwards and forwards. In this country it is usual to make the saw cut when being thrust forward; in other words, the teeth look from the handle; but the modern artificers in Greece and other eastern countries make the cut in pulling, as also did the ancients; the teeth look towards the hand. There is something to be said in favour of and against both methods. The cut, in pushing, enables us to apply greater muscular energy, and the entrance of the saw being towards the eye, we can readily follow the line; but, on the other hand, any

Saw.

sudden jerk or unskilful holding of the tool is apt to bend or buckle it. The cut, in pulling, again, tends to straighten the saw, so that a very thin plate may be used, requiring less labour and causing less waste of material; it is peculiarly suitable for workmen, who hold by their toes; but then the saw-dust is heaped upon the line and has often to be swept or blown away.

The advantages of both of these methods are obtained by stretching the saw tightly in a frame; and even more than these advantages, because we can use saw-webs much narrower and much thinner than when the plate is to be held by one end. The narrowness of the web allows it to be turned considerably within the saw-cut, so that it may follow a curved line, whereas the hand-saw is almost restricted to a straight cut. Saw-webs for frames are made of great minuteness, the breadth even so little as the fiftieth of an inch, and the width of the draft not perhaps the third of that. These hair saws are extensively used for inlaying woods, ivory, and shell, as they can follow the most delicate outlines; they are also used by gold and silver smiths, on account of the smallness of the waste which they occasion.

Saws for cutting bone, ivory, or brass, require very little set; it is sufficient to have the web somewhat thinner toward the back. For these saws the steel is left pretty hard, as much so, indeed, as is consistent with their being readily filed. The preparation of saws for cutting iron or steel is a matter of considerable nicety; they must be very hard in order to resist the oxides and silicates which are to be found in the most carefully prepared iron, and yet they must be so soft as to be filed, although with difficulty; hence really good *iron-webs*, as they are called, are somewhat scarce.

The teeth of large saws, such as those used in the saw-pit or in the saw-mill, are cut out by means of a fly-press, in which a punch and socket exactly of the form of the notch are fixed. The edges are afterwards dressed by the file. Hence they are shaped more in accordance with the principles of cutting tools. The front of the tooth is hooked forward by even so much as forty or forty-five degrees, and the back is relieved only by an angle of eight or ten degrees. But if lines with these inclinations were continued to meet each other (as shown in fig. 4), there would be no

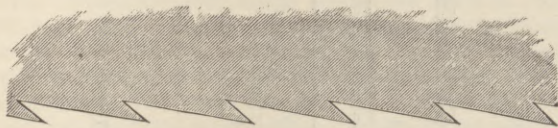


Fig. 4.

room left for the dust, and the saw would be immediately clogged; wherefore a large hollow space is scooped out (as shown in fig. 5), giving to the teeth a very formidable ap-



Fig. 5.

pearance. These saws are sharpened by filing the parts marked A B; and when the teeth become too shallow, they are again deepened at the fly-press, or, if no fly-press be at hand, by means of round files applied to the hollows.

Circular Saws.—The straight saw must necessarily have a reciprocating motion; but when teeth are formed on the edge of a circular disc, the motion is continued in one direction, and great velocity can be obtained. Circular saws are now so very generally used that every one at all interested in mechanical affairs must be familiar with their general appearance and mode of operation.

Part A B C of the circular disc projects through a slit

Saw.

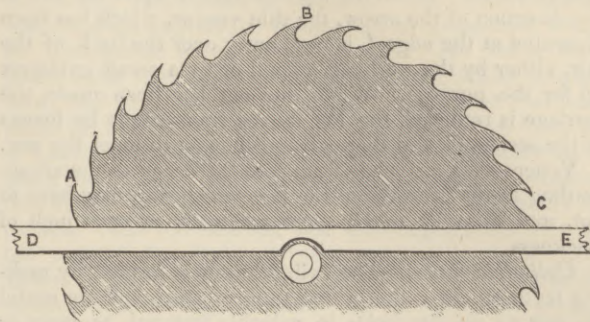


Fig. 6.

on the table D E. The piece of timber to be cut is laid on the table, and carefully brought up to the descending part of the saw at C; the saw being made to revolve with great velocity. When slices of a given thickness have to be cut off a log, a fence is placed on the table at E, parallel to and at the proper distance from the plane of the saw: the log is laid against this fence, and is pushed forward either by hand or by help of the machinery.

This is a dangerous instrument, not to be approached without caution, and, above all, not to be tampered with by foolish meddlers. If a lump of wood were presented at the rising part A, it would be caught by the hooked teeth, hurried over towards C and thrown off, to the great danger of those around, as well as of the saw itself.

Small circular saws have their teeth shaped by the triangular file: the fronts of them should point to the centre.

Veneer Saws.—The veneer saw is contrived for the purpose of cutting finely variegated woods into thin broad slices. The veneer varies from a 24th to a 30th of an inch in thickness, so that if the saw-draft be one 24th of an inch wide, half of the timber is cut into saw-dust. Now, the wood of which veneers are made is almost always very valuable, and hence it is of great importance to have the saw extremely thin.

The body of the veneer-saw consists of a lenticular piece of cast-iron, having the meniscus form—that is, hollow on the one side and round on the other. A section of it is given in fig. 7. The hollow part at B is made sufficiently

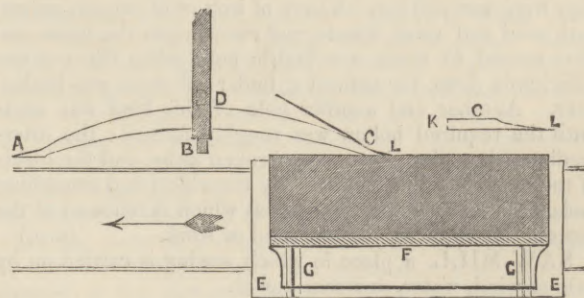


Fig. 7.

deep to receive the bush which carries one end of the axle, and which rests on an overhanging support. Part of the edge A C is turned flat, and to this flat part the steel saw is screwed in segments—the screw heads being countersunk so as not to project beyond the outer face of the segments. These segments are ground away toward the edge, as shown in the section K L, and are thus made to form the rim of a very thin circular saw. The grinding and adjustment of these segments require great care.

The log to be cut into veneer is secured to a frame F, which can be moved by screws G, transversely upon a carriage E. This carriage moves upon two long iron slides or rails, laid exactly at right angles to the axis of the saw

Saw-Mill.

The screws G serve to regulate the thickness of the successive slices. When the log is advanced upon the saw in the direction of the arrow, the thin veneer, which has been separated at the edge *l*, is bent away over the back of the saw, either by the workman's hand or by a small guide set up for the purpose. When one cut has been made, the carriage is returned, the log moved transversely by means of the screws G, and then advanced again to meet the saw.

Veneer saws are made from 5 to 20 feet in diameter, according to the breadths of the logs which they may have to cut, and from 12 to 18 slices are made in each inch of thickness.

Cylindric Saws.—The cylindric saw is formed by making teeth on the end of a thin tube of steel, and are useful for cutting circular holes in valuable material, as ivory or tortoise-shell, without destroying the interior part. As there is no way for the escape of the cuttings, they have to be withdrawn now and then from the cut.

Ribbon Saws.—The latest novelty in the formation of saws is the *ribbon-saw*, which is formed of a long, thin web of steel united at the two ends, or, it may be, of a continuous web rolled from a steel ring. This web, having teeth cut in one of its edges, is passed over two large pulleys, which are put in rapid motion; the descending free part of the web acts as a straight frame-saw, with this difference, that the motion is continuous, and that the action is very rapid.

Lapidary's Saws.—For cutting slate and other soft stones saws of steel are used; but for harder stones, webs of soft iron or copper, primed with sand and water, are employed. It is by means of such a tool that marble is sawn into slabs. When the plate of iron, stretched in a proper frame, is moved backwards and forwards upon the stone, the sharp fragments of the sand imbed themselves in it and act as saw-teeth, but they are so soon rubbed out that the action partakes greatly of the nature of grinding.

For very hard stones emery and corundum powders are used, and for extremely hard stones pounded diamond is employed; the circular form of the saw being generally adopted. The diamond-wheel is truly a saw, for the fragments of diamond stick with great pertinacity into the iron, and act exactly as saw-teeth.

Lapidary's saws were well known to the ancients: some of the sarcophagi retain the marks of the tools by which they were scooped out. A tube of iron or of copper, primed with sand and water, was turned round upon the stone, and thus caused to make a cylindric cut; when this cut was sufficiently deep, the central cylinder of stone was broken over. Another and another hole of this kind was made until the required hollow was roughly formed; the intermediate triangular pieces were broken away, and the inside of the chest was then finished by the chisel and smoothing tools. This is exactly the process which is followed at the present day in doing the like kind of work. (E.S.)

SAW-MILL, a place in which sawing is carried on by help of wind, water, or steam power.

The principal part of the saw-mill is the frame-saw used for cutting up logs, represented in figures 8 and 9. It consists of a frame AA moving between two vertical cheeks. In this frame the saw-webs are stretched according to the nature of the work to be done; these must be fitted truly parallel to the line of motion, and at such distances from each other as to produce planks of the desired thickness.

This frame AA is moved upwards and downwards by means of a crank attached to the machinery, and acting through the connecting rod B; the saws cut while descending. The log to be operated on is fixed in a long frame CC, which is brought forward by means of a pinion fixed to the axis of the ratchet-wheel D. The *feed*, as it is called, is obtained in this way; the end E of the lever EFG is attached to the saw-frame, so as to oscillate with it, thus

causing the arm FG to oscillate also; this arm FG has a row of holes in it for attaching the hook H, which, acting on the ratchet-wheel, brings it round by the distance of one or more teeth at each descent of the saw; the number

Sawunt Warree.

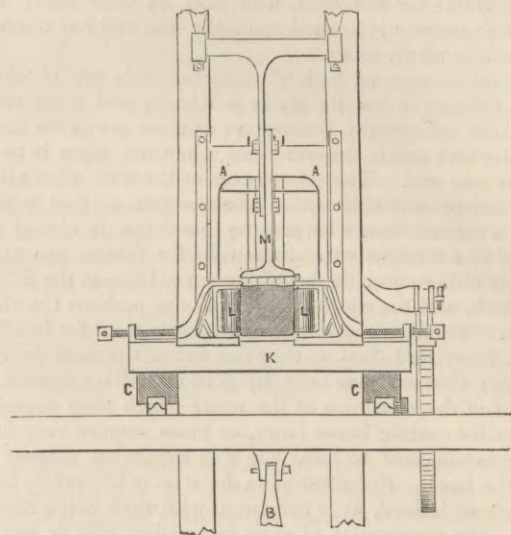


Fig. 8.

of teeth and consequent feed being regulated by the effective length of the arm FG.

The log passes over a support K as close to the saws as possible, and is kept in its place by fences or rollers LL acting on its sides; it is also prevented from rising by two struts, M and N, hanging from the frame-work.

Circular, veneer, and ribbon saws belong naturally

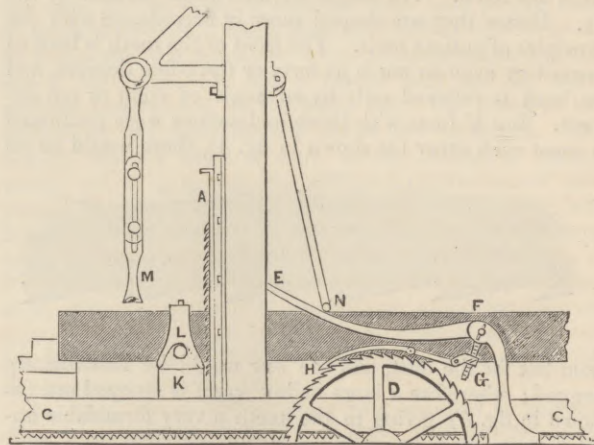


Fig. 9.

to the saw-mill; they have been sufficiently described in the preceding article.

In the saw-mill we often find other kinds of work carried on. Flooring deals and lining boards, after having been roughly shaped by the saw, are dressed to the required breadth and thickness, planed smooth, feathered and grooved on a machine in which planes, saws, and adzes are combined. Battens, too, have their tenons and mortices dressed by appropriate machinery, and the naves of cart-wheels have their spoke-holes neatly cut out by a combination of augers and chisels; but these are additions to the saw-mill proper. (E.S.)

SAWUNT WARREE, a native state of India, under the political management of the British, in the presidency of Bombay, lying between N. Lat. 15. 38. and 16. 15., E. Long. 73. 40. and 74. 22.; bounded on the N. and W. by the British collectorate of Rutnagheriah, S. by the Portu-

Saxe.

guese territory of Goa, and E. by the native state of Kolapoor. Length from N. to S. 50 miles; greatest breadth about 30; area, 800 square miles. It is an exceedingly rugged and mountainous country, consisting mainly of a slip of land on the summit and western declivity of the Ghauts, and in some places extending over the ridge into the Deccan. The scenery is very remarkable and romantic; huge masses of mountain rise to the height of 3000 or 4000 feet, and, except a few patches of bare black rock, are entirely covered with forests of teak and other trees. Numerous rivers, large and small, flow down from the mountains and intersect the jungles which occupy the lower ground. The soil thus watered gives rise to a luxuriant vegetation, but the superior kinds of crops cannot be raised, such as cotton, sugar, &c.; and the staple produce of the country is wheat, rice, pulse of various kinds, and esculent vegetables. The climate is moist; and the rain which falls among the mountains during the monsoons are probably more excessive than in any other part of the world. The principal articles manufactured here are gold and silver embroidery, saddlery, guns, swords, and other arms. Cocoanuts are the most important article of exportation. The annual revenue of Sawunt Warree is about L.20,000, and the expenditure somewhat less. The military force consists of a local corps of infantry, under European officers, amounting to 611 men. The city and territory of Warree derived the title of Sawunt from a Mahratta family of that name, who governed them as chieftain under the monarchs of Beejapoor. In 1659 the reigning chieftain formed an alliance with Sevajee, and though this was soon broken, the Mahratta chief in 1662 conquered the country, and afterwards restored the Sawunt family to the position of dependent chieftains. The first treaty between Sawunt Warree and the British took place in 1730, and had for its object to suppress the piracies of the Angria family in the island of Kolabah. But the chieftains of Sawunt Warree being themselves addicted to piracy, drew upon them the hostility of the British in 1765. A series of wars, treaties, and negotiations ensued, which ended in the subjugation of the state in 1819 by a British force. The sea-coast was then ceded to the British, and the native government restored. Rebellions were raised against the chiefs in 1828, 1832, and 1838. On the two former occasions the British restored their authority; on the last it was deemed necessary to effect a change, and the country was placed under British management, as it has since remained. The most important event that has since occurred was the dangerous rebellion which began in the autumn of 1844, and was put down after some months of hard fighting by Lieutenant-Colonel Outram in the beginning of the following year. Since then peace and tranquillity have reigned, suttee has been abolished, and many other improvements introduced. Pop. 120,000.

SAXE, MAURICE, COUNT OF, was born on the 19th of October 1696. He was the natural son of Frederick Augustus II., Elector of Saxony and King of Poland, and of the Countess of Königsmarck, a Swedish lady, celebrated both for her wit and her beauty. He was educated along with Frederick Augustus, the electoral prince, afterwards King of Poland. His infancy announced the future warrior. Nothing could prevail on him to apply to his studies but the promise of being allowed, after he had finished his task, to mount on horseback, or exercise himself in arms. He served his first campaign in the army commanded by Prince Eugene and the Duke of Marlborough, when only twelve years old. He signalized himself at the sieges of Tournay and Mons, and particularly at the battle of Malplaquet. In the evening of that memorable day, he was heard to say, "I'm content with my day's work." Next year the young count accompanied the King of Poland to the siege of Stralsund, the strongest place in Pomerania, and displayed the

greatest intrepidity, swimming across the river in sight of the enemy, with a pistol in his hand. His valour shone no less conspicuously on the bloody day of Gadebusch, where he commanded a regiment of cavalry. He had a horse killed under him, after he had three times rallied his regiment, and led them to the charge. Soon after that campaign his mother prevailed on him to marry the Countess of Lubin, a lady both rich and beautiful. This union lasted but a short time. In 1721 the count procured a dissolution of the marriage; a step of which he afterwards repented. The countess left him with regret; but this did not prevent her from marrying soon afterwards. The Count of Saxe was too fond of variety to submit to the duties which marriage imposes. In the midst, however, of the pleasures in which he sometimes indulged, he never lost sight of his profession. He carried along with him wherever he went a library of military books; and even when he seemed most occupied with his pleasures, he never failed to spend an hour or two in private study. In 1717 he went to Hungary, where the emperor had an army of 15,000 men commanded by Prince Eugene. Count Saxe was present at the siege of Belgrade, and at a battle which the prince gained over the Turks. On his return to Poland in 1718, he was made a knight of the Golden Eagle. The wars in Europe being concluded by the treaties of Utrecht and Passarowitz, Count Saxe went to France. He had always professed a partiality for that country. French, indeed, was the only foreign language which during his infancy he was willing to learn. He spent his whole time during the peace in studying mathematics, fortification, and mechanics, sciences which exactly suited his genius. The mode of exercising troops had taken his attention when very young. At sixteen he invented a new exercise, which was taught in Saxony with the greatest success. Having obtained a regiment in France in 1722, he formed it himself according to his new plan. From that moment the Chevalier Folard, an excellent judge of military talents, predicted that he would be a great man. His personal size was extraordinary, and he is said to have possessed great bodily strength. In 1726 the states of Courland chose him for their sovereign, but both Poland and Russia rose in arms to oppose the election. The Czarina wished to bestow the duchy on Mentschikoff, a happy adventurer, who from a pastry-cook's boy became a general and a prince. Mentschikoff sent eight hundred Russians to Milan, where they besieged the newly chosen duke in his palace. Count Saxe, who had only sixty men, defended himself with astonishing intrepidity. The siege was raised, and the Russians were obliged to retreat. Soon afterwards he retired to Usmaiz, and prepared to defend his people against the two hostile nations. Here he remained with only three hundred men, until the Russian general approached to force his retreat, at the head of four thousand. That general invited the count to a conference, during which he intended to surprise him, and take him prisoner. The count, informed of the plot, reproached him for his baseness, and broke up the conference. About this time he wrote to France for men and money. Mademoiselle le Couvreur, a celebrated actress, pawned her jewels and plate, and sent him the sum of forty thousand livres. This actress had formed his mind for the fine arts. She had made him read the greater part of the French poets, and given him a taste for the theatre, which he retained even in the camp. The count, unable to defend himself against Russia and Poland, was obliged, in the year 1729, to leave his new dominions, and retire into France. It is said that Anne Iwanowa, Duchess-dowager of Courland, and second daughter of the Czar Iwan Alexiowitz, had given him hopes of marriage, and abandoned him at that time because she despaired of fixing his wavering passion. This inconstancy lost him not only Courland, but the throne of Russia itself, which

Saxe.

Saxe.

that princess afterwards filled. Count Saxe, thus stripped of his territories, devoted himself for some time to the study of mathematics. He composed also, in thirteen nights, and during the intervals of an ague, *Mes Réveries*, which he afterwards corrected. This book is written in an incorrect but forcible style; it is full of remarks both new and profound, and is equally useful to the soldier and the general.

The death of the King of Poland, his father, in 1733, kindled a new war in Europe. His brother, the Elector of Saxony, offered him the command of all his forces; but he preferred the French service, and repaired to Marshal Berwick's army, which was encamped on the Rhine. "Count," said that general, who was preparing to attack the enemy's entrenchments at Etlinghen, "I was going to send for three thousand men, but your arrival is of more value than theirs." When the attack began, the count, at the head of a regiment of grenadiers, forced the enemy's lines, and by his bravery decided the victory. He behaved with no less intrepidity at the siege of Philipsburg. For these services he was, in 1734, rewarded with the rank of lieutenant-general. Peace was concluded in 1736; but the death of Charles VI., the Emperor of Germany, almost immediately kindled a new war. Prague was besieged by the Count of Saxe in 1741, near the end of November, and was taken the same month by assault. The conquest of Egra followed that of Prague. It was taken a few days after the trenches were opened. This success gave so much joy to the Emperor Charles VII., that he wrote with his own hands a congratulatory letter to the conqueror. In 1744 he was made marshal of France, and commanded a part of the French army in Flanders. During that campaign he displayed the greatest military conduct. Though the enemy was superior in number, he observed their motions so skilfully that they could do nothing. In January 1745, an alliance was concluded at Warsaw between the Queen of Hungary, the King of England, and the states of Holland. The ambassador of the states-general, meeting Marshal Saxe one day at Versailles, asked his opinion of that treaty. "I think," said he, "that if the king my master would give me an unlimited commission, I would read the original at the Hague before the end of the year." This answer was not a bravado; the marshal was capable of performing it. He went soon afterwards, though exceedingly ill, to take the command of the French army in the Low Countries. A gentleman, seeing the feeble condition in which he left Paris, asked him how he could in that situation undertake so great an enterprise. "The question," replied he, "is not about living, but setting out." Soon after the opening of the campaign, the battle of Fontenoy was fought. Marshal Saxe was at the point of death, yet he caused himself to be put into a litter, and carried round all the posts. During the action he mounted on horseback, though he was so very weak that his attendants dreaded every moment to see him expire. The victory of Fontenoy, which was owing entirely to his vigilance and capacity, was followed by the reduction of Tournay, Bruges, Ghent, Oudenard, Ostend, Ath, and Brussels. This last city was taken on the 28th of February 1746; and very soon afterwards the king sent to the marshal a letter of naturalization, conceived in the most flattering terms. The succeeding campaigns gained him additional honours. After the victory of Raucoux, which he gained on the 11th of October 1746, the King of France made him a present of six pieces of cannon. He was, on the 12th of January of the following year, created marshal of all the French armies, and, in 1748, commander-general of all those parts of the Netherlands which were lately conquered. Holland now began to tremble for her safety. Maestricht and Bergen-op-Zoom had already fallen, and nothing but misfortunes seemed to attend the further prosecution of the war. The states-general, therefore, offered

Saxe-Altenburg.

terms of peace, which were accepted, and a treaty concluded on the 18th of October 1748.

Marshal Saxe retired to Chambord, a country-seat which the King of France had given him. Some time afterwards he went to Berlin, where the King of Prussia received him as Alexander would have received Cæsar. On his return to France, he spent his time among men of learning, artists, and philosophers. He died of a fever, on the 30th of November 1750, at the age of fifty-four.

The best edition of his *Réveries* was printed at Paris, 1757, in five volumes 4to. It was compared with the greatest attention with the original manuscript in the king's library. It is accompanied with many designs exactly engraved, and a life of the author written in the panegyrical style. There is an English translation of it, by Sir William Fawcett, 1757.

SAXE-ALTENBURG (Germ. *Sachsen-Altenburg*), a small duchy of Germany, consisting of two separate parts, divided from one another by portions of Reuss and Saxe-Weimar, and lying between N. Lat. 50. 43. and 51. 10.; E. Long. 10. 50. and 11. 53.; the eastern part being bounded on the N.E. and S. by the kingdom of Saxony, W. by Reuss and Saxe-Weimar; and the western, W. and N. by Saxe-Weimar and Prussia; E. and S. by Reuss, Saxe-Weimar, Saxe-Meiningen, and Schwartzburg. These two portions form the two circles of the duchy; the former that of Altenburg, and the latter that of Saal-Eisenberg; and their area and population are as follows:—

	Sq. miles.	Pop. (1857.)
Altenburg	244	87,091
Saal-Eisenberg	278	46,602
Total.....	522	133,593

The eastern portion, lying on the northern slope of the Saxon mountains, has a smooth or gently undulating surface, and a very fertile soil; the western portion is less fertile, but abounds in mountains and forests, lying partly among the Saxon and partly among the Thuringian hills. Dollenstein, near Kahla, the loftiest point in the country, does not exceed 1000 feet in height. The principal river in this part is the Saale, an affluent of the Elbe, which receives here the Orla and the Roda; the eastern part of the duchy being watered by the Pleisse, which afterwards unites with the Saale. The climate is temperate, pleasant, and healthy. There are mineral springs at Ronneburg and other places. With the exception of minerals, which are few, Saxe-Altenburg has all the ordinary natural productions. Agriculture is, especially in the eastern part, carried on with diligence and success. The quantity of arable land in the country is 213,982 acres; of wood, 66,838; of meadows, 24,200; of gardens, 10,822; and of pasture land, 7030. The quantity of corn raised is more than sufficient for domestic consumption. Pulse, potatoes, and other vegetables, are also grown. Cattle are raised in large numbers, and of a good breed; the horses and sheep are also excellent. The duchy contains 6200 horses; 56,000 horned cattle; 75,000 sheep; and 25,000 pigs. Deer and wild boars are found in the woods, and fish in the streams. Coal, building-stone, and porcelain-clay, are the most important minerals. Manufactures are not very extensively carried on in Altenburg: woollen, cotton, and linen cloth; wooden articles; beer, brandy, and vinegar, are among the articles produced; and there are also tanneries and dye-works. The trade is of some importance, and is facilitated by the good roads and railways. Corn, cattle, butter, cheese, wool, and timber, are among the principal exports. The educational establishments of the duchy include a gymnasium at Altenburg, with 10 teachers and 140 scholars, in 1854-5; a lyceum; normal seminary; a school of art and industry; 192 elementary schools, &c. The government is a limited monarchy; the dukedom is hereditary

Saxe-
Coburg-
Gotha.Saxe-
Coburg-
Gotha.

in the male line. The legislature consists of the estates of the land (*Landstände*), who assemble in one chamber. This chamber is composed of 24 deputies; 8 from the owners of manors, 8 from the cities, and 8 from the peasantry. A diet must be held every three years; and it is called, adjourned, and dissolved by the duke. The highest judicial tribunal for Saxe-Altenburg is the upper court of appeal, at Jena, in Saxe-Weimar; below this is the court of appeal at Altenburg; and in the third rank a court of justice in that town; and eight others in other parts of the duchy. The established church is the evangelical Protestant. Most of the inhabitants are Lutherans; and there are about 800 Roman Catholics and 1400 Jews. The military force consists of an infantry regiment, 1474 strong, which also forms the contingent to the federal army of Germany. The public revenue for 1856-8 amounted to L.107,943, and the expenditure to L.107,218. Altenburg belonged originally to the Osterland, which included all the country between the Saale and the Mulde; and it was governed by the margraves of Meissen, whose lands were purchased by the Elector of Saxony in 1428. It fell to the Albertine, or younger line of Saxony, by the compact of Leipzig in 1485, and remained in this branch of the family till 1554, when it was transferred to the descendants of John Frederick, the deposed elector of the elder or Ernestine line. But it was not till 1603 that Altenburg became a separate state, under the sons of Frederick William I., a grandson of the deposed elector; but this line becoming extinct in 1672, the most of their possessions fell to Ernest of Gotha; and from that time till 1826, formed a part of the duchy of Gotha. In the latter year, Frederick, previously Duke of Hildburghausen, obtained this duchy in exchange for his own, and founded the new Altenburg line. Some revolutionary disturbances took place here in 1830, but these were only transient; and in the following year a reform in the constitution was effected, which prepared the way for further improvements in various departments of the state. Another outbreak took place in 1848, when the revolutionary party attempted, but without success, to make Altenburg a republic.

SAXE-COBURG-GOTHA (Germ. *Sachsen-Koburg-Gotha*), a small duchy of Germany, comprising, besides several smaller portions, two separate districts, forming the duchies of Coburg and Gotha respectively, lying between N. Lat. 50. 8. and 51. 20.; E. Long. 10. 15. and 11. 14. The duchy of Gotha, which forms the northern portion, is bounded by Prussia on the N.; by Saxe-Weimar on the E. and W.; by Saxe-Meiningen, Hesse-Cassel, Prussia, and Schwartzburg, on the S.; while that of Coburg is bounded on the W. and N. by Saxe-Meiningen; E. and S. by Bavaria. The area and population are as follows:—

	Sq. miles.	Pop. (1855.)
Coburg	212	44,467
Gotha	547	106,411
Total	759	150,878

The surface is in both the duchies partly occupied with mountains; that of Gotha lies on the northern slope of the Thuringian Forest, which extends along its south-western frontier; while the rest of this duchy consists of low, undulating, and very fertile land. The loftiest summits of the Thuringian chain are Schneekopf, 3119 feet high; Beerberg, 3140 feet; and Inscelsberg, 2909 feet. In the duchy of Coburg there are extensive forests, and many beautiful valleys among the hills. The slope here is towards the south; and the chief river is the Itz, which flows in that direction, and falls into the Main. In Gotha, the Werra, an affluent of the Weser, takes its rise, and flows N.W.; and the Unstrut forms the eastern boundary, and flows northwards to join the Saale. The extent of arable land in the duchy is 1,139,819 acres; of wood, 600,569 acres;

of meadows, 147,598 acres; of gardens, 31,766; and of waste land, 143,637 acres. Agriculture is carried on with much care, and is the chief occupation of the people. Corn and flax are the crops most generally raised; also pulse, potatoes, and other vegetables, are cultivated. The soil is very rich and fertile in the valleys and plains; and the climate is throughout the country healthy. In Coburg it is very mild; but in the mountainous parts of Gotha of a more inclement character. Pastoral employments are actively pursued by many of the inhabitants; the sheep especially are of an excellent breed, and the horses and cattle are not bad. There were, in 1852, 7063 horses; 56,207 horned cattle; 120,693 sheep; 18,266 goats; and 36,207 pigs. Fish abound in the rivers, and wild animals in the forests of the country. The German mole infests the land in vast numbers. Among the minerals, iron, coal, cobalt, and manganese, are worked; marble, alabaster, rock-salt, porcelain-clay, &c., are also found. The manufactures, especially of the duchy of Gotha, are of some importance. The weaving of linen, woollen, and cotton fabrics; paper-making; the manufacture of iron, copper, and steel; of chemical products, tobacco, beer, brandy, and vinegar, are extensively carried on; while much potash, tar, pitch, &c., are prepared in the woods. The trade of the country is considerable. Among the exports are corn, wool, salt, timber, metallic and wooden wares, porcelain, marble, lamp-black, &c. There is also a considerable transit trade, as the duchy of Gotha is traversed by a line of railway which communicates with Leipzig on the one side, and with Frankfort on the other. The educational establishments include 3 gymnasias, a progymnasium, 2 normal seminaries, numerous industrial and other schools, and upwards of 300 elementary schools. The form of government in Saxe-Coburg-Gotha is monarchical. The highest office, which is hereditary in the male line, is occupied by the duke, who exercises the executive power; and in the legislature is limited by a diet. Each of the duchies has a separate diet, that of Coburg consisting of 11, and that of Gotha of 19 members; but, besides these, there is one general diet for the whole state, to which the Coburg diet appoints 7, and that of Gotha 14 members. The elections to the separate diets take place by means of electors equal in number to the members to be chosen, each appointed by a certain district of the country. The duration of a diet is four years, and it must meet at least in the first and last of these, while not more than six months must intervene between two diets. The duke has the power of summoning, adjourning, and dissolving the diets. Under the upper court of appeal at Jena, the judicial authority in the duchy is exercised by two colleges of justice, beneath which there are several inferior courts. There is no established form of religion; but all alike enjoy the protection of the law. The duke, and the great majority of his subjects, belong to the Lutheran Church; while there are about 2300 Roman Catholics, and 1200 Jews, in the country. The annual revenue of Coburg for the financial period 1858-61 is estimated at L.34,725, and the annual expenditure (including L.5581 interest of the debt) at L.34,342. In the administration of the public lands the annual receipts for 1855-61, were estimated at L.15,118, and the expenditure at L.10,486. As to the duchy of Gotha, the public revenue for the period 1858-61 was estimated at L.83,478 annually; and the expenditure (including L.13,303 interest on the debt) at L.83,913. The public debt amounts to L.157,346, including L.60,000 of paper money. The annual receipts of the public lands in this duchy are L.80,724, and the annual expenditure L.55,802. The military force of the country amounts to one regiment of 1860 men. Coburg, which, in the earliest times, was immediately dependent on the emperor, came, in 1348, to the house of Meissen, and through it, in 1428, to that of Saxony. By the treaty of Leipzig, in 1485, it

Saxe-
Meiningen.

fell to the Ernestine line of the latter house; and, in 1542, was made a separate duchy under John Ernest, brother of the elector, John Frederick, who regained it in 1554, after his brother's death. Meanwhile this prince had been deprived, in 1547, by the emperor of his electoral lands and dignity, but received as a compensation several lands, among which was the present duchy of Gotha. Various and continually changing divisions of the country among the descendants of John Frederick I. took place, during which Coburg and Gotha, which then formed a part of Weimar, were assigned now to one and now to another branch of the family. Gotha first became an independent state in 1640, under Duke Ernest the Pious; and was afterwards increased by the gradual addition of other lands, until it included all the territory of the Ernestine house, with the exception of Weimar. Ernest, however, died in 1675, leaving seven sons; who, after reigning jointly for five years, proceeded to a partition of the country, and founded seven new lines, viz., Gotha, Coburg, Meiningen, Ramhild, Eisenberg, Hildburghausen, and Saalfeld. Of these the second was the first to expire, in 1699, when the district of Coburg was annexed to Saalfeld. Gotha obtained, in 1707, the possessions of the extinct line of Eisenberg; and, in 1710, only the four lines of Gotha, Meiningen, Hildburghausen, and Saalfeld, remained. Frederick II., grandson of Ernest the Pious, introduced the right of primogeniture into Gotha; and the duchy has not since been divided. His family, however, became extinct in 1825. Meanwhile the house of Saalfeld, which, in 1745, assumed the title of Coburg-Saalfeld, obtained several accessions of land at the congress of Vienna; and, in 1826, a new division of the country was adopted. Gotha was then joined to Coburg, while Saalfeld and other districts were transferred to Meiningen. The ducal family of Saxe-Coburg-Gotha, formerly of Saalfeld, descending from the youngest son of Ernest the Pious, has been rendered illustrious by its connection with several of the royal families of Europe. The prince-consort of this country is the brother and heir-apparent of the reigning duke; the father of the present king of Portugal is his cousin; and another of his cousins is married to a daughter of Louis Philippe of France; while one of his uncles is king of Belgium. Important reforms in the constitution were introduced in 1846, and consequently no serious revolutionary outbreak took place in 1848.

SAXE-MEININGEN (Germ. *Sachsen-Meiningen*), a duchy of Germany, lying between N. Lat. 50. 13. and 50. 58.; E. Long. 9. 28. and 11. 25.; bounded on the N. by parts of Hesse-Cassel, Prussia, Gotha, Weimar, and Altenburg; E. by Schwartzburg and Reuss; S. by Bavaria and Coburg; and W. by Weimar. It has the form of a semi-circle or bow, curving towards the south; and its area is 981 square miles. The surface is throughout hilly, and in some parts mountainous. It is divided into the upper and the lower land; the former occupying the eastern part of the duchy, which is traversed by the range of the Thuringian Forest; the latter in the west, being occupied by the south-western slope of these mountains, and by the eastern part of the Rhön range. About the middle, between the two, lies the principality of Hildburghausen; and to the north-east of the high land that of Saalfeld; both of which are now included in the duchy of Meiningen. The principal summits are Kiefernle, in the Thuringian range, 2786 feet high; and Gebaberg, in the Rhön mountains, 2378 feet high. The principal river in the duchy is the Werra, which is formed by the union of two small streams, and flows in a north-west direction. The Saale crosses the north-east of the country; and the Milz, Steinach, and Itz, which all flow into the Main, take their rise in Saxe-Meiningen. There are several lakes in the country; and mineral springs at Salzungen and Liebenstein. With the

Saxe-
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Eisenach.

varying altitude of the ground, the character of the climate varies; in the lowland regions it is much milder than in the highland, where frost and snow sometimes occur as early as September. In many natural productions the territory of Meiningen is very rich. The extent of arable land in the country is about 243,700 acres; of wood, 224,900 acres; of meadow land, 42,500 acres; of gardens and vineyards, 12,600 acres; and of waste land nearly 90,000 acres. Agriculture is actively carried on, though not in all parts of the country, on account of its mountainous character. Besides wheat, which is cultivated chiefly in the lowland region, potatoes and other vegetables, as well as hemp, flax, tobacco, &c., are raised. The forests furnish an important article of export; the amount of wood exported annually being more than 12,000,000 cubic feet. The live stock of the country in 1849 included 4060 horses, 68,464 horned cattle, 107,355 sheep, 19,673 goats, and 49,598 pigs. The mineral produce is also considerable. Iron, pure and argentiferous copper, cobalt, coal, porcelain earth, sulphur, marble, and salt, are obtained; and the working of the various mines employed, in 1852, 3820 hands. Manufactures are actively carried on in the country. Iron is worked; glass and porcelain are made; woolen, cotton, and linen fabrics are woven; paper is manufactured; brewing, distilling, and various other branches of industry are carried on. The trade of the duchy is considerable. The principal exports are timber, which is generally floated down the Werra; iron, hardware, glass, porcelain, paper, &c., which are conveyed to various countries, especially to America. The education of the people is well attended to in Saxe-Meiningen. There were, in 1853, 294 elementary schools, 2 gymnasias, a normal school, and various other institutions. The constitution of the state is monarchical; at the head of it stands the duke, who exercises the executive power; and is limited in his legislative functions by a diet. This assembly consists of 24 deputies; two appointed by the duke, six by the landowners, eight by the inhabitants of the towns, and eight by those of the country. The duke, and the majority of the people, belong to the Lutheran religion; and there are only about 1000 Roman Catholics, 1550 Jews, and 80 Mennonites. The judicial establishments consist of a court of appeal at Hildburghausen, subordinate to that of Jena, and several inferior tribunals. The army consists of a regiment of infantry, 1726 strong. For the period 1856-59, the annual public revenue is estimated at L.137,026, and the expenditure at L.134,993. The amount of debt on the 31st of March 1857 was L.302,607. Pop. (1857) 165,662. The present ducal family of Meiningen is descended from Bernhard, the third son of Ernest the Pious, of Gotha, who received, in the partition of 1680, the duchy of Meiningen, comprising the greater part of the county of Henneberg, which had fallen, in 1583, to the Saxon states. When the line of Coburg became extinct in 1699, Meiningen entered into a protracted contest with Gotha, Hildburghausen, and Saalfeld, for the possession of its territories; which were at last, in 1723, adjudged by the Aulic Council to Meiningen, Hildburghausen, and Saalfeld, in equal portions. Similar disputes arose on the extinction, in 1710, of the line of Römheld, part of whose possessions were adjudged, in 1714, to Meiningen. The most important changes of territory in subsequent times occurred in 1826. In the partition which then took place, Meiningen received nearly the whole duchy of Hildburghausen, whose duke obtained Altenburg in exchange; the principality of Saalfeld, and other districts, from Coburg; from Gotha, the portion of Römheld which had previously belonged to that duchy; and from Altenburg some small districts. Since that period no alterations of territory have taken place.

SAXE-WEIMAR-EISENACH (Germ. *Sachsen-Weimar-Eisenach*), a grand duchy of Germany, lying between

Saxe-
Weimar-
Eisenach.

N. Lat. 50. 25. and 51. 27.; E. Long. 9. 24. and 11. 49., consists of three principal portions, besides other smaller districts. The most westerly of the three, the principality of Eisenach, is bounded on the N. by Prussia; E. by Saxe-Coburg-Gotha and Saxe-Meiningen; S. by Bavaria; and W. by Hesse-Cassel: the central and largest portion, on the W., N., and N.E. by Prussia; S.W. and S. by Altenburg and Schwartzburg: and the third portion lies between the larger part of Reuss on the S., and Altenburg, with a smaller part of Reuss, on the N.; and between Saxony on the E., and Schwartzburg on the W. The area and population of the various parts are as follows:—

Principalities.	Circles.	Sq. miles.	Pop. (1855.)
Eisenach	Eisenach	466	80,551
Weimar	Weimar	691	135,178
	Neustadt	241	48,026
Total		1398	263,755

The surface is generally undulating; and in some parts, especially in Eisenach, rises into mountains: there are also level tracts of land along the banks of the rivers. In a small separate portion of the grand duchy, the district of Ilmenau, near the S.E. extremity of the Thuringian Forest, rises Hinkelhahn, the highest summit in the country, to the height of nearly 2700 feet. Eisenach is occupied in the north by the Thuringian Mountains, more than 1300 feet high; and in the south by those of Rhön, whose highest point, that of Ellenbogenberg, has an altitude of about 2500 feet. The circle of Neustadt is traversed by several offsets of the Erz Mountains, stretching from S.E. to N.W. Among the rivers which water the grand duchy is the Saale, traversing the E. of Weimar, and receiving the Ilm, which rises in Ilmenau, and traverses the circle of Weimar. The Saale also receives the Elster and the Orla, which are the chief rivers in the circle of Neustadt. The principality of Eisenach is watered by the Werra, and by its affluents, the Fulda, Ulster, Suhl, and Orsel. In most parts of the country the climate is temperate, and the air pure and healthy. Cold and raw weather frequently occurs in the mountainous regions; while in the valley of the Saale it is extremely pleasant. In spite of many difficulties which the nature of the soil offers to the cultivator, farming is carried on with much diligence and success. The quantity of corn raised frequently exceeds the demand; potatoes, pulse, hemp, flax, hops; and on the banks of the Saale, vines are also grown. A valuable article of produce is timber. The amount of arable land in the country is about 495,300 acres; of meadow land, 81,400 acres; of gardens and vineyards, 18,750 acres; and of forests, 225,250 acres. Among the live stock of the country, the chief are sheep, of a good breed, especially in the circle of Weimar, and horned cattle, in those of Neustadt and Eisenach. In all, the grand duchy contains more than 12,000 horses, 112,000 horned cattle, 236,000 sheep, 60,000 swine, and 13,000 goats. Of the mineral produce of the land, coal, iron, copper, cobalt, and marble, are the most important articles. The chief manufactures of the country are those of woollen, linen, and cotton cloth; dyeing, and the working of metals. The greatest amount of manufacturing industry exists in the circle of Eisenach, though Neustadt is the principal seat of the wool-manufacture. Wool and grain form the staple of a trade which is actively carried on. The chief of the educational establishments in the grand duchy is the University of Jena, which belongs equally to the other Saxon duchies. (See JENA.) Besides this there are 2 gymnasia, 2 normal seminaries, and, in addition to various other establishments, 460 elementary schools. The constitution is a limited monarchy, hereditary in the male line. The executive power is in the hands of the grand duke, and the legislative is shared with a diet, consisting of

Saxo.

31 deputies; of whom 21 are elected by universal suffrage, 4 by those who possess landed property of the annual value of L.145, 5 by those who have a revenue of the same amount from other sources, and 1 by the nobility who possess estates. Justice is administered by an upper court of appeal at Jena, whose authority extends over all the Saxon duchies, the principalities of Reuss and Schwartzburg, and the duchy of Anhalt-Dessau-Cöthen. Beneath this there is an appeal court at Eisenach, and various subordinate tribunals. The grand duke, and the majority of his subjects, belong to the Evangelical Church; but there are also about 10,000 Roman Catholics, and 1430 Jews, in the country. For the financial period, 1857-59, the annual revenue of the state was estimated at L.224,757, and the expenditure at L.223,902; while the public debt, Jan. 1, 1855, amounted to L.916,259. The territories of this state, which formerly belonged to the electorate of Saxony, fell to the lot of the Ernestine line at the partition in 1485. After the deposition of John Frederick I. in 1547, numerous divisions took place among the different branches of the family; the right of primogeniture having been only introduced at a later period among these states. At the first of these divisions, in 1566, Weimar, with Gotha for its capital, was given to John Frederick II., eldest son of the deposed elector; and the rest of the country, under the name of Thuringia, to John William, his second son. The latter, however, after his brother had, by attempting to regain the dignity, incurred the fate of his father, obtained possession of Weimar, leaving Coburg and Eisenach to his two nephews, whose families became extinct in 1638. John William left two sons, the elder of whom founded the old Altenburg line; while the younger, John, had eleven sons, among whom were William, the immediate ancestor of the present family of Weimar, and Ernest, of all the other ducal houses. After this period the line of Weimar was not mixed up in the various divisions that took place among the other duchies, though it was itself once more subdivided, in 1672, into Weimar, Eisenach, and Jena. But these were reunited by the extinction of the line of Jena in 1690, and of that of Eisenach in 1741; while, in 1719, the right of primogeniture was introduced, which put an end to all further subdivisions. The most celebrated duke of Saxe-Weimar, in recent times, was Charles Augustus (1758-1828), who acted the part of a Mæneas towards the science, art, and literature of Germany, took part in the contest against Napoleon, and received at the congress of Vienna, in 1815, along with the title of grand duke, several additions to his dominions.

SAXO, or as he is generally called, *Saxo Grammaticus*, or the *Grammarians*, was descended from an illustrious Danish family, and was born about the middle of the twelfth century. Stephens, in his edition of *Saxo Grammaticus*, printed at Soroë, indubitably proves that he must have been alive in 1156; but he cannot ascertain the exact place and time of his birth. On account of his uncommon learning, Saxo was distinguished by the name of *Grammaticus*. He was provost of the cathedral church of Roskild, and warmly patronized by the learned and warlike Absalon, the celebrated archbishop of Lunden, at whose instigation he wrote the *History of Denmark*. His epitaph, which is a dry panegyric in bad Latin verses, gives no account of the era of his death, which happened, according to Stephens, in 1204. His history, consisting of sixteen books, begins from the earliest account of the Danish annals, and concludes with the year 1186. It bears the title, *Historia Regum Heroumque Danorum*, and first gives the history of King Hamlet. According to the opinion of an accurate writer, the first part, which relates to the origin of the Danes, and the reigns of the ancient kings, is full of fables; but the eight last books, and particularly those which regard the events of his own times, deserve the utmost credit.

Saxony.

He wrote in Latin; and the style, if we consider the barbarous age in which he flourished, is in general extremely elegant, but rather too poetical for history. Mallet, in his *Histoire de Dannemarck* (vol. i., p. 182), says that "Sperling, a writer of great erudition, has proved, in contradiction to the assertions of Stephens and others, that Saxo Grammaticus was secretary to Absalon, and that the Saxo, provost of Roskild, was another person, and lived earlier."

SAXONY (Germ. *Sachsen*, Fr. *Saxe*), a kingdom of Germany, lying between N. Lat. 50. 10. and 51. 23., E. Long. 11. 23. and 14. 34.; bounded on the N. and N.E. by the Prussian provinces of Saxony and Silesia, S.E. and S. by Bohemia and Bavaria, and W. by Reuss, Saxe-Weimar, Saxe-Altenburg, and Prussia. Its form is nearly triangular; its length from N.E. to S.W. about 150 miles, breadth about 75; area, 5760 square miles. The northern part of the kingdom is for the most part a level or an undulating country; but on the south it is very mountainous. The principal mountain ranges are the Erzgebirge, extending along the Bohemian frontier, and reaching their highest elevation in the Fichtelberg, 3813 feet high; the Lusatian mountains, forming a continuation of the former range on the E. of the Elbe, with Lausche, 2530 feet high; and the Elbe sandstone range, extending along both sides of the Elbe, from Dresden to Bohemia.

This last mountainous district, usually denominated Saxon Switzerland, has peculiar charms for the lovers of picturesque scenery. It is about 28 miles in length and 23 in breadth, displaying deep chasms bordered by perpendicular rocks, some naked, and others clothed with every variety of trees. Rapid streams pour from declivities, forming cascades in some parts, and in others in deep vales, meandering through verdant meadows, without their entrance or their egress being discoverable by the observer from the precipices which enclose them. Through this mass of mountains the River Elbe has worn itself a passage by a most tortuous course, and washes the bases of rocks, in some parts of nearly 1000 feet in perpendicular height. From the surface of this mountain-plain rise pinnacles of rocks, on which castles in the feudal times were erected, some of the ruins of which add to the romantic grandeur of the prospect; whilst others, such as Königstein, have had applied to them all the arts of modern fortification, and are the most impregnable fortresses in the Saxon dominions. Königstein has on its apex strong walls, surrounding buildings in which the treasures of the crown are secured in times of danger. Few spots in Europe create greater interest in the geologist, the botanist, or the lover of picturesque scenery, than this portion of the country so appropriately denominated Saxon Switzerland.

The principal river of Saxony, and that to which almost all the others contribute their streams, though not till it has left this kingdom, is the Elbe. It enters from Bohemia, and is navigable through the whole of its Saxon course. The other rivers are the Black Elster, which rises in Lusatia, and soon enters the Prussian territory; and the Spree, which comes out of Bohemia, divides itself into two branches near Bautzen, and then passes into Prussia. These rivers fall into the Elbe on its right bank. On the left bank it receives the Mulde, which is formed by the confluence of the Zwickau or western, and the Freiberg or eastern Mulde, both rising in the Erzgebirge, and flows northwards till it joins the Elbe at Dessau. The White Elster rises in the Voigtland, or south-western portion of the Erzgebirge, with many curvatures reaches the suburbs of the city of Leipzig, and, receiving there the small river Pleisse, falls into the Saale, and is ultimately lost in the Elbe above Magdeburg. The only river that does not run to the Elbe is the Neisse, which rises in the eastern corner of the kingdom, and, passing into Silesia, at length empties itself into the Oder. There are no considerable lakes in

Saxony.

Saxony, nor any canals, except such as are used in the mining districts for conveying the ore to the mills.

As compared with most parts of Germany, the agriculture of Saxony is much advanced. Wherever the soil is capable of cultivation it is worked with diligence; and the more hilly and poorer soils have a good herbage, and yield pasture to numerous flocks and herds. The sides of the mountains towards the Elbe, from Pirna to Meissen, are covered with vines which yield both red and white wine, to the amount of 145,320 gallons in 1855. The extent of arable land in the kingdom is estimated at 1,839,000 acres, of meadow land at 413,000 acres, of gardens and vineyards at 45,000 acres, and of forests at 1,131,000 acres.

The arable land is chiefly cultivated on a three-course system, though in the Voigtland there are generally four courses. Rye, wheat, barley, and oats are the crops most generally raised. Notwithstanding the attention paid to farming, and the natural excellence of the soil in several parts, there is not produced more than enough of grain to supply the wants of the dense population. Peas, beans, lentils, and vetches are grown. The culture of potatoes is very extensive, and they form almost exclusively the food of the labouring classes in the mountainous districts. Tobacco, hemp, flax, wood, hops, and chicory, are grown in some parts of the kingdom, but none of them to the extent which the consumption of the country requires. The forests of Saxony form one of the chief sources of wealth to the country. Timber of excellent quality is obtained from them to the amount of more than 52,000,000 cubic feet annually. Pastoral occupations afford employment to a great number of the inhabitants. The cattle are good, especially in the Voigtland and Erzgebirge, where large quantities of butter are produced. As to the rearing of sheep, generally of a good breed, this country occupies the first rank in Germany; and poultry and pigs are also numerous. There were, in 1853, 94,925 horses, 610,836 horned cattle, 485,147 sheep, 74,726 goats, and 124,158 pigs. The wild animals of the country are at present of little importance.

Saxony abounds in minerals, and the ore is tolerably rich; which, added to superior skill and economy in working the mines and separating the metals, makes them very beneficial to the crown, to whom the greater portion of them belong. In 1854 there were in operation 362 mines in all, besides a large number of smelting-houses. The value of the silver obtained in 1850 was L.206,176; and the total value of the mineral produce about L.428,000. Besides silver, iron, lead, copper, tin, coal, sandstone, sulphur, saltpetre, and many other minerals, are found in the kingdom. Salt, however, is entirely absent, and has to be imported from Prussian Saxony.

In no part of the continent has manufacturing industry been carried to so great an extent, or occupied so large a proportion of the population, as in Saxony. It is in the mountainous regions of Lusatia and the Erzgebirge that manufactures are most extensively carried on; and in these regions there are not only many manufacturing towns, but villages, which in size, architecture, and activity of business, surpass many towns. The first manufacturing town of the country is Chemnitz. More than the half of the people are engaged in manufactures. The annual value of the whole produce of Saxon industry is estimated at thirteen millions sterling. It would include almost the whole catalogue of European manufactures to enumerate the respective kinds of goods made in Saxony. Woollens, linens, cottons, and silks for clothing; iron, brass, and copper wares; paper, leather, earthenware, hats, musical instruments, and turnery ware; various chemical and dyeing preparations; clocks, watches, swords, guns, and pistols, are all comprehended in the list of Saxon manufactures.

The commerce of a country whose inhabitants are chiefly

Saxony. occupied in manufactures, and produce an insufficiency of food for their own consumption, must necessarily be extensive. The trade of Saxony chiefly centres in the city of Leipzig, where, at the time of the three annual fairs, the greater part of the manufactures are disposed of, and contracts are made for such foreign commodities as the supply of the country demands. The roads in Saxony are generally good, and these, as well as the railways, of which there were in 1856 nearly 400 miles in operation, and the navigation of the Elbe, greatly facilitate the trade of the country. Saxony exports sheep's wool, fine woollen goods, linen and thread lace, yarn and worsted, ironmongery, cutlery, and braziers, and also books. It receives in return corn, wine, salt, colonial wares, &c. The annual excess in value of the exports over the imports of Saxony is above L.700,000; and the share of the kingdom in the net receipts of the German Zollverein amounted in 1855 to L.318,976. The quantities of the principal articles exported and imported in 1855 are exhibited in the following table:—

Principal Articles.	Import.	Export.	Transit.
Books (cwt)	9,404	12,059	672
Cattle.....(head.)	74,608	8,044	...
Coal.....(cwt.)	7,734	15,621	...
Copper and brass.....	9,693	7,264	1,242
Corn, pulse, seeds, berries (bushels)	1,727,105	387,275	...
Cotton and cotton stuffs..... (cwt.)	260,628	180,856	162,094
Drugs, colours, &c.	203,641	126,929	139,081
Glass and glass ware.....	8,309	262,386	792
Grocery, &c.....	322,279	83,303	278,311
Hardware.....	401	5,712	3,824
Hides, &c.....	33,391	8,228	2,448
Iron and steel.....	110,535	21,065	94,476
Leather, &c.....	1,521	17,536	6,644
Linen, linen yarn, &c.....	17,206	8,315	13,119
Oil.....	4,305	10,711	51,399
Paper, pasteboard, &c.....	4,421	4,973	1,090
Pottery.....	2,917	3,863	595
Silk and silk fabrics.....	3,569	5,122	3,887
Tallow and stearine.....	2,627	306	2,329
Tar, pitch, &c.....	3,400	761	456
Tin and tin wares.....	1,353	116	966
Wood and wooden fabrics....	19,267	10,475	982
Wool and woollens.....	87,944	30,521	22,902

The government is a monarchy hereditary in the Saxon Albertine line, and, in failure of that, in the Ernestine or Saxe-Weimar branch of the family. The king enjoys the whole executive power, confirms pardons, bestows commissions, nominates the supreme judges, and enjoys the power of making peace and war, and of concluding all treaties. In making new laws, and in imposing new taxes, the states have the right to be consulted. The legislative body is a diet composed of two chambers, which meet at the same time, and possess equal rights and privileges. The first chamber includes, besides the nobility, a deputy from the University of Leipzig, one of the Evangelical and one of the Roman Catholic clergy, the supreme magistrates of Dresden, Leipzig, and other towns, &c. In the second chamber there are twenty deputies from the possessors of manors, twenty-five from the towns, twenty-five from the country, and five representing the manufacturing and commercial interests. When the king pleases these states are convoked; but they must hold an ordinary meeting at least once every three years, and an extraordinary one on each change of ministry. The administration is conducted by a cabinet council, under which, through the privy council, orders are communicated to the departments of finance, war, domains, police, and foreign affairs. According to the budget for 1858-60, the income and expenditure each amounted to L.1,873,048; and the public debt at the end of 1857 was L.12,264,802.

The military force of Saxony is composed of the following troops:—

Infantry of the line, forming 4 brigades.....	15,748
Chasseurs " " 1 "	4,005
Cavalry " " 2 "	3,208
Artillery	2,430
Commanding officers.....	15

Total (exclusive of the reserve)..... 25,406

The whole contingent of Saxony to the German confederation is 18,000 men.

Although the royal family professes the Roman Catholic religion, the most of the people belong to the Lutheran Church. In 1855 the number of Lutherans was 1,995,891; of Roman Catholics, 36,730; of the Reformed Church, 3602; of German Catholics, 1753; and of Jews, 1200. Toleration is extended to all sects recognised by the law; and these are the Lutheran, Reformed, Roman, Greek, and German Catholic Churches; but over all alike the civil government exercises the supreme ecclesiastical power.

The educational institutions comprise the University of Leipzig, and in the endowed classical schools of Meissen and Grimma, as well as in 11 gymnasia, 9 normal seminaries, 1892 elementary schools, and various other institutions. Both the higher and lower kinds of schools are well managed, and popular education is widely spread throughout the country; so that in intellectual culture Saxony stands in the foremost rank among the nations of Europe. The fine arts have been cultivated with considerable success, and both statuary and painting receive valuable assistance from the fine productions which are contained in the collections of Dresden. The capital of Saxony is Dresden and the country is divided into four circles, as follows:—

	Sq. Miles.	Pop. (1855.)
Dresden.....	1,669	528,714
Leipzig.....	1,338	454,262
Zwickau.....	1,785	759,328
Bautzen.....	968	296,771
Total.....	5,760	2,039,075

The early history of the Saxon people is involved in considerable obscurity. According to the most ancient traditions of the people, they are represented as being the aboriginal inhabitants of the wide forests of their own country, living by agriculture and the chase. As the population gradually increased, and became too great for the country, colonies were sent out from time to time. These settled on the coasts of the Cimbrian peninsula, where they pursued a different mode of life from the inland tribes,—devoting themselves to commerce, and partly also to piracy. They rendered themselves so terrible to the Romans by their devastations that, in the reign of Theodosius, a Saxon frontier, guarded by Roman armies, was established along the shores of the German Ocean. It was from these maritime Saxons that the bands came over to colonize Great Britain.

After the ecclesiastical council at Worms in 774, Charlemagne began a long and bloody war against the Saxons. He made repeated invasions into their country, in which he was almost uniformly successful; but as soon as his back was turned the enemy was again in arms. The result of the war was that, in 804, a great part of the Saxons were compelled to adopt Christianity, and submit to the power of the Franks. They were then governed by counts, generally of Frank origin, who were afterwards raised to the rank of dukes. Of these the most celebrated is Henry the Fowler (912-936), who was elected German emperor, the first of the Saxon family who wore that crown. The duchy at that time did not correspond with the present Saxony, but with Westphalia, Hanover, and Holstein.

The nucleus of the present kingdom of Saxony was formed by the erection in 926, by Henry the Fowler, of the margraviate of Meissen, comprising the country between the Elbe, the Saale, and the Erzgebirge, as a bul-

Saxony.

wark against the Slavonian tribes beyond. In 1130 the office of margrave became hereditary in the family of Wettin, who added to the territory of Meissen their own possessions in Thuringia, Saxony, Suabia, &c.

Meanwhile the Duchy of Saxony, afterwards raised to an electorate, passed into the Ascanian family, the last elector of which, Albert III., died in 1422. As he left no issue, numerous claimants appeared for his land and dignity; but the Emperor Sigismund conferred them, in 1423, on Frederick the Quarrelsome, Margrave of Meissen, on account of the services he had rendered to the empire in the war against the Hussites.

The territory of the house of Wettin had by this time extended far beyond its original limits, and stretched from the Werra to the Oder, and from the Erzgebirge to the Harz Mountains. The accession of Frederick to Saxony gave him little additional territory, but conferred much importance, by raising him to the second place among the temporal electors. Thus the name of the purest in blood of all the German tribes, passed over to a different people; and that of Saxony came to designate what had been formerly known as the margraviate of Meissen. The country had been very much improved by the discovery of its great mineral wealth, which led to the clearing of the immense forests; but in the beginning of the fifteenth century great devastations were caused by the incursions of the Hussite troops from Bohemia. Under the wise and energetic rule of Frederick the Quarrelsome, the University of Leipzig, an offshoot from that of Prague, was founded in 1409. Frederick was succeeded in 1428 by his son of the same name, surnamed the Gentle, who died in 1464, leaving two sons, Ernest and Albert, from whom the Ernestine and Albertine families of Saxony are descended. For some time they reigned conjointly; but in 1485 proceeded to a division of the country. Ernest, the elder of the two, obtained, along with the electorate and the territory attached to that office, the greater part of Thuringia, the Voigtland, and the district of Coburg; and Albert, the ancient Meissen, and the rest of Thuringia.

The successors of Ernest in the electorate did good service to the cause of truth and freedom in supporting the rise of the Reformation. Frederick III. (1486-1525), founded the University of Wittenberg, and afforded his patronage to Luther, who was made professor there. John the Constant (1525-32) stood at the head of the protesting princes at the Diet of Spire in 1529; and John Frederick the Magnanimous (1532-47) took the lead against Charles V. in the Schmalkaldic war; and was defeated and taken prisoner in the battle of Mühlberg in 1547. For this act of rebellion he was deprived by the emperor of his electoral dignity and lands; and these were conferred on his cousin Maurice, duke of Saxony.

While the Ernestine branch of the family were thus contending in favour of liberty and protestantism, Albert and his immediate successor, who possessed the present kingdom of Saxony, were exerting their power on the opposite side. The former, in 1488, led an army to the Netherlands, and delivered from captivity Maximilian, king of the Romans, for which service he was appointed, in 1495, hereditary viceroy in Friesland, and general of the imperial army. He died, however, in 1500, in a vain attempt to subdue the Frisians; and his son George, who succeeded to the duchy, and in 1504 obtained Friesland from his brother Henry, being equally unsuccessful in his efforts, gave up this province in 1515 to the Archduke of Austria for 20,000 gulden about (£200,000). George strongly opposed the progress of the Reformation, and attempted to exclude, by will, any Protestant prince from the succession; but dying in 1539, leaving his will unsigned, he was succeeded by his brother Henry, a Lutheran, who introduced the reformed religion into the country. His son Maurice,

Saxony.

who became duke in 1541 and elector in 1548, though he adhered to Charles V. in the Schmalkaldic war, afterwards opposed and put an end to the despotic designs of that emperor; and by the treaty of Passau in 1551, obtained for the Protestants the free exercise of their religion. Maurice's brother and successor, August (1553-86), assisted in bringing about the religious peace of Augsburg in 1555, by which the Protestants obtained equal rights with the Roman Catholics, and also did much for the improvement of the laws and constitution of Saxony. Various additional districts were added to the electorate in this reign.

The reigns of Christian I. (1586-91) and Christian II. (1591-1611) were distinguished only for religious disputes; but that of John George I., the brother and successor of the latter, includes the whole period of the Thirty Years' War, in which he played no very illustrious part. He refused the Bohemian crown, which was offered to him, and not only advised the elector of the Palatinate to do the same, but refused to afford him any assistance. He remained on the emperor's side till the arrival of Gustavus Adolphus; and after his death made terms with the emperor at Prague in 1635, by which he obtained part of the see of Magdeburg, and the two Lusatian margraviates. His eldest son, John George II., succeeded in 1656; while the younger sons, August, Christian, and Maurice founded the lines of Wossenfels, Merseburg, and Zeitz, which became extinct in 1746, 1738, and 1718, respectively. John George III. (1680-91), the son and successor of the last elector, distinguished himself by the assistance he gave to the emperor against the Turks in Hungary, and against France on the Rhine.

After the short reign of John George IV., Frederick August I., surnamed the Strong, succeeded in 1694; and, in order to obtain the elective crown of Poland, went over, in 1697, to the Roman Catholic Church. By this increase of power and territory, however, he involved himself in a war with the greatest soldier of the age, Charles XII. of Sweden, in which Saxony was invaded by the Swede, and suffered the loss of an immense amount of money and blood. Frederick August II., who succeeded his father in 1733, was also elected King of Poland. During this reign, as in the preceding, the wars and extravagance of the court reduced Saxony to the lowest pitch of misery. In the war of the Austrian succession, Frederick August took part with France and Prussia against Austria; but in the Seven Years' War he placed himself on the imperial side. In the latter contest Saxony was devastated alike by friend and foe, and was the scene of many of the victories of Frederick the Great.

The wretched state of the country began to be ameliorated in the long reign of Frederick August III., who obtained the electorate in 1763 at the age of thirteen, and ruled at first under the guardianship of his uncle Xaver. A system of strict economy, justice, and mildness was introduced; the people were relieved from many burdensome imposts; the use of torture was abolished; and much was done for the material improvement of the country. A rising of the peasantry, which took place in 1790, was put down without loss of blood, and the grievances complained of were removed. In the wars which followed the French Revolution, Saxony took part with Prussia at first; but after the power of that kingdom was overthrown by the decisive battle of Jena in 1806, Frederick August made peace with Napoleon, and was made, with the title of king, a member of the Rhenish confederacy. By the peace of Tilsit in the following year he obtained several accessions of territory, and the sovereignty over the newly erected grand-duchy of Warsaw. During this time of his prosperity the monarch acted a very upright and honourable part, in not taking advantage of his power to enrich himself at the expense of the surrounding small states, as he might easily have done. But a great reverse of fortune befell him after

Saxony. the fall of Napoleon. Saxony was treated as a conquered country; the king was kept in confinement for some time; and a partition of the kingdom was effected by the Congress of Vienna, whereby, besides the loss of the duchy of Warsaw, an area of 7911 square miles, with a population of 845,218, was ceded to Prussia, to make up to that kingdom for its part of Poland, which Russia obtained.

Notwithstanding this spoliation of more than half its territory, Saxony has since risen to a more flourishing and prosperous condition than ever. Frederick August I. (as king) died in 1827, having deservedly obtained the surname of the Just; and was succeeded by his brother Anthony, who carried on the various measures of reform which his predecessor had begun in the later years of his reign. Still the people suffered under many grievances, and had as yet very little share in the legislative power. The outbreaks which took place in 1830 in Dresden and Leipzig did not indeed cause any serious disturbance; but they led to the introduction of a new constitution in the following year. On the death of the king in 1836, his nephew, Frederick August II., who had been regent since 1830, ascended the throne.

The constitutional system now established did not succeed altogether in the best possible way. A powerful party was formed in opposition to the government; and in the year 1843 violent contests began, in which the opposition gradually gained the upper hand. The chief points in dispute were the freedom of the press and the publicity of judicial proceedings. The government followed the fatal policy of delaying to yield as long as possible, so that the concessions which would in 1843 have been received with universal joy, were granted in 1846 without any effect. An attack was made in Leipzig in 1845 upon Prince John, the heir-apparent; and having been put down by the military, led to a still more violent opposition on the part of the popular party. The ministry, however, still held their ground during the stormy session of 1845-6; but were at last compelled to resign in March 1848, when a liberal cabinet was formed. Various changes were introduced in the following year, especially with regard to the mode of electing the legislature, but these were not of long continuance; and the diet of 1852, elected after the old manner, restored the constitution almost entirely as it was before 1848. Falkenstein, who was one of the ministry previous to 1848, and resigned in that year, is now again in the cabinet, and has been since 1853. In 1854, the king was killed by an accident while travelling in the Tyrol, and was succeeded by his brother John, the present king.

SAXONY (Germ. *Sachsen*), a province of the Prussian monarchy, lying between 50. 55. and 53. 5. N. Lat., 9. 22. and 13. 21. E. Long.; bounded on the N.E. by the province of Brandenburg, S. by the kingdom of Saxony and the Saxon duchies, W. and N.W. by Electoral Hesse, Brunswick, and Hanover. Area, 9760 square miles. It has several detached portions lying among the Saxon duchies, and encloses portions of these as well as the duchies of Anhalt and the principalities of Schwartzburg. It is for the most part a flat country, consisting of the land lying between the Thuringian Mountains in the S., the Harz Mountains in the W., and the Elbe in the E. and N. The Harz Mountains belong partly to this province, and within its limits is their highest summit, the Brocken, a granite peak 3508 feet high; and another called Konigsberg, which attains the height of 3100 feet, besides others of less elevation. To that part of the Thuringian mountain which is included in the province belongs the summit of Dolmar, 2100 feet high. The lower portions of the country are watered by the Elbe, which enters the province at its south-eastern extremity, and flows in an irregular course to the north-west, never very far from the borders of Brandenburg, which it touches in the lower part of its

course. This river receives, either directly or indirectly, all the other streams of Saxony. The Saale flows northwards from the Thuringian Mountains into the Elbe; the Mulde, also an affluent of the Elbe, flows in the same direction further east, and nearly parallel to the Saale; and the Unstrut flows from the west and joins the Saale. The whole of the soil of Saxony is not only very fertile, but exceedingly well cultivated; and it enjoys a mild and salubrious climate. The extent of arable land in the province was, in 1852, 3,377,069 acres; of gardens, vineyards, &c., 70,487 acres; of meadows, 424,701 acres; of pasture land, 394,597 acres; of forests, 955,511 acres; and of waste land, 1,403,689 acres. Cattle, sheep, and horses are raised in great numbers in Saxony. There were in 1855, 152,485 horses; 502 mules and asses; 522,380 horned cattle; 1,838,946 sheep; 144,255 goats; and 332,490 pigs in the province. The mineral productions comprise silver, iron, lead, copper, coal, and salt. Marble, alabaster, granite, sandstone, and porcelain clay are also found. Manufactures are actively carried on here, especially those of woollen and cotton cloth. Education is well provided for, and the proportion of the population who have enjoyed its advantages is higher here than in any other province of Prussia. There are in all 2872 public elementary schools, with 3794 teachers and 304,318 scholars; 66 intermediate schools for boys, with 11,480 scholars; 49 girls' schools, with 11,036 scholars; 11 normal seminaries; 4 progymnasias; and 21 gymnasias. Saxony contains also one university, that of Halle, with which the former one at Wittenberg has been united. The great majority of the inhabitants are of German extraction; 1,738,130 belong to the Evangelical Church, 118,064 to the Roman Catholic; 5 to the Greek Church, 16 are Mennonites, and 5320 Jews. Saxony is divided into three circles, as follows:—

	Square Miles.	Pop. (1855).
Magdeburg	4453	727,052
Merseburg.....	3999	781,947
Erfurt	1308	352,536
Total.....	9760	1,861,535

The greater part of this province till 1815, formed part of the kingdom of Saxony; but by the congress of Vienna it was annexed to Prussia.

SAY, JEAN BAPTISTE, a French political economist, was born at Lyons on the 5th of January 1767, of an honourable commercial family of Protestant refugees. Say was originally designed for the family trade, but having always been of a meditative turn, he showed early a decided fondness for letters. In his youth he assisted Mirabeau and Clavieres, and during the Reign of Terror he was one of the conductors of the *Decade Philosophique*, the sole scientific and literary monument of that bloody time. Being requested to take part in the affairs of the tribunate by Bonaparte, then first consul, he remained faithful to his political convictions; and when Napoleon was subsequently raised to the empire, Say voted against it, and withdrew in 1804. He was for a time director of taxes for the department of Allier, but afterwards resigned this post to popularize the science of Adam Smith and Quesnay. Say was not a discoverer in political economy, but was a very intelligent expounder of the principles of that science as originated by others. His distinguishing merit is that of a skilful exponent of truths and principles already known and fully established; and except in his inquiry relating to gluts, he left the science of political economy exactly in the same state as he found it. He died at Paris on the 16th of November 1832. Say's principal works are—*Traité d'Economie Politique*, 2 vols., 1802; and 5 vols. in 1826, afterwards expanded into the *Cours Complet d'Economie Politique Pratique*, 6 vols., 1829; *Catechisme d'Economie Politique*, 1815, fifth edition, 1826. Another

Say.

Scala Nova work, entitled *De l'Angleterre et des Anglais*, was written after a tour in that country.

Scaliger.

SCALA NOVA, a seaport town of Asiatic Turkey, at the head of a gulf of the same name, 40 miles S. of Smyrna. It is a wretched, meanly-built place, on the side of a hill rising from the sea. Some wine is made here; and an active trade was formerly carried on with Egypt and Salonica. Pop. 20,000.

SCALE, a mathematical instrument, consisting of several lines drawn on wood, brass, or silver, and variously divided, according to the purposes it is intended to serve; whence it acquires various denominations, as the *plain scale*, *diagonal scale*, *plotting scale*, and the like. (See GUNTER.)

SCALE, in *Music*. See MUSIC. The name is derived from *scala*, a ladder, or flight of stairs, and has reference to the disposition of the notes that ascend or descend upon the written or printed musical stave.

SCALIGER, JULIUS CÆSAR, a learned critic, poet, physician, and philosopher, was born at the castle of Riva, in the territories of Verona, in 1484, and is said to have been descended from the ancient princes of Verona, though this is not mentioned in the letters of naturalization which he obtained in France in 1528. He learned the first rudiments of the Latin tongue in his own country; and in his twelfth year was presented to the Emperor Maximilian, who made him one of his pages. He served that emperor seventeen years, and gave signal proofs of his valour and conduct in several expeditions. He was present at the battle of Ravenna in April 1512, in which he had the misfortune to lose his father, Benedict Scaliger, and his brother Titus, on which his mother died with grief; when, being reduced to necessitous circumstances, he entered into the order of the Franciscans, and applied himself to study at Bologna. But soon afterwards, changing his mind with respect to his becoming a monk, he took arms again, and served in Piedmont, at which time a physician persuaded him to study physic, which he did at his leisure hours, and also learned Greek; and at last the gout determined him, at forty years of age, to abandon a military life. He soon afterwards settled at Agen, where he married, and began to apply himself seriously to his studies. He learned first the French language, which he spoke perfectly in three months; and then made himself master of the Gascon, Italian, Spanish, German, Hungarian, and Slavonian; but the chief object of his studies was polite literature. Meanwhile, he supported his family by the practice of physic. He did not publish any of his works till he was forty-seven years of age, when he soon gained a great name in the republic of letters. He had a graceful person, and so strong a memory, even in his old age, that he dictated to his son two hundred verses which he had composed the day before, and retained without writing them down. He was so charitable, that his house was as it were an hospital for the poor and sick; and he had such an aversion to lying, that he would have no correspondence with those who were given to that vice; but, on the other hand, he had much vanity, and possessed a satirical spirit, which created him many enemies. He died of a retention of urine in 1558. The following is a list of his principal works:—*Commentarii Hippocratis librum De Insomniis*, Græc. et Lat., 8vo, Lyon, 1538; *De Causis Lingue Latine*, Libri xviii., 4to, Lyon, 1540—unquestionably a great work; *Poetices Libri Septem*, folio, Lyon, 1561—a monument of grammatical knowledge; *In Theophrasti Libros sex de Causis Plantarum Commentarii*, folio, Geneva, 1566; *Commentarii in Aristoteli adscriptos Libros Duos de Plantis*, Geneva, 1566; *Aristotelis Historiæ Animalium Liber Decimus*, Lyon, 1584; *Animadversiones in Theophrasti historias Plantarum*, Lyon, 1584; *J. C. Scaligeri adv. Desid. Erasmus Orationes Duæ, Eloquentiæ Romanæ Vindices*, Toulouse,

1621—an exceedingly virulent attack upon Erasmus. The Latin poems published by J. C. Scaliger did not tend greatly to increase his fame.

SCALIGER, *Joseph Justus*, one of the most learned critics and writers of his time. He was the son of Julius Cæsar Scaliger, and was born at Agen, in France, in 1540. He studied in the college of Bordeaux, after which his father took him under his own care, and employed him in transcribing his poems. By this means he obtained such a taste for poetry, that before he was seventeen years old he wrote a tragedy upon the subject of Œdipus, in which he introduced all the poetical ornaments of style and sentiment. His father having died in 1558, he went to Paris the year following, with a desire to apply himself to the Greek tongue. For this purpose he for two months attended the lectures of Turnebus; but finding that in the usual course he should be a long time in gaining his point, he shut himself up in his closet, and by constant application for two years gained a perfect knowledge of that language. After this he applied to the Hebrew, which he learned by himself with great facility. He made no less progress in the sciences; and his writings procured him the reputation of one of the greatest men of that or of any other age. He embraced the reformed religion at twenty-two years of age. In 1563 he attached himself to Louis Casteignier de la Roche Pozay, whom he attended in several journeys; and in 1593 he was invited to accept of the place of honorary professor of the University of Leyden, which he complied with. He died of a dropsy in that city in 1609. He was a man of great temperance, was never married, and was so close a student, that he often spent whole days in his study without eating; and though his circumstances were always very narrow, he constantly refused the presents that were offered him. The following are the principal works of this great critic, whose fame has well-nigh eclipsed that of his proud and subtle father:—*De Emendatione Temporum*, folio, Paris, 1583—his greatest work, connected with which was afterwards published his *Thesaurus Temporum, complectens Eusebii Pamphili Chronicon cum Isagogicis Chronologiæ Canonibus*, 2 vols., Amst. 1658. Among his minor works are his edition of Arabian proverbs, his *Poemata* and *Epistolæ*, besides numerous commentaries, annotations, and editions of Varro, Theocritus, Manilius, Catullus, Tibullus, Propertius, Seneca the dramatist, Ausonius, Nonnus, Festus, and many other ancient authors. In all of those works we can trace the hand of the profound scholar and the sagacious critic; but his works are too frequently disfigured by great bitterness of spirit, and by the disgusting invectives which he showers on his opponents. The collections entitled Scaligerana were the idle pretensions of his father to an illustrious origin, and were collected from his conversations by one of his friends, and being ranged into alphabetical order, were published by Isaac Vossius.

SCAMANDER, or XANTHUS, a river of the Troad, which has attained a world-wide fame by means of the poems of Homer, and now bears the name of *Bunarbashisu*. According to the poet, it was called Xanthus by gods, and Scamander by men.

SCANDERBEG. See TURKEY.

SCANDEROON, ISKENDEROON, or ALEXANDRETTA, a town of Asiatic Turkey, the seaport of Aleppo, from which it is distant 65 miles W.N.W., on the S.E. shore of the bay of Scanderoon. It is a meanly-built place, and very unhealthy on account of the marshes that surround it; but some improvement has recently been effected by the draining of one of the largest of these, and the harbour is the best on the Syrian coast. It is one of the principal seats of the maritime trade of Syria. Pop. 800.

SCANDINAVIA, the ancient name of Norway, Sweden, and Denmark.

Scaliger
||
Scandi-
navia.

SCANDINAVIAN LITERATURE.

Scandinavian literature. THE literature of Scandinavia is the literature of our ancestors. There has been of late years a determined bias to show our ancestry from the Germans; but with the Germans proper we have little or nothing to do. It is with that branch of the great Gothic race, stretching from Norway to the frontiers of France, including the Scandinavians, the Holsteiners, the Dutch and Flemish, that we claim kindred, and from whom we derive a portion of our blood and the freedom of our institutions. It has been well said, that we are not even Anglo-Saxons, but English, being amalgamated of the ancient Britain, the Roman, the Anglo-Saxon, and Scandinavian. They who endeavour to trace our paternity to the Germans proper, will find that we have few traces in our language, our political constitution, or our national character of such paternity. The Germans are, and always have been, an inland, sedentary, industrious, but unenterprising people, having no fleets, no colonies, no free institutions, except such as they have of late years copied from us. But when we turn to the natives whose maritime habits led them to locate themselves on the sea-board of the greater part of Western Europe, we discover our true progenitors. They, and especially the Scandinavians, have always had a determined tendency to political liberty, to ships, maritime adventures, colonization, and foreign conquest. The language of the Anglo-Saxons—a Scandinavian, and not a pure German race, Anglen, whence they came, being still a portion of Holstein, a Danish province—Dean Trench, a great authority, tells us, constitutes sixty parts of our present English out of every hundred, thirty only being from the Latin, five from Greek, and five from other sources. It is extraordinary, therefore, that we have not made a more intimate and educational acquaintance with a language which is the great foundation of our own, and a literature so illustrative of the great sources of our descent, and our present stamp of character.

The earliest literature of Scandinavia is of an antiquity the date of which is vastly remote, and its limits untraceable. It consists of those accounts of its gods and heroes which had been handed down from age to age by a class of poets and oral historians educated for the purpose, and styled Scalds and Sagamen. The Scalds, or poets, attended the kings and princes both in their palaces at home and on their martial expeditions, and sung the history of the gods and the exploits of the sovereigns and distinguished heroes. The Sagamen appear to have not only related their histories and legends in palaces, but far and wide amongst the people. This system of oral literature continued till Christianity introduced letters, in or about the year 1000. It is true, that the Scandinavians possessed long before that a rude species of letters called Runes, which were cut on staves of wood, called Runstafvar, or Rimstafvar, or on rocks and stones, as memorials of some great event. Their Bauta-stenar, or stones of memorial, had Runic inscriptions upon them, and they had staves of a calender-like character cut with them, called Kaflar; they had also arrived so far as to write letters on great occasions in them, as the letter which Anshar the Christian missionary, the apostle of the North, received from King Björn. But however extraordinary, they never appear to have conceived the idea of preserving their knowledge in them, but continued to commit their histories, their poems, and their tales, to the memories of their Scalds and Sagamen.

Wherever Christianity came in the shape of Romanism, which was the case sooner or later all over Europe, it put down the original literature or traditionary lore of the country, because it was inseparably mixed with the pa-

ganism of the people. This was the case in Scandinavia, and so completely did it root out the ancient knowledge, that neither in Scandinavia itself, in England, nor in Normandy, were there left any traces of the grand mythologic and heroic compositions which had filled the Scandinavian mind for countless ages up to that period. All this ceased to exist, except in a much metamorphosed form in the minds of the common people, in what are called Folks-Sagor, to which we shall, ere long, allude. Odin, Thor, Frigga, and Iduna, became mere names, and their deeds are no longer remembered as theirs. Fortunately for some very noble and curious compositions, these were preserved by such of the Scandinavians who had fled to Iceland from the oppression of some of their conquering monarchs, and who there retained a greater independence of the Romish Church. In that wild volcanic island, amidst its stormy northern seas, the ancient order and arts of the Scalds were preserved. The Scalds went thence to attend the courts and campaigns of the Scandinavian kings, and learned men, by their lamps during the six months' perpetual darkness of their winters, penned down what yet remained of the pagan orature of their ancestors. The first of these was Sámund Sigfusson, surnamed Frode, or the Learned. He was born in 1056, only about a year before Christianity was introduced into the island by Isleif, the first bishop. He was, therefore, though educated a Christian, also a Scald; and thus sympathizing with the Scalds gone before him, he wrote down all that remained of their great mythologic and heroic poems, now remaining under the name of the Elder, or Rhythmical Edda. After him followed Ari Hinn Frode, who began the chronicles of Iceland in the *Landnama Bok*; and Snorre Sturleson, the author of the Second or Prose Edda, and the *Heimskringla*, or *Chronicle of the Kings of Norway*. These, with a great number of romantic and popular sagas, constitute the mass of the ancient Norse literature, which, escaping the annihilating hands of the Romish priests in that remote island, which remained an independent republic till 1261, astonished the learned world of Denmark and Sweden, by their discovery in the middle of the seventeenth century. For a full account of these extraordinary productions, we must refer to Howitt's *History of Northern Literature*, where a complete analysis and copious translated specimens of the Eddas are given, and to Mr Laing's translation of Snorre Sturleson's *Heimskringla*. Our space will admit of only the most cursory notice of them.

THE ELDER, OR SAMUND'S EDDA.

On entering on these ancient books, we are immediately struck with the corroborative evidence which they furnish of the eastern origin of the Goths, the fathers of the Scandinavians. As all languages, so all mythologies run in lines, which converge to one common centre, the original source of the human race, and consequently of all tongues and primeval faiths—Central Asia. And little as we might expect it, no sooner do we open the ancient religious books of Scandinavia, than we are carried back thither. Our northern people are a people of eastern origin. Odin and his Asar, as Asiatics, declared themselves to be from the great Svithiod, a country which appears to have been the present Circassia, lying between the Black and Caspian Seas. The whole of their memories abounded with the proofs of it. They brought with them abundant eastern customs, those of burning the dead, and burying under mounds, like the tombs of Ajax and Achilles on the Phrygian plain, or which are still seen on the plains of Persia and Tartary. They

Scandinavian literature.

practised polygamy, looked back with imperishable affection to the great Svithiod, to the primitive district of Asgard, and the city of Gudahem, or home of the gods. They transferred a religion bearing the primal features of those of Persia, India and Greece, to the snowy mountains of Scandinavia. The Asar and the giants were in constant hostilities, like the gods of Greece and the Titans. They had their three principal deities,—Odin, Thor, and Loke, the latter the evil principle, the Pluto of the Greeks, the Ahriman of the Persians, the Siva of the Hindoos. They had their gods of thunder, of war, of eloquence, and of the sea. They had the actual Venus of the Tanais, the great deity of the Persians, the very name Vanadis suggesting that of the Hellenic Venus. They had in Balder the Vishnu of India, and a more beautiful Pan. The gods of Scandinavia are actually described as sitting on Idavalla, or Mount Ida; and Odin, Thor, and Loke, like the Jupiter, Mercury, and Mars of Greece, make excursions amongst mankind, and indulge in singular love adventures. You have the strife of Light and Darkness in Balder and Höder, as in Ormuzd and Ahriman; you have a tripart divinity,—the Jove, Neptune and Pluto of Greece, the Brahma, Vishnu, and Siva, find their counterparts in Odin, Thor, and Balder. Instead of the ox Abudad, we have the cow Audumbla; instead of genii, nymphs, dryads and nereids, we have elves, dwarfs, and trollquiuna. All the powers of nature are shadowed forth in this great pantheistic system, in the various deities of the various eastern mythologies; there is a great and sublime deity, far above all semi-human deities, that stand in greater proximity to men, and then comes a final fire, Regnarök, like that of the Persians, and the grand mundane catastrophe of the Christian creed. Through the whole, indeed, we trace the earliest traditions of the primitive world, the Adam and Eve in Ask and Embla, the Meschia and Meschiane of Persia; the very Fates are there, the Nornor, the Dog of Hell, and the Tree of Life. That tree so conspicuous in the Hebrew system, in the remains of Nineveh, and in the Christmas customs of Germany, has assumed in the Scandinavian mythology, through the grand imagination of poet-priests of unknown ages, a magnificence which is without a parallel.

The *Rhythmical Edda* consists of eight-and-twenty poems; these are divided into two parts. The first part contains everything relating to the mythology and morals, to the histories of the gods and heroes of the Scandinavian world. From the three first, the *Völuspá*, or song of the Vala or prophetess; *Vafthrudner's* song and *Grimner's* song, we obtain a complete view of the uranic, cosmogonic, and mythic system of the ancient Scandinavians. In the *Hávamál*, or Odin's high song, we have a system of ethics which astonish us by their profundity and knowledge of human life and motives. The maxims contained in it more resemble the Proverbs of Solomon than anything else in human literature. One is surprised to find, too, the whole *philosophy of clothes* contained in a single strophe a thousand years before either Montaigne or Carlyle enunciated it:—"I hung my garments on the two wooden men who stand on the wall. Heroes they seemed to be when they were clothed! The unclothed are despised!"

In the second part of the Edda, we come upon a still more interesting discovery, the original of the great German poem, *The Nibelungen Lied*. The Germans, with a natural egotism, claim this great story as their own. They call the *Nibelungen Lied* the Iliad of Germany, and place it above all ancient poems, except that of Homer. But here we have not a *Nibelungen Lied*, but the original materials of it,—a cycle of ancient Icelandic heroic poems that have no parallel in all the treasures of ancient literature. They are to the *Nibelungen Lied* as the songs of the Rhapsodists, which Homer elaborated into his immortal epic. The *Nibelungen Lied* has been elaborated from

Scandinavian materials, and these materials exist in the *Scandinavian Edda* in a form than which Greece itself has nothing prouder to show. The stories and characters of these poems differ in many particulars from the German version. Siegfried here is named Sigurd, Chrimhilde, Gudrun; Brunhilde is a far finer character, and the final tragedy proceeds, not from Chrimhilde, but from Atle, the Etzel of the German story. These tragic events and heroic personages, which for ages filled all the North with love and admiration, and which the poems themselves declare "shall live for ever in all lands," possess a colossal and powerful nature. They are the expressions of the souls of poets existing in the primæval and uneffeminated earth. They are limnings of men and women of godlike beauty and endowments, full of the vigour of simple but impetuous nature. They have gigantic proportions; a thrilling revelation of beauty; a terrible force of passion, which lead to crimes and desolation of life, which are unsurpassed by the awful fatalities of the Atridæ family, the madness of Orestes, the terrible story of Medea, or the sorrows of Iphigenia or Antigone.

The *Prose Edda* was compiled by Snorre Sturleson, and deals with the same topics in prose as the *Elder Edda* has presented in poetry, mixed up with many other matters of an inferior or extravagant character. It betrays the lower taste of the age, though including some striking sagas.

The *sagas* were the prose recitals of Sagamen, as the Eddaic poems and the heroic lyrics, as the well-known death-song of Ragnar Lodbrog were of the Scalds. The sagas comprehended, indeed, almost every species of narrative in prose. There were great historic sagas; sagas relating to local and familiar matters, romantic sagas and heroic sagas. In the sagas it is difficult to say where fable ends, where fact commences, or how much of one is amalgamated with the other. Saga literature is a world of itself. It consists of above 200 volumes, lists of which may be seen in the *Series Dynastarum et Regum Danicæ*, of Torfæus, in Müller's *Saga Bibliothek*, and in Biorn Halderson.

Of all the sagas, however, the great historical one of the *Heimskringla* is the most important. This is so called from the leading word of the manuscript, "Heimskringla," the home-circle, meaning the circle of the earth, the home of man. It is a most admirable history of a great portion of northern Europe, from about the time of the Christian era to 1177 A.D., or the twenty-third year of our own Henry II., a hundred and eleven years after the Norman Conquest. It traces Odin and his Asar from the East; gives the settlement of Scandinavia, the contests of the petty kings of Norway, Denmark, and Sweden, till they became three compact kingdoms, each under its own sovereign; the Vikings expeditions to all parts of the world; the discovery and settlement of Iceland and Greenland; the discovery of the coast of America; the conquest of Normandy and England; and this is done, not in the dry manner too common to chroniclers, but with a life and freshness belonging only to a great and dramatic genius. The actors are alive; the details have all the simple grandeur and vivid colouring of the narratives of the Bible. Mr Laing's translation has made this accessible to the English reader.

The *Romantic Sagas* of Iceland resemble the great romances of the middle ages, in which, without much regard to times or geography, the most wonderful stories of kings, heroes, giants, ferocious and terrible beasts, as well as beautiful countries and beautiful maidens, figured, such as now constitute the *Volks-Bücher* of the German peasantry.

The *Remaining Literature of Iceland* consisted of the *Grágás* or Laws; and at a later period, supposed to be of the twelfth or thirteenth century, the *Konungs Skygsja*, or *Mirror of Kings*, supposed to be addressed by King Sværrer to his son, a work curious for its moral inculcations and its melancholy description of the island. We may add that

Scandinavian literature.

Scandinavian literature. Iceland has continued to the present time to have its literature, chiefly of an economical and practical kind, many of which productions have been printed in Denmark by societies formed for that purpose. Iceland, too, has also had its poets, the chief of whom, Jon Thorlakson, is known to our countrymen by his translation of Milton's *Paradise Lost* and Pope's *Essay on Man* into Icelandic, as well as by a fine poem on the "English and Foreign Bible Society." He also translated Klopstock's *Messiah*. Dr Henderson found this venerable poet in 1814 living on an income of L.6, 5s. sterling. Other of the Icelandic poets of great popularity were Jon Jonsonius, Stephen Olafson, Benedict Jonson Groendal; Thorvald Bødvarson, the translator of Gellert's "Christian" and Pope's "Messiah;" Professor Finn Magnusin, and Sigurd Peterson. Iceland had also its historians and eminent antiquarians and naturalists. Amongst these are Jon Olafson, a learned orientalist; Olaf Olavius, a naturalist; Halder Jacobson, the historian of Rolf of Normandy and of Iceland in the eighteenth century; Arne Magnusen, a great antiquary; and Finn Magnusen, the learned editor of the *Elder Edda* and of the great *Lexicon Mythologicum*; Jon Eyricksson, president of the Icelandic Society in Copenhagen, and a learned writer on Icelandic mythology and history, &c. &c.

THE FOLK'S SAGA OF SCANDINAVIA.

But perhaps no form of Scandinavian literature furnishes such striking evidence of our descent from the Scandinavian root as the *Folks-Sagas*. These have been collected only in modern times; but they are the true productions of ancient, not of modern Scandinavians. When the Papal religion had put down the scalds and sagamen, and so completely extinguished the eddas and the mythic stories of the Odin period, that, except in the secret archives of Iceland and the hidden wastes of an old German library, they were no longer to be found; when the Latin had superseded the vernacular tongue amongst the learned all over Europe, and monkish legends and dry chronicles had displaced the imaginative compositions of Scandinavia, the spirit and traditions of these old mythologies and wonder-worlds still remained fast rooted in the minds of the people. Though Catholicism became the people's religion, and the miracles and *diablerie* romances of the convent were engrafted on their prior credence, their forefathers' faith became their fireside literature. The marvels of the Pagan faith survived the faith itself; and now, when the monkish twaddle with which the Roman priests abused the imagination of the population wherever they prevailed, has again sunk into matter of laughter, the legends of the old creed of the North show themselves everywhere in a revived and immortal bloom. True, they are greatly metamorphosed, but they are there. The names of Odin and Thor, Frigga and Iduna, are forgotten; but their deeds and potency remain, and cast a spell on all the nurseries of England, Normandy, and Germany, as well as over those of all the north of Europe. All the witch, fairy, and dragon lore which Odin and the Asar brought out of the East exist under new names in the saga lore of our infancy; in *Jack the Giant-Killer*, *Cinderella*, *Bluebeard*, *The Little Old Woman Cut Shorter*, *The Pig that would not go over the Brig*, *The Giant who smelt the Blood of an Englishman*, *Puss in Boots*; nay, even traces of *Dick Whittington and his Cat* and *Baron Munchausen*.

These Folk-Sagor have of course much in common with the German *Kinder und Haus-Märchen*, as collected by the brothers Grimm; but they have many features not to be found in those of Germany. Of these the collection of Folk-Sagor by Olaf Hylten Cavallius and George Stephen is a good specimen of the Swedish ones. The Danish are equally abundant. The English reader will find a good assortment of them in Dasent's *Tales from the Norse*, lately published.

THE VISOR, OR OLD BALLAD POETRY OF SCANDINAVIA.

Scandinavian literature. The extinction of Odinism, with its scaldic and saga system, by Christianity, or rather by Romanism, was insufficient to extinguish that poetic and imaginative spirit which had lent its life to them. This spirit ere long manifested its indestructible presence in new forms. As the saga revived in the form of the Ridder-Romanen, such as that of *Diedrich of Bern*, and the Folk-Sagor, so the scaldic fire reappeared in one of the most brilliant forms of this old literature,—that of the Kämpe-Visor, or heroic ballads, followed by the Folk-Visor, or popular ballads. The Kämpe-Visor, though the ancient religion had fallen, and the model of the Eddaic hymns was abandoned, still celebrated the very heroes of the mytho-heroic period. These heroes and heroines lived again, as it were, in new bodies. Though the Visor are supposed, at least the most ancient of them, to have been composed in the thirteenth, fourteenth, and fifteenth centuries, "Chriemhilde's Revenge," "Brynhilde's Song," Sigurd, under the name of "Sivard Snarensvend," reappeared in them. Diedrich of Bern and Vidric Verlandson, or son of Wayland the smith, once more performed their prodigies of valour. Giants, trolls, and dwarfs still lived amid saints, angels, and abbesses. But the Kämpe-Visor present only the first phases of this class of national ballads. They continued to appear down to very modern times, and embodied the varying characteristics of the successive ages. The Scandinavian collectors very properly divided them into heroic ballads, ballads of the neeromantic and supernatural, historic ballads, and ballads of love and romance.

These ballads of Scandinavia, the early volumes of which were collected and published 174 years before Bishop Percy published his *Reliques*, nevertheless resemble in fact, in spirit, manner, and topic, those of England and Scotland. They are the common expression of the life and feelings of a common race under the prevailing influences of the same period; and what is more, in many of them the subject is identical, showing that they were, as far as England, Scotland, and Scandinavia were concerned, drawn from one common source, where the people and the language were one.

Our space forbids us to note these exact identities; they can be seen in the authorities referred to, as well as the artistic peculiarities of these splendid ballads. We may, however, notice one of the most remarkable, the "Omquädé," or refrain, which reminds one greatly of those in the English and Scottish ballads, "Binnorie, O Binnorie," "The sun shines fair on Carlisle wall," &c. These refrains display, in the nameless poets, the same intense love of nature as those of the Robin Hood ballads. In such refrains as—"The Linden Tree which quivers in the Grove," "The Fragrant Rose Wood," "The Lily and the Lily Tree," a poetic imagination abounds. See Howitt's *Northern Literature*, where many translations of such ballads are given.

The first collection of Danish ballads was published through Tycho Brahe inducing Vedel, the collector, to recite some of them to the queen of Sweden when on a visit to his observatory, Uranionburg. They appeared in 1591. Other volumes from time to time have been added by Syv, Abrahamson, Nyerup, and Rahbek, &c.; and they have successfully inspired many of the modern Danish poets and romancers, Evald, Oelenschläger, Ingeman, &c. The same may be said of the Swedish ballads, which are equally splendid.

THE MODERN LITERATURE OF DENMARK.

With the Visor which we have been noticing, the literature of Scandinavia in reality divides itself into two nationalities, the Danish, including the Norwegian, and the Swedish. We now come upon a wide intellectual desert,

Scandinavian literature.

stretching itself betwixt the ancient and modern literatures of these countries. The modern literature of Scandinavia is very modern indeed. The ancient literature may be said to terminate with the Visor and Folk's-Sagor in the thirteenth century. These survived amongst the people, but these only; and it was not till the sixteenth century that a fresh Scandinavian literature in the mother tongue began to show itself. Through this long interval of three centuries a foreign literature prevailed—that of the Church of Rome, with its Latin and its legends—the ingrafted tongue having no root in the spirit of the people, but remaining a mere life in death.

From this judgment we must except Saxo Grammaticus and his *Historica Danica*, which, though written in Latin, was written whilst the old Scandinavian knowledge was in its fulness. Saxo was contemporary with Snorre Sturleson, had the famous sagaman, Arnold, the Icelander, who, like himself, was in the service of Absalon, archbishop of Lund, for companion, and drew, according to his own confession, his earliest annals from the Eddaic songs, Runic inscriptions, and the written records of the Icelanders. He completed his *Annals* in 1186, merely enshrining in Latin what had drawn its life-blood from the vigorous vernacular. No wonder, then, that he could supply such material for the genius of our Shakespeare and the Danish later writers. But from him and his contemporary chronicler of Norway, Theodoric, the monk, what a dreary dearth till the very commencement of the seventeenth century compared with the Anglo-Saxons, who adhered longer to their own tongue, had their 'Song of Cædmon,' their fine poem of "Beowulf," "The Battle of Finsburgh," and the "Song of the Traveller." But when we have taken leave of Saxo, Theodoric, and Svend Aagesen, author of the *Suenonis* in the twelfth century, with the exception of a treatise on medicine by Henrick Harpestreng, in the thirteenth century, we travel down to the fifteenth before we reach the *Rimkronike*, or *Chronicle in Rhyme*, of Neil, a monk of Sorøe. Neil turned Saxo's Latin into Danish, and added fresh matter from other sources. Soon after Mikkell, a priest of Odensee, produced a volume of religious poems; but these were solitary swallows who made no summer. In 1479 the university of Copenhagen was founded, but seemed only to add to the rage for Latinity. The learned wrote in Latin; the court spoke German. In 1508, Peter Lolle published a volume of *Proverbs* in Danish; and in 1550, the Bible and New Testament, under the influence of the German Reformation, were translated into the native tongue. In 1591, Vedel published the first volume of the *Kæmpe-Visor*; yet these great events, capable, one would have thought, of stirring the popular mind to its depths, appeared for a long time to produce little effect on native literature.

The first man who may be said to have heralded the dawn of modern literature was Anders Christensen Arreboe. Arreboe was bishop of Drontheim at the early age of thirty; he died in 1637. His chief work is the *Hexamæron*, or, *the World's First Week*, written in Alexandrines, the same stanza as that of the German *Nibelungen Lied*. It is a free translation, or rather adaptation, of *The Creation of Du Bartas*, which was recommended to him by the chancellor Christen Friis. It was completed in 1622, but not published till after his death. The poem is a compendium of all the natural philosophy of his time. It abounds with learning, and displays great poetical beauty. The Danes regard him as the Chaucer of their literature. In the Swedish literature Stiernhelm holds a parallel place, though he wrote a few years later, and in a more polished language, that of the court of Christian IV., brother-in-law of our James I.

Anders Bording, who immediately succeeded Arreboe, was a lyrical poet of considerable merit. He was born in 1619 and died in 1677.

Thomas Kingo was a man of far higher and more serious genius. He was born in Slangerup in 1634, and died in 1703. Kingo was of Scottish descent, his grandfather having gone to Denmark after our Scottish James married the sister of Christian IV. He was a genuine religious poet; he wrote a volume of hymns, which at once acquired an immense popularity and were translated into German, Swedish, Icelandic, and Latin. These are still in use, and highly esteemed by the people.

The other poets of this period were the patriotic William Helt, who died in 1724; the satirist, Tøger Reenbergh, who died in 1742; and Jörgen Jörgenson Sorterup, who wrote both satires and *Heltesange*, or martial songs. Christian Falster was also a most stinging satirist, whose productions appeared between 1730 and 1750.

Denmark at this era also distinguished itself in various other departments of literature and science. History and natural history flourished. Erik Pontoppidan, born in Funen in 1616, and bishop of Drontheim in 1678, published his *Grammatica Danica* in 1668, being the first systematic analysis of the Danish language. In this department he was followed by Peter Syv in 1685, and Hoysgard in 1743. The second Pontoppidan, also Erik Pontoppidan, but much more celebrated than the first, is well known in England by his *Natural History*; but he was the author also of various other learned and important works, as *Annales Ecclesiæ Danicæ*; one on historical geography, *Marmora Danica*; natural history, *Gesta et Vestigia Danorum extra Daniam*; one of the first theological romances, *Menoza*, &c. &c. He was born in Aarhus in 1698, and ascended through various ecclesiastical dignities till he became bishop of Bergen and chancellor of the university of that city.

In theology, also, Hemmingius flourished at this period; in jurisprudence, Theophilus and Seavenius were most eminent; in medicine and physiology, Morsing, Ole Worm, better known by his Latinized cognomen, Olaus Wormius, also celebrated for his works in history and antiquities; Simon Pauli, Bartholin, and Olaf Borrich. In philosophical knowledge A. Krag, Eilschov, and Peter Severin; in mathematics, O. Römer; in philology, Winding and Rhode; in history and literature, Hvítfeldt, with his *Kronike*, Resen, Gram, and Arnas Magnäus. A lady also, Brigitta Thott, distinguished herself by the translation of Seneca and Epictetus. These are evidences of a rapidly growing wealth of intellectual accumulation. But the great man of this epoch was Denmark's most illustrious astronomer, Tycho Brahé, whose life and discoveries will be found under their own head.

Brahé introduced to notice another astronomer, namely, Christian Severin Longomontanus. Longomontanus was a poor orphan, who being educated by the minister of his parish, attracted Brahé's notice at the college of Wiborg. He took him and instructed him in astronomy. Longomontanus went with Brahé during his exile to Prague, but on the death of his patron returned, and became professor of the higher mathematics in Copenhagen. He was more brilliant than sound; he believed in astrology, and that comets portended disaster. He died in 1647.

Holberg. The appearance of Holberg is regarded by Denmark as a great epoch in its literary history. He is their great comic poet, the Moliere of Denmark. Arreboe and Kingo were writers to be proud of as pioneers, but not to claim comparison with the authors of other nations. To that distinction the Danes believe Holberg fully entitled. Still he has no claims to the tragic; he is simply comic and satirical. He has no Macbeths, no Othellos, Hamlets, or Romeo and Juliets; but the Danes see all their social life, their humour and national character so clearly reflected in him, that they are never weary of their exhibition. He became at once universally popular through a satirical mock-heroic poem called *Peter Paars*. In 1722 appeared his

Scandinavian literature.

Scandinavian literature. *Mikkelsen's Four Comic Poems*, and, in 1726, his *Mikkelsen's Metamorphoses*. He then began writing for the stage with amazing rapidity and equal popularity; and saw acted and published seven volumes of plays called *Mikkelsen's Comedies*. These were speedily translated into Swedish, French, and German. He thus became the founder of the comic stage of Denmark. His *Niels Klim's Subterranean Journey*, a satirical work in Latin, was equally popular, and was translated by Baggesen and others into various languages. He wrote many other works on ecclesiastical history, a *History of the Jews*, biographies in the style of Plutarch, *Moral Tales*, &c. He died in 1754.

From the death of Holberg to the publication of *Rolf Krage* by Evald, the next poet who marked a national era, the only names of note which appear in the history of Denmark's literature, are those of Stub, Sneedorf, Tullin, and Stenersen, and these are of a minor class compared with Holberg. It is curious how common-place abounded in most European literature of this period. The compositions of Ambrosius Stub consist of lyrics and drinking songs, written in the deepest poverty and obscurity. He was born in Ribe in 1707, and passed the greater part of his life in Funen, where, while his songs were on every tongue, he himself continued in the most perfect neglect. He is said to have died in 1758. His merry drinking song, "Crambambuli," is still everywhere sung by the Danish and German students.

Christian Brauman Tullin, with far less talent, had a far different fortune. He was in easy circumstances; fame attended his every effort; and everywhere he was received with open arms as a genius of the highest order. When we look in the poems which could thus entrance his contemporaries, we find them to consist of odes, prize poems, occasional verses, epitaphs in large numbers, on a par with the verses to Cloe or Cleanthe, which fill so many volumes on English shelves once called poetry.

Peder Christoffer Stenersen was a clergyman and comic poet, who died in 1776. Jens S. Sneedorf, who lived at this period, was the father of the periodical literature of Denmark. His poems were much admired, but his *Patriotic Spectator* was still more popular, and undoubtedly did more than all writings which had gone before to refine and elevate the public taste. About this period, too, Kraft, Langebek, and Möllman distinguished themselves; Kraft in logic and metaphysics, Langebek in periodical literature, and Möllman in history.

Evald. "About the middle of the eighteenth century," says Molbeck, the great Danish critic, "there stood forth a young man whose destiny it was to give to the poetry of Denmark a wholly new form." This man was Johannes Evald, the son of a clergyman, the director of the orphan-house in Copenhagen. Evald was born in 1743, and died in 1781, in the thirty-eighth year of his age. He was unfortunately intemperate in his habits, having been disappointed in love. A considerable portion of his life was passed in the deepest poverty, and the most excruciating agonies from rheumatism; yet whilst almost wholly disabled for bodily motion, he struck out a new and brilliant path as a lyrical, dramatic, and romantic poet. His first successful production was a lament for the death of Frederick V. His most splendid lyric was "King Christian," which became the national song of Denmark. Evald was equally great as a dramatist, in the satirical drama, in tragedy, and in opera. Excited by the *Messiah* of Klopstock, he burst the fetters of the French taste, and overthrew the Frenchified tragedies of Nordal Brun and Niels Krogh Bredal, imitators of Voltaire. His *Adam and Eve*, his first production in the romantic school, was the first original tragedy in Denmark. His next, *Rolf Krage*, drawn from the heroic times of Denmark, opened up that rich field of myth and legend which Oelenschläger has since so splendidly

worked out. This was followed by *The Death of Balder*, his most noble production, in which his admiration of Shakspeare and Ossian are clearly marked. His lyrical drama, *The Fishermen*, was his last work of any extent.

DANISH LITERATURE FROM EVALD TO BAGGESEN.

The forty years from the death of Evald to that of the death of Baggesen produced a great number of poets and literary men in Norway and Denmark, but none who rose to the same national rank; we must, therefore, pass slightly over them. At this period the literary men of Copenhagen, a large proportion of whom were from Norway, introduced club-life, in imitation of that which had in England flourished under different chiefs, and where Dryden, Pope, Addison, Gay, Bolingbroke, and, in fact, all the principal literary men had assembled, or still did assemble. The Norwegians formed themselves into a club, called the Norwegian Society, which met at Juel's coffee-house, in the Svärtegeaden; and at its head stood John Herman Wessel. The Danish club, at the head of which stood Evald, met at Neergaard's coffee-house, in the Badstuestræden. Another club, consisting of men who could not go the length of the hostilities of these two rival clubs, formed under the title of the Society of Belles Lettres.

Wessel, the head of the Norwegian club, was born in 1742, in the parish of Vestby, in the diocese of Aggerhuus, in Norway, where his father was dean and parish-priest. He was the nephew of the brave Admiral Wessel, called Tordenskiold, mentioned in Evald's national song, *King Christian*. In 1772, Wessel suddenly became popular by a satirical comedy in ridicule of the French trash of Brun and Bredal, already mentioned, called *Kiærlighed uden Strømper*, "Love Without Stockings." Wessel wrote a great quantity of articles in verse and prose, very much of the character of *The Three Warnings*, *The Three Black Crows*, of our own literature of that period. He edited a periodical with the singular title, *Votre Serviteur Otiosis*, and passed his days at different coffee-houses and taverns, amusing the people with epigrams and impromptus. He died in 1785, at the age of forty-three, leaving not enough to pay the expenses of his funeral.

Cotemporary with Wessel were Johannes Wibe, a comedy writer; Bull, the author of ethic and didactic poems; and the brothers Trøjel. Peter Magnus and Peter Kofod Trøjel, both writers of bacchanalian lyrics, and the latter of some serious poetry.

Edward Storm, a Norwegian, is the author of *Bræger*, a mock-heroic poem, describing a rural dean going his rounds at Easter, collecting his pask-eggs; also of narrative poems and fables of the Fontaine school. His ballads and religious poems have great merit.

Tyge Rothe was more noted for his prose than his poetry. His work on *The Love of One's Country* is a fine specimen of prose style. Johan Nordal Brun, whose French tragedy we have noticed, was in his time very popular; but his fame has long died out, except as connected with the violent contest which his tragedy excited. He received church preferment, became a truly eloquent preacher, and wrote a poem, *Jonathan*, in ten books,—an utter failure. He died in 1816.

In this period also appeared several ladies of considerable merit in poetry and the drama: Dorothea Biehl, Catherine Bojë, Sophie Buckholm, and Louisa Lindenkrone; besides several other male poets who claim only a mention: Wivet, Weyer, Fasting, and Colbiörnsen.

About the same period appeared writers whom we only need name. Povel Dankel Bast wrote poetry and epigrams; J. C. Tode, a German, who wrote as a Dane, distinguished for comedies, fables, and humorous pieces; Thomas Christian Bruun, author of tales and satires; Lauritz Hasse, a novelist; Olufsen, author of a comedy called "Gulddaasen;"

Scandinavian literature. Horrebow and Abrahamson, poets, and the latter distinguished in other works; Samsøe, author of a popular tragedy called *Dyvecke*. Jonas Rein wrote a tragedy entitled *Hagen and Valborg*, founded on the old Danish legend of *Axel and Valborg*. He wrote also lyrical, elegiacal, and narrative poems. Thomas Thaarup wrote two admirable operas, "The Harvest Supper," and "Peter's Wedding." Thaarup was eloquent as an orator, and wrote many beautiful hymns and other lyrical poems. Zedletz, a clergyman by birth, a Norwegian, lived chiefly in the country. His poetry is celebrated as extremely varied, new, genial, and joyous, never serious and pathetic.

Christen Henriksen Pram was a man of great importance in his day. He was a Norwegian; a man in office. His principal work is "*Stärkodder*," a heroic poem, celebrating a great mythic hero of Norway with twelve arms, the Briareus of the North. Stärkodder is the "*Kehama*" of Scandinavia; and, indeed, the genius of Pram very much reminds us of that of Southey. There is the same incessant industry exerted on all sorts of topics, poetry, criticism, politics, political economy, journalism, and the literature of the day. There is the same want of penetration into the depths of poetry in its most psychological character, and, as if to seek compensation for the defect, a letting loose of the imagination almost reinless into the world of phantasy and supernatural legend. Pram also edited a periodical, *The Minerva*, in which he was succeeded by his friend, Rahbek.

During this period Luxdorf distinguished himself in criticism; Suhm wrote his *History of Denmark*, a great and elaborate work, in sixteen volumes quarto. Birknir distinguished himself as a classical prose writer; Juel as a portrait-painter; Wiederveld as a sculptor, the master of Thorwaldsen; Jacob Baden in philology; and G. L. Baden in criticism and by his *History of Denmark*.

Ove Høegh Guldberg was a great name at the close of the eighteenth century. His historic productions are master-pieces. He united with Sneedorf, Schytte, and others, in a *History of the World*. He translated the New Testament, and published an essay on the dates of the writing of its different books. But he is equally remarkable as the successor to the ministry of Denmark on the fall of Struensee, and the simultaneous ill-treatment of the amiable Caroline Matilda, the unhappy sister of our George III. The son of Guldberg, Frederick Høegh Guldberg, was a genial poet and translator of Tibullus, Terence, and Plautus. Jörgen Zøega is celebrated for his work on Egyptian antiquities; Thorlacius for northern antiquities and literature; Abrahamson, a military officer, for his publication, with Nyerup and Rahbek, of five volumes of *Select Danish Verse of the Middle Ages*. Thomas Bagge wrote on astronomy and mathematics; and Foersom is celebrated for his translation of Shakspeare, as far as four volumes, Captain Wulff completing it in five more volumes in 1825. Before this, Niels Rosenfeldt had translated *Macbeth* in 1787, and two other volumes of Shakspeare's other plays in 1792. Bastholm requires mention in philosophy and morals, Malling in history and biography. Periodical literature had now several active and influential organs.

Jens Baggesen. Baggesen is a man who occupies a large space in the field of Danish literature. He lived partly in the last century and partly in this, and represented in the fullest manner the spirit and character of the past. He may be said to be the last of the classical school, living to do battle with and fall before the new or romantic school. In these circumstances he was accompanied by his friend Rahbek, who was the representative of the literary men of the latter end of the eighteenth century, as he was of the men of genius. He died in 1826, Rahbek in 1830. A new race and a new spirit were rising around them, even while they were in the prime of their years and popularity; but they themselves resisted vigorously the new influences,

especially Baggesen. Their cotemporaries were preparing, and some of them carrying out, as great a revolution in literary taste as that of France was in political philosophy. Klopstock, Bürger, Voss, and Wieland, in Germany, had already broken down the boundaries of what was called the old classical school; Rousseau and Voltaire, in France, Bishop Percy, Burns, and Campbell, in England, had entered on an entirely new track; and everywhere giants were showing their heads above the crowd, prepared to astonish the world with a wholly novel creation,—a wholly new world of poetry, literature, and romance. Schiller and Goethe, Tieck, Fichte, and Jean Paul, Scott, Wordsworth, Coleridge, and Southey, had produced some of their master-pieces before the representatives of the last age had disappeared from the scene; and still nearer home, Oelenschläger had startled them as by the apparition of their own Thor, before the blows of whose hammer all the artistic creations of the more cold and precise French classicality fell in dust and fragments.

No man in Denmark, up to a certain moment, ever enjoyed so great and universal a popularity; his genius was so brilliant, so multifarious, so genial, and fascinating. In classical style, in learning, in wit, in imagination, in masterly reason, he was equally pre-eminent. He was the Tom Moore of the very highest classes, caressed, and living in familiar equality with princes, princesses, and nobles, with more than Moore's genius and intellectual stamina. Before he was twenty years of age, a volume of *Comic Stories in Verse*, appearing the same year as Pram's *Störkodder*, Bartholm's *Liturgy*, Scheel's *Theatre of War*, and Pram and Rahbek's new periodical, *The Minerva*, notwithstanding rose far above their interest, and placed him on the pinnacle of fame, especially in the realm of comic and satiric poetry. From this time, for nearly thirty years, he continued to pour out a series of volumes of poems, travels, dramas, operas, and miscellaneous writings, which held his countrymen in entrancement. The works of Baggesen in Danish fill twelve volumes, exclusive of his works in German, amongst which latter are some of his most considerable productions, as the *Parthenais*, *Oceana*, *Adam and Eve*, and *Heideblumen*. Amongst the Danish dramas and operas, the chief are *Holger Danske*, *Erik Eiegod*, the *Trylleharp*, the passionate and very beautiful drama of *Pandion and Dione*, from the Greek mythology, and *Thora*. The poems of Nanna, written in his latter years, are undoubtedly amongst the most beautiful compositions in Danish. The translation of Holberg's *Niels Klim* into Danish is a masterpiece, and his *Labyrinthen*, containing his travels, have all the brilliance, vivacity, and fascination of a novel. His life was indeed a romance. His birth was in poverty; his youth amid the warmest sunshine of fame and honour; his latter days plunged in gloom by envy of his younger contemporaries, and a public neglect too much merited by his conduct. He died at Hamburg in October 1826.

Knud Lyne Rahbek was author of plays, songs, miscellaneous poems, prose stories, much criticism, &c. He has left, however, no original works which can fix his name pre-eminently in the temple of his country's fame, but a mass of able and interesting writings, so mixed up with the people and the time that they form an inseparable portion of the Danish literature of the period. He was born in Copenhagen in 1760, and died in 1830. He united with Nyerup and Abrahamson in the collection and publication of the *Kiempe-Viser*; edited the plays of Holberg and others; wrote the lives of his contemporaries; and songs, the favourites of the young throughout Scandinavia. He edited the *Minerva* after Pram left it, and the *Tilskuere*, or *Spectator*, in imitation of Addison's *Spectator*, for many years. Later, he edited a political paper, *Dagen*, the *Day*, from 1811 to 1814. His house, known to all Scandinavia

Scandinavian literature. as the Bakkehus, or house on the Mount, was the constant resort of the learned and the happy, and the home of the poor and sorrowful. He was the constant friend of struggling merit.

Oelenschläger, the greatest poet of his country, and at a time most capable of developing his genius to perfection, requires no mention here, his life and works appearing under his own name. The only writer in Scandinavia with whom he can be compared is the Swedish poet Tegnér. Both are poets of a high order and of kindred genius; but while Tegnér perhaps excels Oelenschläger in tenderness and delicacy of feeling, Oelenschläger certainly transcends Tegnér in vigour, and in the wide and varied field in which he exerted it. *Frithiof's Saga* stands as the only great poem of Tegnér, without which he would be reduced to the simple rank of a lyrical poet; but Oelenschläger is the author of a host of works, epic, dramatic, and lyrical, which, from first to last, display the same wonderful freshness and vigour. Oelenschläger's great companions at the university were the two brothers Oersted, afterwards so famous; Hans Christian, the great natural philosopher, author of *The Soul in Nature*; and Anders Sandöe, the great lawyer and statesman.

Nicolai Frederik Severin Grundtvig is equally remarkable as a philological antiquarian and translator, and as a theologian and preacher. He was born, in September 1783, at Udby, in South Zealand. His earliest works were on the mythology of Scandinavia, of which he was an enthusiastic admirer. On this subject he published his *Northern Mythology*, and *Scenes from the Fall of the Kämpes Life in the North*. But his mind suddenly took as enthusiastic a religious turn, in which he condemned his zeal for the old mythology, and in an essay *On Religion and Liturgy*, he called for reform in the church. For eight years he lay under the clerical ban. During this time, however, he employed himself in historic and antiquarian labours; published a *Bible Chronicle*, *The Roskilde Rhyme*, *Roskilde Saga*, *Kvædinger*, &c. In 1822 he completed his greatest and most laborious work, his translations of *Saxo Grammaticus* and *Snorre Sturleson*, in six quarto volumes, by which the ancient chronicles of Norway and Denmark were made the property of the multitude. He had now also gone deep into Anglo-Saxon, and already, in conjunction with Rask, had published a masterly translation of *Biowulf's Drape*. From 1828 to 1838 he edited a monthly theological magazine, published several volumes of his sermons, and in 1829 he came to England, to consult the Anglo-Saxon manuscripts in Exeter and in the British Museum. Whilst here, he issued the prospectus of a most gigantic work, a *Bibliotheca Anglo-Saxonica*, which was to contain not only *Biowulf's* poem, with an English translation, but Caedmon's celebrated paraphrase of the first book of Moses, many minor Anglo-Saxon poems and fragments, Layamon's Old English *Rhyme Chronicle*, in three volumes, and a collection of Anglo-Saxon homilies in three other volumes. In a second visit to this country in 1831, he explored the Anglo-Saxon manuscripts at Cambridge, where he was introduced by Mr Babbage. But though Grundtvig received much courtesy in this country, his great plans received no real encouragement. Since then, Grundtvig has become one of the most celebrated preachers and sacred lyrists in Denmark.

Steen Steensen Blicher is one of the most original poets and romance writers of Denmark. He was a clergyman, born in Jutland in 1782, who had lived in a country of wild heaths, sandy and heathery, and amid pine woods, studded with ancient cairns, and his poetry and his romances breathe their solitary and dreary spirit. Besides his tales, the earliest of which was his *Rural Dean's Diary*, and his poems, the earliest volume of which was styled *Snowdrops*, he translated *Ossian* and *The Vicar of Wakefield* from the English.

Bernhard Severin Ingemann is the great romance writer of Denmark. He has, indeed, poured forth works of many different kinds with an astonishing prodigality, and is one of Denmark's most voluminous writers. Poems, great and small; psalms, hymns, and other religious lyrics; lyrical poems of various kinds; poems, epic and dramatic; tragedies, comedies, satires. But his great historic romances are what give him his position of one of the greatest writers of his country. They are read and re-read by the winter firesides throughout the North, amid the wildest mountains and the vastest snow-barricaded woods, in the huts of the peasant, the hunter, and the fisherman.

Johan Ludvig Heiberg, a poet, critic, and dramatist, is most distinguished for the introduction of the vaudeville into Denmark, and for a new kind of play, the romantic or fairy comedy, of which the *Elves*, acted in 1835, and the *Fata Morgana*, in 1838, are amongst the most popular. In 1849, he was made director of the theatre for his services to the drama.

Madame Heiberg is one of the most distinguished actresses in Denmark. After all, the most charming compositions attributed to Heiberg are, *Tales by the author of Every-Day Stories*; which, however, by others are attributed to his mother, the Countess of Gyllembourg. Heiberg's father, Peter Andreas Heiberg, was also a dramatic and satiric writer, but rather French than Danish, being an exile residing in Paris from 1800 to his death.

Amongst living writers of Denmark, the following are of high distinction. Johan Carstens Hauch, a lyric, dramatic, and romance writer. He was born, in 1791, in Frederikshald, the son of a man of high note. He was himself chiefly attached to literature, and had been professor in Kiel and lecturer to the academy of Sorö. In his poetry there are strong traces of the naturalist, as in his *Life of Plants*. So also his romances, as *Wilhelm Zabern*, *the Goldmaker*, and *The Two Points of View*. In his tragedies, which are numerous, on the contrary, there is an equally strong tendency to metaphysical philosophizing, to the tracing out the springs of action, yet mingled with intense passion and scenes of exciting peril. They are more calculated, indeed, for the deep thinker than the seeker of light amusement.

Henrik Herz is one of Denmark's most brilliant poets and dramatists. It is in the latter character, however, that he is most distinguished. He was born in 1798, and in 1827 produced anonymously the play of *Herr Burckhardt and his Family*. Since then his principal productions have been, *The Flitting Day*, and *Emma*, plays; *Love and Police*, *Love's Strokes of Genius*, and *Debates in the Police Friend*, vaudevilles; *Svend Dyring's House*, a romantic drama in five acts; and *The Swan-Coat*, or *Swan Disguise*, a romantic play, in three acts, founded on the ancient sagas and viser. His most celebrated production, however, is his lyrical drama, *King René's Daughter*, ably translated into English by Theodore Martin.

Frederik Paludan Müller is one of the most powerful poets of the present day. He was born in 1809, and is regarded by his admirers as the Byron of Scandinavia. He has published *Four Romances*, *Dandserinden*, a female dance or serio-comic poem; *Cupid and Psyche*, a lyrical drama, and various other poems, lyrical and dramatic; but his great production is *Adam Homo*, a poem in three volumes.

Christian Winther, is the half-brother of Paul Martin Möller, also a poet of good standing. He is author of some novels, and of strong and life-like poems from the old Kämpes-Viser, and the life of the people.

Caspar Johannes Bojë is a clergyman, famous for his psalms and hymns, to be found in all collections. He has published also the following tragedies:—*Svend Grathe*, *King Sigurd*, *Queen Jutta of Denmark*, and *Erik the Seventh*. He has issued a volume of psalms translated me-

Scandinavian literature.

Scandinavian literature. trically from the Hebrew, under the name of *David's Harp*, and *Spiritual Poems and Songs*. He is also well known as the translator of Walter Scott's best romances, and as co-editor of Baggensen's works.

Hans Christian Andersen is well known to the English reader by his romances of *The Improvisatore*, *O. T.*, and *Only a Fiddler*, and his *Stories and Legends for the Young*, first introduced to us by Mrs Howitt. He was born in 1805, the son of a shoemaker in Odensé, and has raised himself to a first place in Danish literature by his talents.

To this illustrious list we could yet add a long series of names well known and honoured in Denmark. Amongst them Hans Peter Holst, who has published poems and romances; *Out and Home*, or his travels; *Giachino*, a play; and in the war of Holstein in 1848 stood prominently forth as a patriot in his *Little Hornblower*. Moritz Christian Hansen, the author of various dramas, novels, tales, and educational works. A. M. Goldschmidt, the editor of *Corsaren*, the Danish Punch, and author of *Jacob Bendiscon*, *the Jew*, a novel, &c.

Besides those who belong more particularly to the literature, poetry, and romance of Denmark, the departments of art, science, and antiquities boast names that deserve more mention than we have space to give. Thorwaldsen, the sculptor, belongs to the whole world, and will be found in his proper biographical niche in this work. He died at Copenhagen in 1844, aged about seventy years; and lies buried in the centre of the museum built in his honour. The best sculptor before Thorwaldsen was Wiedeveldt, Thorwaldsen's master; the greatest now are Jerichau and Bissen, specimens of whose productions appeared in our Great Exhibition in 1851,—by Jerichau, "Adam and Eve," in plaster; "The Hunter and Panther," in marble: by Bissen, "Orestes," "Eros, or Love," "A Fisher-Boy Angling," and a bust of Andersen.

Amongst the best painters of Denmark are Juul, Gärtner, Schütz, and others, in portrait; Horneman, in miniature portrait; Eckersberg, historical and marine painter; Dahl, Harder, Marstrand, Simonsen, Sonne, Melby, Sørensen, Möller, Skovgaard, Keirskow, and Rump, in landscape; Gebauer, animal painter; Lorenzen and Stubb, in historical portrait; Fritsch, Camradt, Martens, Jensen, and Ottensen, flower-painters; *genre* painters, Schleisner and Monnier. The wife of Jerichau, the sculptor, is a fine portrait-painter.

In music, Hartman, Ronge, and Gade, are most distinguished.

In medical science, the names of Bang, Trier, and Stien are pre-eminent. In botany, Professor Schouw.

In philology and antiquities, no nation boasts greater names than Rafn, Rask, Grundvig, Molbech, Finn Magnussen, and Warsaae. Rask is one of the greatest philologists that ever lived. A complete account of his travels in discovery of ancient knowledge, and into the origin and principles of language in Scandinavia, Lapland, Russia, Georgia, and the regions of the Caucasus; in Persia, Tartary, India, Ceylon, Iceland, Scotland, &c., of his grammar of and treatises on almost all languages, would fill volumes. His invaluable collection of MSS., inscriptions, &c., now belong to the library of the university of Copenhagen and to the great Royal library.

In geography there is a name which most readers believe to be French, Malte Brun. It is, however, merely the Frenchified name of a real Dane, Malthe Conrad Bruun, who resided in Paris, was one of the founders of *La Société de Géographie*, and its secretary.

Professor Molbech is one of the northern literati whose industry astounds us. To his *Poetical Anthology* and his criticisms we are greatly indebted in this article. His great Danish Dictionary is work enough for one life; he is the Johnson of Denmark; but besides this he is the author of

a *Dictionary of Danish Dialects*; of a *History of the Stuarts on the Throne of England*; *History of Erik Plogpenning*; editor and translator of various works, &c.

Of the labours of Thorlacius, Müller, Nyerup, Finn Magnussen, Werlauff, Simonsen, Thomson, Abrahamson, &c., in archæology and antiquities of the North, it is impossible to speak too highly. But for their individual labours, as well as those of Monrad and Schlegel, we must refer to information under their own names.

In intellectual philosophy and theology, Denmark has a new and distinguished race of theorists, who seem by no means inclined to follow in the German fog, mist, and find-nothing school; on the contrary, they are of a decidedly Christian tendency. They have probed the German philosophy to its depths, and have drawn very different results from their psychological researches. Amongst the most eminent are C. F. Sibbern, author of *Psychological Pathology*, and *The Letters of Gabriel*; the eloquent Bishop Mynster; Grundvig, already mentioned; Martensen, in his *Anatomy of Self-Consciousness*, &c.; and the brothers Kierkegaard, in various works. Nor must we close our notice without again referring to the illustrious brothers Oersted, one the statesman, the other the author of *The Soul in Nature*, and discoverer of electro-magnetism in 1820, which has led to the electric telegraph, and other wonderful results.

MODERN LITERATURE OF SWEDEN.

The ancient literature of Sweden, like that of Norway and Denmark, was that of the common Scandinavia. Its first independent literature, like that of those countries, consisted of the Folk-Sagor and Visor, which we have given. During the middle ages the same causes which annihilated the native literature of Norway and Denmark, annihilated that of Sweden. It was the incubus of Latinity and Rome. From the time that monkery set its foot in Sweden till the Reformation shook its yoke from the soul of the people, there lay a dark and barren waste of mind in which the Visor and Sagor, circulating amongst the uneducated population, alone preserved the germ of intellectual life amid woods and hills. Other causes followed in Sweden, which retarded the revival of literature even more than in Denmark and Norway—the deep hold which the French influence and ideas gained there. Sweden, up to this moment, has never developed the same vigour and varied genius as the rest of Scandinavia. She is confessedly neither dramatic, epic, nor, till lately, at all historic. Many causes have been assigned by Swedish writers for this, into which we need not here enter; the reason given by Beskow, in his *Reminiscences of Stjernstolpe*, is sufficient. "No literature," he says, "is so poor in comic authors as the Swedish. What is the cause? The Swedes have no want of the love of fun or wit. But the first requisite for the development of comic, as of all other genius, is *freedom*, in the æsthetic and social meaning. Has no one, then, discovered that this may have had its influence on our dramatic status? The intolerably heavy æsthetic fetters have only in our own day become broken; but conventionalism, etiquette, and the daily circumstances of social life, rule with scarcely less vigour than formerly. We are too serious, people say. On the contrary, we are not serious enough. The most serious and most proud of all nations, the English and the Spanish, possess the most splendid comic authors."

The Swedish literary annalists divide the history of their literature into four grand periods. First, the romantic; second, the Germanico-Italian, or Stjernhjelm, period of the seventeenth century; third, the Gallic period; and fourth, the new school, commencing with 1809. Over all, except the last two periods, we may pass very cursorily, for the reasons adduced above. The Eddaic and Visor periods are

Scandinavian literature. here already given; the second and great part of the third period present nothing of great originality. The first, or romantic period, extends over the enormous space of 500 years, that is, from the introduction of Christianity, or about the years 1000 to 1600. During this time the chief literature was historical visor and folk-sagas, as the "Battle of Brunkeberg," "King Erik and the Fortune-telling Woman," "Battle of Brännkryka," "Gustavus and the Dalecarlians," "Charles XII.'s March," a fine song, set to a fine air, and other ballads about Charles XII., &c.

Amongst the first imitators of the old Folks-Visor was Nicolaus Hermanni, bishop of Linköping, in the thirteenth century, who wrote the ballad of "Elisif Eriksdotter, the Nun." This author, too, wrote an account of Ansgarius, the Northern Apostle. In 1437, Bishop Thomas wrote poems on Engelbrecht and Erik Puke; Dahstjerna, the "King and Sir Peter," on the victory of Narva. Director Odel wrote a popular song, "Malcolm Sinclair," and "The Old Hen-woman's Song," by Cardius, pastor of Södermanland, is the Swedish literary history from Christina to Adolf Frederick. Erik XIV., a monarch equally poetical and unfortunate, and who married Karin Mansdotter, the daughter of a corporal, wrote some most popular songs, especially one addressed to his low-born but admirable wife. Being imprisoned by his usurping brother John, he wrote in his prison religious hymns, and the versions of the 180th and 373d psalms in the Swedish psalm-book are by him; the latter one a most singularly simple and touching composition. Ericus Olai had preceded King Erik in psalmody; and others of that period followed in the same line. Many nobles of that period also wrote popular love-songs; amongst them Count John Hoya. Gustavus Adolphus celebrated his youthful favourite, Ebba Brahé; and one of his bravest officers, Colonel Ekeblad, wrote many lyrics in imitation of the ancient Visor; as "The Five Perils of Man"—from the caprice of great lords, from April weather, rose-coloured garments, cards, and fair women. He wrote also many amorous pastorals. Buræus was the first introducer of hexameters.

The reading of this period consisted greatly of foreign chivalric poetical romance, and Queen Euphemia of Norway was a great translator of them; as the Charlemagne and King Arthur romances, which were called Queen Euphemia's Visor. Then arose hosts of these, followed by "Ryncké the Fox," "The Dance of Death," "Martin Goose," and the like. The native Folks-Sagas were as numerous, besides the "Childhood of Christ," "Judas Iscariot," "Pontius Pilate," "Faust," "Fortunatus," "Owlinglass," "Baarlaam and Josaphat," "Blue-Beard," "Master Cat," and all the middle-age romances still read by the German peasantry. To this literature of simplicity and simple faith we must add that of Rhymed Chronicles, and a species of drama much akin to Mysteries and Moralities, in which all the characters of sacred history figure; and others, called Ballets, resembling the English Masques. In some of these, and especially in the play of "Tobit," by Olaus Petri, written only eight years before our Queen Elizabeth ascended the throne, we are astonished to find the wonderful resemblance betwixt Swedish and English, much greater than betwixt English and Scotch of the same period. What is remarkable is, that the sound and spelling of the *th* in "the," "three," and all similar words, now quite abandoned by Swedes and Danes, and nearly all continental nations, and so difficult of expression to foreigners, was then in full use.

SECOND SWEDISH PERIOD—THE GERMANICO-ITALIAN SCHOOL, SEVENTEENTH CENTURY.

The Reformation in Sweden, as in other countries, put to flight all the prognostics of its effects on poetic literature.

What many authors have asserted that Protestantism is founded on reason, and is therefore opposed to imagination and poetry, soon showed its falsity. Darkness, delusion, and superstition fled, but all the elements of poetry remained in the daylight. Nature smiled with her glorious face into more intelligent eyes; into spirits more capable of comprehending and loving her. Shakspeare and Milton stand the perpetual refutations of the aspersions on Protestantism as prosaic. Here no Shakspeare arose, but the drama was removed from the cloister and the church to its more legitimate stage amid social life; and John Messenius and his son Arnold, and George Stjernhjelm, improved on what Olaus Petri had begun. The elder Messenius wrote six dramas or comedies, as all dramas were then called, like Danté's. They were chiefly from the old sagas, or the national history, as *Svanhvita*, *Signill*, *Gustaf I.* They are all flat, and destitute of interest at the present day. The younger Messenius was historiographer of the kingdom, and represented the whole reign of Gustaf I. in a drama! Their cotemporaries, Prytz, bishop of Linköping; Brask, a clergyman; Hjärne, Kolmodin, and Beronius, all wrote plays, and terminated that school. Then followed George Stjernhjelm, who wrote dramas, lyrics, an epic and didactic poems, and produced such an impression that he decided the character of his country's literature for a century. As he chose his subjects from the classics, he has been considered the first classic poet of Sweden. His great poem was "Hercules," in hexameters, which Hammarsköld pronounces the best poem of its kind in the Swedish language. He wrote besides, "The Hanged Artrild," "The Captive Cupid," &c., &c. His works much improved the language. His chief followers were Lindsköld, Rjörk, Wallenius, and Count Stenbock; but the growing influence of the Italian and German taste was now fast prevailing.

The chief writers of the Italian school were Dahstjerna, who introduced the *Ottava Rima*; Gustaf Rosenhane, Leyoncrona, Rudeen, bishop of Linköping, Gripenhjelm, and Liljenstedt. Of the German school, Samuel Columbus, who published songs and epigrams, under the title of the *Biblical World*; Gyllenborg, Holmström, Risell, Werwing, Geisler, and Olaf Broms. Lasse Lucidor, or Lasse Johansson, was a wild, eccentric genius of this period, who lived like a Diogenes, wrote songs and hymns, and was murdered at the age of twenty-four. The first lady authoress of Sweden, if we except Queen Euphemia, appeared in the person of Fru Brenner, who, says Lénström, bore fifteen children, and wrote still more poems. Her verses related chiefly to weddings and funeral feasts, and had the strangest and most elaborate titles; but she was immensely popular in her day, and was complimented by more than thirty eulogistic addresses, some of them from foreign countries. Archbishop Haquin Spegel was the Arreboe of Sweden. He translated, and, the Swedes say, greatly improved Arreboe's *Hexameron*; but his psalms are the compositions which give him, and justly, as the Swedish Psalm Book testifies, his reputation in Sweden. He had read Milton, and wrote a *Paradise Lost and Found* of his own, as also a keen satire, called *Sir Highmind Downfall*. His disciples in the department of sacred poetry were Olof Kolmodin, author of the immensely popular *Voice of the Dove*; Professor Arrhenius, Bishop Svedberg, and Jacob Frese. Besides these, Runius, Dalius, Triewald, and Fornelius, are names of mark of this era.

The taste and knowledge of Sweden were now fast progressing, and they were growing familiar with the best French, English, German, Italian, Dutch, and Danish authors. We find them quoting Ronsard, Corneille, Spenser, Milton, Cowley, Flemming, Cats, Vondel, Arreboe, Kingo, Hoffmanswaldan, Lowenstein, Opitz, Gryphius, Guarini, Boileau, etc.

Scandinavian literature.

THE EIGHTEENTH CENTURY—THE FRENCH SCHOOL.

The splendour and *eclat* of Louis XIV.'s court, and the familiarity with French affairs and opinions produced by the long war betwixt Popery and Protestantism, which was ended by the peace of Utrecht, spread everywhere French taste and fashion. Even England, which had so stoutly combated French domination, did not escape its contagion. Our literature, from Pope to Cowper, bore melancholy traces of it; Germany suffered immensely from the same cause; and a fresh importation of the Gallo-mania was revived in Prussia by Frederick, misnamed the Great, where Voltaire and French fashions, French vice, French atheism, and French poetry were enthroned and worshipped amid pigtails, powder, and jack-boots. But in no country did this Gallic pest fall more heavily than on Scandinavia. The Swedes divide this period into three portions:—

1. *The Morning of Gallicism—The Dalin Period.*

The principal writers of this period are Dalin, after whom it is named, Fru Nordenflycht, Creutz, and Gyllenborg. They display little originality, and there is as little pleasure in perusing their compositions as there is in those of our own Yaldens, Spratts, Dukes, and the like. Dalin was a courtier and a favourite of Queen Louisa Ulrika. He wrote an epic, *Swedish Freedom*, a drama, *Brynhilda*; a comedy, *The Envious One*; a great number of festive odes, birth and death poems, &c. In fact, he filled all the functions of a court laureate, in effusions which have no more value for posterity than so many old cast-off clothes. As a prose writer he had more merit, publishing a periodical, *The Argus*, in 1732, on the model of Addison's *Spectator*, which continued two years.

Hedvig Charlotte Nordenflycht was a very different person. She was the popular poetess of this period, and in a better age would have been a better poetess, for she possessed, in no ordinary degree, passion, feeling, and imagination. She vented her real and her Sapphic sorrows in a series of elegies called *The Sorrowing Turtle Dove*. She wrote an idyl, *Camilla*, and much love poetry. She was the centre of all literary society, and founded a literary society, of which the queen, Louisa Ulrika, seized the idea, and established the Academy of Literature, which lasted till her death in 1782, and was again restored by her son, Gustavus III., in 1786, under the title of the Academy of Literature, History, and Antiquity.

The Counts Gyllenborg and Creutz were formed in the school of Madame Nordenflycht. Creutz was born in Finland in 1729, and died in 1785. His best work is *Atis and Camilla*. The only merit of the poem is its feeling for nature, and its beautiful style. He wrote also a *Song of Summer*, elegies, and a clever satiric poem, *The Defence of Lying*. Gyllenborg's chief works are, *Songs of the Four Seasons*—for both he and Creutz had an admiration of Thomson's *Seasons*; *the Joys and Sorrows of Men*, *Ode on the Power of the Soul*; fables, satires, and plays. His *Tåget öfver Bält*, in twelve books, is a feeble attempt at a national epic, in the style of the *Henriade*. In most of his works there is a melancholy without hope, a poison of scepticism. He was the chief poet of his time, and his poems on the Seasons the most pleasing.

The other writers of this first section of the century were Wrangel, Hesselius, Celsius, Lalin, Wellander, dramatists; Liljestråle, Skjöldebrande, Göstaßson, Bergström, narrative poets and translators; Olof Rudbeck, Livin, Cederhjelm, Nyrén, comic and satiric writers. Mörk was the great romance writer of the time, Sweden's first regular author of romance. His models were Fenelon, Barclay, and Lohenstein; yet his productions are more numerous than readable. He had imitators in Wexel and Gyllenstolpe. Palmfelt and Nicander were translators from Virgil and others.

2. *Noon of Gallicism—The Period of Gustavus and the Academy.*

Scandinavian literature.

Gustavus III. was a great patron of literature and an author himself, but unfortunately educated in the French taste, and thus only contributed more firmly to fix that taste on his country. Still, in some respects, Swedish literature owes much to Gustavus. He encouraged polish of style, and discouraged coarseness and grossness. Of this mid-day of the Gallic era, Gustavus, Kellgren, Leopold, and Oxenstjerna are the chiefs. Gustavus, following in the steps of his mother Ulrika, and by the advice of his tutor Tessin, established the Swedish Academy of Literature in 1786. He wrote a number of dramas, the chief of which are *Gustavus Wasa*, *Gustavus Adolphus* and *Ebba Brahé*, *Siri Brahé*, *Helmfelt*, *Gustavus Adolphus's Magnanimity*, *Frigga*, a comedy; *The Jealous Neapolitan*, *Alexis Michaelovitsch*, *Natalia Narischkin*, &c. These dramas were in prose, and are still read with interest; but he had several of them thrown into the form of operas by Kellgren and Leopold, by which they only lost their freshness and originality, and the prose ones are still preferred. Kellgren was born in 1741 and died in 1795. He was the best lyric poet of the period. He commenced the *Stockholm Post* in 1777, with his friend, Carl Lenngren, which exercised a powerful influence for nearly fifty years. He was a witty and keen satirist, as is evidenced by his *Enemies of Light*, *My Laughter*, *Man only a Genius when Mad*. He wrote operas which did not equal his lyrics. Kellgren showed unmistakably symptoms of a tendency to back out of the bondage of the French school. On studying the German literature, he began to suspect that his literary career had been an error; and on reading Klopstock's *Messiah*, he declared that he had lived in vain.

Carl Gustav Leopold, after the death of Kellgren, was at the head of the literary world of Denmark during the remainder of the century. He was born in 1756 and died in 1829. His works fill six volumes, including almost every species of poetry but the epic; but he is best known by his dramas and miscellaneous poems.

Johan Gabriel Oxenstjerna, born in 1750, became a marshal of the kingdom, and died in 1818. He was a wonderful admirer of our Thomson, and wrote in imitation the *Harvest*, and the *Hours of the Day*, which, spite of the faults of the age, display living pictures of country life in Sweden, much idyllic beauty, and homely, attractive grace. He also translated Milton and Tasso; the first remarkably well, the latter indifferently.

The other writers of this period are Johan Stenhammar and Isaac Blom; Axel Silverstolpe; Sjöberg, who cultivated the English taste; Edelerantz, who translated "God Save the King."

TERMINATION OF THE FRENCH SCHOOL IN SWEDEN.

This was properly a transition period. The day of French taste was drawing to an end. The French Revolution, by its startling events, was in fact most powerfully destructive of French taste. Voltaire, the author of the miserable *Henriade*, by his other writings was preparing a mine which, in its explosion, broke the intellectual fetters of other nations. In England, the process of literary revolution dates still earlier, from Bishop Percy's *Reliques*, in 1765. In Germany, similar innovations date from Klopstock; in Denmark, Steffens carried about the new German fire; and in Sweden the same spirit was stirring in Bellman, Hallman, and numbers of others before the French Revolution broke out. That world-awakening carried on and completed the change. Not only Bellman and Hallman, but Kexél, Wallenberg, Lidner, Thorild, and Madame Lenngren, at this period, in songs, lyrics, dramas, and others compositions, drew their spiritual life

Scandinavian literature. from the people, and startled and exasperated the orthodox dulness of the academy.

Carl Michael Bellman is the Anacreon of Sweden. He is the pride of his countrymen and the puzzle of foreigners. His songs, which are chiefly bacchanalian and describe the people in their tavern life, have a wonderful joviality and power of language; but much of the charm of his compositions is lost to all but Sweden. There can be no translation of such lyrics as "Up, Amaryllis!" "Drink out thy glass, see Death awaits thee;" "Mark how our shadow, mark, Moritz, my brother;" "Ulla, my Ulla!" etc., etc. Bellman was born in 1740, and died in 1795.

Carl Israel Hallman wrote comedies and farces, often coarse but full of Swedish folk-life. His vaudeville of *Opportunity makes the Thief*, is still extremely popular on the stage. He drew his characters from the same class as Bellman.

Olaf Kexél lived a gay, vagabond life, and found a home in a debtor's prison. He wrote comedies, and re-wrote those of others, as *Captain Puff*, and *Michael Wingler*, which still are admired.

Carl Envalson, a writer of numerous plays, *Schröderheim*, *Lannerstjerna*, and *Holthusen*, were popular in their day. A much more remarkable writer was Jacob Wallenberg, a witty dramatic author and traveller. He wrote merry sketches on an Indian voyage, *My Son in the Galley*, or *All Sorts of Ink-horn Wares*; and an equally amusing visit to London, where he saw and described Wilks, in *London in George III.'s reign, as seen by a Swede*.

Lidner and Thorild were men of a totally different character, grave, philosophic, and almost wholly of the new school. Lidner wrote *Medea*, a tragedy; *The Messiah*; *The Last Judgment*, etc., but with a pure and a fiery glow, which denoted the coming change. Thorild was from head to foot a man of the new ideas. His nature was revolutionary. In the face of the court and academy he maintained the merits of Ossian, Klopstock, and Goethe. He was a master in prose, published a *Critique on Montesquieu*, studied law in England for two years, and in 1798 was banished for four years for a work *On the Freedom of the Understanding*. His poems, the *Göthmanna Songs*, *The Passions*, and *Pleasures of the Imagination*, have much merit. Swedish literature, in fact, is greatly indebted to Thorild for the spirit of manly freedom, and the sound principles of taste which he infused into it. Enbom and Engzell were followers of Thorild.

But perhaps the most interesting character of the close of the last and the opening of the present century in Sweden is Anna Maria Lengren. She was born in 1754, married Carl Lengren, counsellor of Commerce in 1780, and died in 1817. She commenced her literary career by the translation of some operas; but her original poems, contained in one small unpretending volume, are what will for ever secure her a place amongst the classical writers of her country. She is the Miss Bremer of Sweden in poetry. Her poems are, in fact, Swedish domestic life in all its varieties and all its charms.

Fru Widström was another lady poetess of this time, of a more sentimental mood.

Amongst other writers of the period were Paykull, Boman, Regné, and Adlerbeth, chiefly known as translators of the classics; Stjernstolpe and Skjöldebrand, translators and original writers; Wallerius, a song-writer, the Tom Moore of his day, who was in much request at dinner and other parties for his fine voice and singing of his own songs; Choræus, Kullberg, and Lindegren, poets of a grave caste; a second Kullberg, who wrote afterpieces for the theatres; Granberg, Altén, Nordförss, Becker, and Wallmark, names of merit; and Ehrens-värd and Höijer, men of profound philosophical merits. Ehrens-värd was an admiral, and wrote on esthetics in a deep and

original manner, on what he called the *free arts*—architecture, sculpture, painting, and poetry—because they are not based on our necessities, but spring out of the love and desire of beauty. Höijer followed up Ehrens-värd's views by establishing a *Literary Gazette*, to diffuse ideas on art and true beauty in literature; but he was prohibited from proceeding by the king, who declared that he would only have one literary journal in Sweden, and put it into the hand of Wallmark.

THE NEW SCHOOL, COMMENCING IN 1809.

Whilst in England, Germany, and Denmark the new literature was progressing rapidly; whilst in Germany, philosophy, through Kant, Fichte, and Schelling, had acquired a profounder field of labour, more extended views of science and art, and the latter, through the works of Winkelman, Lessing, Herder, Goethe, and Schiller, became more correctly understood; and the Schlegels, Tieck, and Novalis, made the public familiar with the beauties of art in the middle ages in other towns and other countries,—the Swedish academy still contended stonily against the new spirit of the age. Though Oelenschläger, following Evald, and stimulated by Steffens, was producing new creations of beauty in Denmark from its ancient myths; though the spirit-destroying doctrines of the French Encyclopædists had failed of its object, religion had received a new impulse, natural philosophy taken a healthier tone, history was liberated from the chains of rhetoric, and everywhere men were crying out for fact, reality, practical virtue, and freedom, the academy stood fast, resisting all innovation. Fortunately a political revolution gave freedom of the press, and effected the necessary revolution in mind. "The Friends of Literature," an association formed in Upsala some years before, including some of the leading critics of Sweden, in 1807, resolved itself into a new league called the Aurora League, and the first men of the movement flocked into it. In 1809, on the establishment of the freedom of the press, the effect of this association was seen. A new journal, *The Polypheme*, edited by Askelöf, was issued, which made determined war on the old school. In 1810 also appeared the *Lyceum*, and in the same year *Phosphorus*, the organ of the Aurora League, with Atterbom at its head. This journal became famous, and the disciples of the now triumphant new school eventually settled into the three sects of Phosphorists, a Romantic school, the Gothic school, and the Miscellaneous school, but all more or less of the romantic character. Two writers are considered to constitute a class of themselves: Phosphorists, yet having traces of the past school about them, amidst all their beauty and freedom, and not entirely classable with the sects which afterwards arose. These were Franzén and Wallin.

Franz Michael Franzén was born at Uleaborg in Finland, in 1772, and was educated at Abo. He travelled into most European countries, England included, and rose through different preferments from librarian to the university of Abo to the bishopric of Hernösand, where he died in 1847. Franzén resembles Wordsworth in the simplicity of his subjects, drawn from lowly life and open nature. There is in him the same wise and almost child-like nature. The Swedes have noticed the resemblance. It is the idyllic and lyric in which he is most at home. He wrote several larger works, *Emile, or an Evening in Lapland*, new and striking; *Columbus*, an unfinished epic; *Gustavus Adolphus in Germany*, an epic fragment in twenty cantos; *Svante Sture*, a romance in the school of Walter Scott; *Julia de St Julian*, a poetic story; *The Murder on Elgarös*, a drama, etc. But it is not on these, but on his small poems that rests his fame.

Wallin, the archbishop of Sweden, was born in 1779, and

Scandinavian literature.

Scandinavian literature.

died in 1839. He is the greatest religious poet of his country. He wrote much miscellaneous lyrical poetry; but they are his hymns, of which seventy-six are included in the new Swedish Psalm-book, which have given him his unparalleled reputation as a sacred poet. He is styled the "David's Harp of the North," and truly was an archbishop in song as well as in station. His hymns are more truly grand anthems and religious poems. The same characteristics marked his preaching and his speeches. His sermons, like his psalms, are said to have no parallel in the Swedish language.

THE PHOSPHORISTS.

Atterbom, Hammaršköld, and Palmblad were the chiefs of this sect, but Atterbom was its head and founder. In *Polypheme*, in *Phosphorus*, and other publications, he led the attack on the academy and the old French school. But in aiming at being romantic, the new school became too romantic; they became fantastic. In Atterbom's "Island of Blessedness," and his "Flowers," we are carried back to the allegories of Fletcher's "Purple Island" and Darwin's "Loves of the Plants." His productions are warm and sunny, but want substance and reality. In the former mentioned, and in "The Blue Bird," there are splendid passages, but as wholes they are heavy. Atterbom was born in 1790. In later life he became reconciled to the academy, and grew conservative through his connection with court. The results of his university teaching are several works on history, *A System of Philosophy*; *The Swedish Seers and Poets*, etc.; amongst the latter standing pre-eminent Swedenborg and Ehrensvärd. This work, in fact, contains some of the best accounts we have of Swedish writers. His poems were published in two volumes in 1836.

Hammaršköld was born in 1785, and died in 1827. Besides being one of the ablest antagonists of the academicians, he was one of the ablest critics and historians of Sweden. His poems and tales are of little value, but his histories of Swedish literature, of the plastic arts, and philosophy, have given him great and just fame.

Palmblad besides being a very caustic critic, was the author of the first Swedish novel *Amala*, an Eastern story, of *Castle Stjernborg*, *Äreshutan*, and *The Island in the Lake of Däll*. He translated portions of Homer, Æschylus, and Sophocles.

Of this same school is Anders Fryxell, a poet, and author of an admirable History of Sweden, under the name of *Narratives out of the History of Sweden*. Adolf Iwar Arvidsson is a distinguished poet, and editor of *Early Swedish Ballads*, in 2 vols. Besides these are many names—Elgström, Ingelgren, Söndén, Zeipel, Börjeson, Rydquist, editor of *Heimdall*, and translator of Moore's *Irish Melodies*. Hedborn, Graftström, and the Countess d'Albedyhl, all more or less distinguished in poetry and literature. Fru Kerstin Nyberg is a popular poetess, the L. E. L. of Sweden. Her poems have appeared under the *nom de plume* of Euphrosyne.

THE GOTHIC SCHOOL—TEGNÉR, GEIJER, &c.

Tegnér and Geijer, the two greatest names of Swedish literature, stand at the head of a section of the literary world so-called, because they adopted a more general taste than the phosphorists, whom they deemed too one-sided, and condemnatory of much in the old school which had merit. They approved of the reform, but denounced the bitter spirit in which it was prosecuted. Instead of adopting what was merely national, they extended their range of sympathy over the whole Gothic race. Hence their name.

Geijer was the son of an iron-founder in Wermland. Born in 1783, he studied in Upsala, visited England in 1809, and

became professor of history in Upsala in 1817. He originated the Gothic school in the *Iduna*, and perceiving that Atterbom and the Romanticists were fast merging into German idealism, he took fresh and more solid ground. He produced some of the most admirable poems in the language on this principle, "The Last Scald," "The Viking," and "The Last Champion," in the style and spirit of the ancient Visor. He is known equally as a poet, a musician, and a historian. Like Bellman, he has written the music to many of his small poems, and some of them expressly for Jenny Lind. But his Chronicles of Sweden, *Svea Rikes Håfder*, are the grand monument of his fame. Sweden has many poets, but only one Geijer. He was writing also a *Lesser History of Sweden* at the time of his death, 1847. His great work, too, remains a Titanic fragment.

Elias Tegnér, the greatest poet of Sweden, was, like Geijer, a native of Wermland. His principal poems are, "Prestvigning, or Consecration to the Priesthood;" "Nat-tvardsbarnen;" "The Young Communicants," well translated by Longfellow, and "Frithiofs Saga," found on the old saga of Frithiof and Ingeborg, the nearest approach to an epic poem which Sweden has yet achieved. Though not a regular epic, for it is rather a bundle of lyrical poems woven into one epic cycle, it is yet a complete and great poem. It abounds with innovations, not only every book being in a different metre, but the dramatic dialogue being introduced in the midst of the narrative. The success with which the poet has achieved these innovations prove that there is no reason in nature why poets, any more than architects, should slavishly adhere to Grecian models. We have had five or six translations of "Frithiof," none of which give any conception of the exquisite beauty and splendour of the original. His minor poems are full of beauty, life, and variety. His "Gotha Lion" is the national song, and is set to fine music.

The other chief poets of the Gothic school are Ling, Afzelius, Nieander, Von Beskow, and Lindblad, and they show the system run to ripe seed.

H. P. Ling, who died in 1839, was an eccentric man, who wrote two tedious epics, "The Asar" and "Tirfing," the former of which Lénström compliments as "the most long-winded poem in the language." His dramas, nine in number, are equally heavy, but his lyrics are first-rate. The choruses in his dullest dramas are masterpieces. Ling, however, is more famous as a gymnast than as a poet. He introduced the ancient classical system of gymnastics as a means of restoring the northern race to its ancient vigour, and raised it to an effective branch of medical manipulation.

Afzelius, a lyric poet of the same school, was led into the same extravagances by the overstrained admiration of the old Northern. In his own proper lyric element, Afzelius is admirable, like Ling. His most popular original poems are "The Neck's Polska," "The Neck" being a popular water-spirit of the North; and "Tomtarne," the Hobgoblins. But Afzelius has still higher claims on his country's regard. With Rask, he translated Sámund's Edda into Swedish; with Geijer, he collected the *Ancient Folk-Visor*, in 3 vols.; and afterwards himself published, under the title of *Svenska Folkets Sagohäfder*, a history of Sweden drawn from the traditions of the people.

Karl August Nicander, who died in 1839, was rather an Italian than a Gothic poet. Like many Scandinavians, he had a passion for Italy, and many of his poems are quickened and coloured by the South. Yet he wrote the *Rune-Sword*, a tragedy, and translated *Othello* and Schiller's *Maid of Orleans*. In fact, in Nicander there is more grace and colour than substance.

Bernhard von Beskow, besides being the author of various original poems, has produced a series of dramas, which are the nearest approach to regular acting dramas which Swe-

Scandinavian literature.

Scandinavian literature.

den possesses. The chief of these are the tragedies of *Erik XIV.*, *Hildegard*, *Torkel Knutson*, and *King Birger and his Race*. His opera, *The Troubadour*, was set to music by the present king of Sweden.

Assar Lindblad, a clergyman of Scania, is a disciple of Tegnér; his poems display much genius.

POETS BELONGING GENERALLY TO THE NEW SCHOOL.

There are a number of poets belonging to the new school, yet who differ as much from each other as they do from Phosphorists and Goths, so that they cannot be very regularly classed. Prominent amongst these are Stagnelius, Almqvist, and Runeberg, with others of more or less mark. The greatest of these poets is perhaps Stagnelius, though Runeberg treads closely in his steps.

Erik Johan Stagnelius is a genuine modern gnostic. His poetry is as fully and as positively the enunciation of gnosticism as ever were the preachings of the old Syrian and Egyptian speculative Christians. Suffering himself in a sickly and torturing body, and with a soul longing intensely for liberation, he held, with the gnostic sect, the belief, inherited from Plato and Pythagoras, that souls are here cast into prison for their past sins, and that Christ is the liberator from this captivity. All his poems, the "Cydispe," the "Narcissus," the "Bacchantes," "Proserpina," and "Svedger," are based on this faith, and are eloquent with the passion of a deep and divine sorrow. They are amongst the most spiritual poems ever written, and abound with word-paintings, that remind us of the old Byzantine pictures, with their devotional figures and golden back-grounds. Stagnelius was born in 1793, and died in 1828. Besides the works mentioned, he published *Women of the North*; *Wladimir*, a fine heroic poem in hexameters; and the *Martyrs*, i.e., Vivia Perpetua and her Companions, a masterly production; but they are his "Lilies of Sharon," which distinguish him from all other Swedish poets, and place him amongst the greatest intellectual poets of any country.

J. C. L. Almqvist is one of the most extraordinary characters as well as writers of Sweden. His productions are most voluminous, and on almost every subject. Professing to teach the practical duties of life, he has contrived to fly off into the strangest speculations and vagaries conceivable. Poetry, romance, philosophy, the drama, elementary treatises, and startling projects, have poured from his pen with a wonderful abundance. That he possesses real genius is undoubted, but it appears a genius allied to madness, if not to something worse. In fact, we suspect Almqvist to be a character of no ordinary kind, and his more recent proceedings put this even beyond suspicion. He has written legends of New Holland, and a life of Hector; on the condition of the poor in Sweden; on the honour of labour; and in advocacy of education. He is the champion of progress and of improvement of the social condition. He has written *Writings for the People*, *The Gospel of Health*, *The Prop of Man*, religious treatises; and along with these, others sapping the foundations of all morals, especially female ones. In his notorious novel, *Det går an*, a phrase equivalent to *Ça Ira*, he has advocated the loosest notions regarding marriage. He has written the most extravagant stories, as *Skållnora Mill*, and *Ramido Marineseo*, the infamous son of the infamous Don Juan; and the wildest fictions in his *Törnrosens Book* mingled masses of extravagance and beauty, or *Schems-el-Nikar*, a Nubian epic; *Isodorus of Tadmor*; *the Wolf's Daughter*, &c. At one time he proposed, like Southey, a Pantisocracy, called the "New Man-home Confederacy," and set the example by going off into the primeval forests of Wermland, living in a turf-cabin, clothing himself in home-spun, and eating porridge with a wooden spoon. At length, in 1851, having robbed an acquaintance of a large amount, he poisoned

him, and got off to the Great Exhibition of London, and thence to America, to the horror and indignation of all Sweden.

The distinguished modern poets of Sweden are Vitalis, Livijn, Dahlgren, and Fahlcrantz. Livijn is also a distinguished novelist, and Fahlcrantz a celebrated wit, though the bishop of Westerås. There are also Wadman, Ingelman, Wieselgren, Böttiger, and others. But we can only devote a more particular notice to Johan Ludvig Runeberg, a Finn by birth, but who writes in Swedish, his subjects being, however, Finnish; and they bring us at once into a perfectly new field of life. Finland has its own vein of poetry, though it cannot be said to have a national literature. It has for ages existed under foreign masters; there could, therefore, be no national literature, yet it has a native poetry. Amid its solitary forests, its wide, dark moorlands, its lonely lakes, it was impossible that poetry should not visit the people under their invasions and sufferings from both climate and men. Finland has its own mythology, totally different from that of Scandinavia. There we have no longer Odin, Thor, Balder, Braga, and the rest; but Ukko, the mightiest of heaven's powers, thunders from the purple cloud; Ahti is the god of the sea, Wellamo his goddess; Kalma, the monarch of death; and Wäinämöinen, the god of song, sings through the woods and by the streams the deeds of their gods and heroes; of Kullervo, the son of Kaleva, the great ancestor of all Finnish heroes. The Finns have their songs of the maidens, of the herdsmen, of their social festivities, songs of the cradle, and of the stern and stirring passages of life. They have always had their popular poets, and sing in a metre peculiar to the country, one form of which has been borrowed by Longfellow in his song of *Hiawatha*.

Runeberg is a genuine Finnish poet; he has thrown into his poetry all the wild and melancholy character of his country, and has mingled with it a deep feeling of its sufferings and its wrongs. He indulges in no morbid feelings of his own, but he is baptized with the spirit of his country and countrymen by the reflection, over those brute but overwhelming forces of the demi-savage Muscovite, which have torn his native land as a prey from its old and cherished associations, and made it an appanage of a vast, dominant, but unamalgamated empire. These feelings break forth in the *Stories of Ensign Stål*. No Northern poet has embodied in his compositions more poetry in the highest sense,—the genuine expression of the human heart in all its joys, troubles, and passions.

Amongst the remaining poets, Wieselgren has also written a *History of Swedish Literature*, to the close of the sixteenth century. Besides those mentioned, there are Ruda; Olof Fryxell, brother of the historian; Hedborn; Adlersparre; Braun; Lindeblad; Ridderstad; Satherberg; Blanché, a vaudeville writer; Strandberg, the poet of freedom; Malmström; Nybom; and Bergman; Gosselman, a naval officer and traveller; Unge, also officer and traveller, a humorous poet; Sturzenbecher, a brilliant writer of the Heiné school; Carlén, the husband of the novelist; Nervander, translator of poetry of King Ludvig of Bavaria; Wennström, Goransson, and numbers of rising men; Hagbart, the excellent translator of Shakspeare, in twelve volumes, which he has presented to the Shakspeare Society in England.

THE ROMANCE AND NOVEL WRITERS OF SWEDEN.

Whilst the literature of Sweden is almost wholly modern, its romance and novel literature is especially so. Mörk, about the middle of the eighteenth century, was the first to cultivate prose fiction. His models were Fenelon, Lowenstein, and Barelai; his productions were heavy, bombastic, diffuse, and monotonous. Their titles indicate their character, as *The Romance of Adalrik and Göthilda*,

Scandinavian literature.

Scapula.

Eugenia, or the Bewildered Well-meaning One. He died in 1763. From that period to the end of the century the country was inundated with foreign romances. La Fontaine's *Wood Child, Subterranean Burial Vault, &c.*, cost more tears and candle-ends than can be well counted. But all this unsound stuff had its day. Hobgoblins, like other horrors, vanished; interesting robbers ceased to show themselves after Rinaldini; even Kotzebue's monstrosities grew insipid. Palmblad and Cederborg then introduced something more real and amusing. Cederborg became the most popular. His *Uno von Trusenberg* and *Otto Tralling* were much of the *Tom Jones* school; but his novels, which passed rapidly through numerous editions, abounded with real Swedish life and characters, and are read by many with pleasure. He was the Dickens of Sweden of his day. In 1843 he published a new edition of his works. Walberg was a disciple of Cederborg, in *Uggelvik's Ball*, and the writers of *Fuselbrenner, Baron Dolh, &c.* Two lady novelists also appeared, Fröken R*** and Fröken Cronhjelm, but of no great note. G. W. Gumælius, who wrote *Thord Bonde*, in imitation of Walter Scott, was the first historic romance writer. Clas Livijn, the poet, Count Peter Sparre, "O. K.," author of *Snapphanarne, &c.*, and Mellin, are all novelists of note. Mellin has also written a *History of Sweden for Ladies*. We have already spoken of Almqvist's romances; and we may mention the names of Mamsell Stahlberg and Mina Grönwall, as well as Kullberg, author of *Gustavus III. and his Court*.

But now appeared Sweden's great novelist, Miss Bremer, whose works are so well known to England, through Mrs Howitt's translations, that we need only mention them. Besides her novels, Fredrika Bremer has published her *Homes in the New World*. Her success called forth two other ladies in the same department of literature who have become famous,—the Baroness Knorring and Emily Carlén. The Baroness Knorring, now deceased, is the George Sand of Sweden, exhibiting much of his genius and of his peculiar notions. One of her stories, *Torparen, or the Peasant and his Landlord*, is a masterly production. Emily Carlén is perhaps a more prolific writer than Miss Bremer, and enjoys great popularity in Sweden; it has been said a greater popularity than Miss Bremer. This is not the case. Professor Lenström, the historian of Swedish literature, pronounces his verdict in a few decisive words:—"Fredrika Bremer is Sweden's greatest female writer of romance;" and Dr Sturzenbecher says, "she has carried our native literature farther than any of our literary notabilities before."

Besides these, Sweden possesses other distinguished living writers of fiction. Wetterbergh, who writes under the name of Uncle Adam; Engström, who exposes the vast inequalities of society; Snellman, a Finn; De Geer, a mem-

ber of a noble family and a government official, who writes under the initials "S. H. T.;" Ödman, a professor of Upsala; and Crusenstolpe and Lindeberg, two of Copenhagen's most brilliant journalists, who are equally celebrated in fiction.

Scarborough.

Here we close our sketch of the literature of Scandinavia. It is but a sketch—a mere outline—of the mass of literary, poetical, and imaginative wealth spread over the northern lands of our stalwart forefathers; and it would be unjust not to add that in all other branches of letters, in science, in art, the drama, in jurisprudence, in philosophy, Scandinavia stands on a fair eminence, and promises in a few years to assume a position challenging comparison with any country of Europe. Let the reader turn over the *Swedish Biographical Lexicon*, or Lenström's *Synopsis of the Literature and Art of Sweden*, his *Poesiens Historie*, the *Nordisk Conversations Lexicon*, now publishing in Copenhagen, and similar works, and see what hosts of able authors in every species of intellectual activity present themselves; that whole libraries have been accumulated under their hands, in all sciences,—history, philology, theology, antiquities, every branch of natural and moral philosophy, and every kind of miscellaneous literature. Look back through the past, what world-wide names! Puffendorf, the author of *Jus Naturæ et Gentium*, and other works, philosophic and historic. Linnæus, Swedenborg, who would have taken one of the highest places as a discoverer in science had he not stood forward as a great theologic seer. The names of Scheele and Berzelius are familiar to all chemical students. In history, Sweden presents great names, from Saxo Grammaticus to Geijer, Fryxell, and Strinholm, author of the *History of the Vikings*. In literary history, Hammarköld, Wieselgren, and Lenström. In contemporary art, Byström, Göthe, and Fogelberg, as sculptors, are eminent names; in painting of different kinds, Södermark in portrait, Sandberg in portrait and historic painting, Mörner, historic painter, Dahlgren, and others. Fröken Rothkirch is distinguished in portrait, and Fahlcranz in landscape painting from northern scenery, in which department ladies have also distinguished themselves, as Evelina Stading and Mamsell Linnell. Besides these, Julin, Ezdorff, Héidecken, Söderberg, the Anckarswårds, one an animal painter; Kylberg, a painter of humorous subjects; Lauræus, a Finnish *genre*-painter; and many others, deserve particular notice. The great names in all these departments of art and science belonging to Norway and Denmark we have already mentioned. The more we study the literature of these nations, the more we shall perceive traces of our real ancestry, and that we have yet kindred in the North who are essentially worthy of being known where Canute the Great once reigned. (w. II—T.)

SCAPULA, JOHN, was born probably at Lausanne towards the end of the sixteenth century, and studied at Lausanne. His name is recorded in the annals of literature, neither on account of his talents, nor learning, nor virtuous industry, but for a gross act of disingenuity and fraud which he committed against an eminent literary character of the sixteenth century. Being employed by Henry Stephens as a corrector of his press while he was publishing his *Thesaurus Linguae Græcæ* in 1572, Scapula extracted those words and explications which he reckoned most useful, comprised them in one volume, and published them as an original work, with his own name. This book appeared in 1579, and bore the title of *Lexicon Græco Latinum*. The compilation and printing of the *Thesaurus* had cost Stephens immense labour and expense; but it was so much admired by those learned men to whom he had shown it, and seemed to be of such essential importance to the acquisition of the

Greek language, that he reasonably hoped his labour would be crowned with honour, and that the money he had expended would be repaid by a rapid and extensive sale. But before his work came abroad, Scapula's abridgment appeared, which, from its size and price, was quickly purchased, while the *Thesaurus* itself lay neglected in the author's hands. The consequence was a bankruptcy on the part of Stephens, while he who had occasioned it was enjoying the fruits of his treachery. Scapula's *Lexicon* was afterwards enlarged, and published in folio; and has gone through several editions, while the valuable work of Stephens has never been reprinted. Its success is, however, not owing to its superior merit, but to its moderate price and commodious size.

SCARBOROUGH, a seaport and market-town, municipal and parliamentary borough of England, in the North Riding of Yorkshire, 39 miles N.E. of York, and 217 N. of London. It occupies a fine situation, on the shore of the

Scarborough.

German Ocean, along a semicircular bay, protected on the N. and N.E. by steep heights, crowned by the old castle. Originally built close to the sands, it now extends for some distance up the slope behind, the houses rising in successive tiers one above another. The upper and more modern part of the town is very handsome, consisting of broad, well-paved streets, lined with elegant houses. There are many public buildings, some of which are remarkable for beauty. Among them are a town-hall, jail, and custom-house. Very conspicuous is a fine circular edifice, in the classical style, recently built for the accommodation of a museum, which forms a valuable collection, illustrative of the geology and natural history of the county. The ancient but now dilapidated castle stands on a cliff from 300 to 330 feet high, and is still used for barracks; and protects the town and harbour by means of three batteries. It formerly covered 19 acres, and was accessible only from the west. The massive square keep, and parts of the gate barbican, and ditch, are still to be seen. The old church of St Mary occupies the site of a former Cistercian priory, of which some portions of the crypt and one of the ancient towers still remain. Christ Church is a fine Gothic edifice, erected in 1828. The Established Church have also a chapel of ease; and there are other places of worship belonging to various sects, of Methodists, Baptists, Independents, Quakers, Christian Brethren, and Roman Catholics. Education is well provided for by a grammar school, with thirty scholars in 1854, a Lancasterian school, national schools, and others of various kinds. There are also two public libraries, and a mechanics' institution; besides the museum already mentioned. The charitable institutions comprise—alms-houses, a poor-house, and a seamen's hospital. Scarborough owes its prosperity chiefly to its mineral wells and to its advantages for sea-bathing, which render it a favourite place of resort for summer visitors. There are two mineral springs, the north and the south, differing somewhat in their chemical ingredients. They have long been in high repute as beneficial to invalids. A large castellated saloon has been erected at the place where these springs rise, at the foot of the cliff near the sea. This place is separated from the town by a ravine 400 feet wide, which is spanned by a handsome iron bridge of 4 arches, supported on piers 75 feet high. The amusement and recreation of the visitors are provided for by a theatre, assembly-rooms, news-rooms, and public gardens. Ship-building is largely carried on at Scarborough, as well as the manufacture of ropes and sail-cloth; but these branches of industry have in recent times considerably declined. The herring fishery, during its season, employs many boats belonging to the town, and there are several coal mines in the neighbouring country. The harbour is of some importance, as it is the only good one between Whitby and the mouth of the Humber. It has two piers; and though the entrance is narrow, it is commodious and safe. Scarborough was made a bonding port in 1841: it has bonding warehouses and a lighthouse. Some foreign trade is carried on, chiefly with the Baltic, Holland, and Portugal; iron, timber, hemp, flax, wine, and brandy, being the chief articles imported. There is also some coasting trade. The number of sailing vessels registered at the port, December 31, 1857, was 299; tonnage, 36,470: of steam vessels, 3; tonnage, 452. In that year the number of vessels that entered the port, all sailing vessels, was 330; tonnage, 20,788: those that cleared, also all sailing vessels, were 46; tonnage, 2271. Scarborough is governed by a mayor, 6 aldermen, and 12 councillors; and returns 2 members to parliament. The town is believed to be ancient, on account of its name, which is Saxon, signifying *the fortified rock*; and it was at one time strongly defended by walls, moat, and earthen ramparts. The castle must have been a place of great strength before the use of gunpowder; and even during the civil war it held out for a long time

against the parliamentary forces. It was dismantled under the Commonwealth, but partially repaired again at the time of the rebellion in 1745. Pop. (1851) 12,915.

SCARLATTI, ALESSANDRO, one of the greatest among musicians, was born at Trapani, in Sicily, in 1659, and died at Naples, on 24th October 1725, aged sixty-six years, as is shown by the inscription on his tomb in the church of the Carmelites of Monte-Santo. Who were his early instructors in music is not known. It seems hardly possible that he should have studied under Carissimi, at Rome, as has been so often said; because when Scarlatti was fifteen years old, Carissimi was ninety-four. Scarlatti visited Rome in 1680, but it is not probable that Carissimi was then living. In that year, his first opera, *L'Onestà Nell' Amore*, was performed at the court of Christina of Sweden. It has been said that another opera of his was performed in the same year at the court of Munich; but it appears that no opera of Scarlatti's was performed there before 1721. His opera, *Pompeo*, was performed at the court of Naples on 30th January 1684. After that we learn nothing of his proceedings until 1693, when he composed the oratorio, *I dolori di Maria sempre Vergine*, and the opera, *Theodora*, performed at Rome. In this opera he gave the first example of a *da capo*; a form adopted by other composers, and employed for many years afterwards. He introduced another novelty, *i.e.*, orchestral accompaniments to the recitatives; and he also gave a separate design to the accompaniments of the airs. It appears that, in 1694, he held the office of chapel master-royal at Naples. His opera, *Pirro e Demetrio*, performed at Naples in 1697; *Il prigionier fortunato*, in 1698; and especially *Laodicea e Berenice*, 1701, established his reputation. On 31st December 1703, Scarlatti was called to assist Foggia, chapel-master of Santa Maria Maggiore, at Rome; and in May 1707 succeeded that eminent musician. He held also the office of music-director to Cardinal Ottoboni, who seems to have obtained for him the decoration of Knight of the Golden Spur. At that time the new political condition of Naples induced Scarlatti to return thither in 1709, after resigning his appointments in Rome. Among the operas which he produced at Naples was *Il Tigrane*, performed in 1715; and in a note subjoined to the argument of the drama, Scarlatti states that he had then composed 106 operas for different Italian theatres. He afterwards composed eleven others, besides several oratorios, and a great deal of church music. In *Tigrane* he formed new orchestral instrumentations, unknown till then. Scarlatti composed a vast number of cantatas, most of which remain in manuscript. He taught by turns in the conservatories of Sant' Onofrio, Dei Poveri di Gesù Cristo, and Santa Maria di Loreto. The famous Durante was one of his pupils, and arranged several of Scarlatti's cantatas as duets in a most masterly manner. Mirecki published these arrangements, along with Clari's duets and trios, at Paris. Scarlatti's genius and fertility were extraordinary. His invention was rich and bold, his learning great, and his style pure. His modulations, often unexpected, are never harsh, and never difficult for the voice. Besides the music above-mentioned, Scarlatti composed the following pieces for the chamber. Twenty madrigals; a serenata for four voices; two serenades for five voices; madrigals for two voices; fourteen chamber duets, for study; two books of toccatè, for the harpsichord or organ. A specimen of Scarlatti's vocal music is given by Burney, in the fourth volume of his *History of Music*; and another by Padre Martini, in the second volume of his work on counterpoint. Clementi, in his *Selection of Practical Harmony*, 3 volumes, gives specimens of instrumental music by Alessandro and Domenico Scarlatti. (G. F. G.)

SCARLATTI, DOMENICO, son of Alessandro Scarlatti, was a very distinguished composer, and one of the ablest harpsichord players in Europe. He was born at Naples in 1685

Scarlatti.

Scarlet
Fever.

and studied at first under his father, and afterwards under Gasparini, at Rome. In 1709, he met with Handel, at Venice, and was delighted with the surprising improvisations of that great master. At Rome, he composed a great number of excellent cantatas, and wrote also for the church. On 1st January 1715, he was appointed chapel-master of St Peter's, in the Vatican, but quitted that post in August 1719, when he went to London, in order to compose an opera, and to accompany on the harpsichord at the Italian Opera. He there produced *Narcisso* on the 30th May 1720; and next year set out for Lisbon. The king of Portugal engaged him, and treated him very liberally. In 1726, he returned to Naples, but finding his great instrumental talent of small advantage to him in Italy, he accepted, in 1729, an offer from the court of Spain to give lessons to the Princess of the Asturias, whom he had formerly taught at Lisbon, as Princess of Portugal. At Madrid he enjoyed great advantages, which were continued to him by Ferdinand VI., in whose service he remained till his death in 1757. He published two sets of sonatas for the harpsichord, dedicated to the Princess of the Asturias, besides other sonatas. His sonatas are remarkable for invention, for graceful melody, and skilful construction. The number of his sonatas is wonderful. The Abate Santini, at Rome, had collected 349 of Domenico Scarlatti's sonatas for harpsichord and organ, and yet had not obtained all that he had written. Clementi, in the second volume of his *Selections*, gives two fugue specimens of Domenico Scarlatti's music, one of them the celebrated Cat's Fugue. (G. F. G.)

SCARLET FEVER (*Scarlatina*), either mild, or malignant with putrid sore throat, exhibits different forms of a disease which is propagated by a specific contagion, like small-pox or measles, and like them is believed by the best observers to attack a person only once during life; though the apparent exceptions to this remark are more numerous in scarlet fever than in the other two diseases above mentioned. It will be proper to notice separately, the mild and fatal scarlet fever; and to describe some cases, in which the symptoms are irregularly combined.

The *milder form* of scarlet fever is distinguished by the rash, with a moderate degree of fever, and with very little affection of the throat. The rash first appears in innumerable red points about the neck and face, and by the next day they are seen over the whole surface of the body. The skin is rough to the touch, and sometimes there are small vesicles. About the fourth day, the eruption is at its height, and on the fifth it begins to decline. The patient should be kept cool and quiet, should not be overloaded with bed-clothes; his diet should be sparing, and cooling drinks and mild laxatives should be recommended.

In the *severer forms of Scarlatina* the febrile symptoms at the commencement are more severe; there is a sensation of stiffness and pain on moving the neck, and it is also painful to swallow; the voice is thick, and the throat feels rough and straitened. The heat of the surface rises in a most remarkable manner; not only to the sensations of the patient or observer does the heat seem greater, but the thermometer shows it to be 108° to 110° ; that is more than ten degrees above the natural standard. There is sickness, headache, great restlessness, and delirium; the pulse is frequent, but feeble, and there is great languor and faintness. The tongue is of a bright red colour, especially at the sides and extremity, and the rising points are very conspicuous. This kind of scarlet fever is not unfrequently followed by great debility, or the occurrence of other diseases, as inflammation of the eyes, or dropsy, or an inflammatory state of the whole system, or water in the brain.

Treatment. It is in general proper to begin with giving an emetic, especially if we at all suspect the stomach to be loaded with undigested matter; and we are very soon after to exhibit laxative medicines, which are truly one of our

most important remedies in this disease. The washing of the patient's body with cold water, is considered a good antidote to lessen the burning heat of the skin. The inflammatory state of the system which often follows scarlet fever, is not unfrequently accompanied with a swelling resembling dropsical swelling; but we are not to regard this last as a sign of debility, or to be deterred from the use of active remedies.

In *Malignant Scarlet Fever*, with putrid sore throat, the putrescent symptoms are more rapid and severe, and the general system is much oppressed, the throat and neighbouring parts being affected with rapidly-spreading ulcerations. This form of scarlet fever begins like the preceding, but in a day or two shows symptoms of peculiar severity. The rash is usually faint, and the whole skin soon assumes a dark or livid red colour.

Treatment. Strong beef-tea should be given in as large quantities as possible, and wine and bark should be liberally administered; the throat must be injected with strong cleaning gargles.

SCARPA, ANTONIO, was born at La Motta, in 1748. He early distinguished himself as an anatomist and surgeon, and his works in both these branches of science have spread his reputation throughout all Europe. For many years he occupied the chairs of clinical and operative surgery in the school of Pavia; and when he became emeritus professor, he was really the director of the faculty of medicine in the university which he so greatly contributed to render celebrated. Scarpa was an exact as well as a laborious observer, and did more than most men of his time to advance the progress of surgery. Surgical anatomy, which has given a particular direction to the researches of surgeons, owes its first development to the labours of Scarpa, and forms, in some sort, the distinctive character of his productions. His works are not altogether free from faults. They recommend themselves more by the beauty than by the precision of their style; but the excellence of the precepts which his writings convey, and the judicious and original observations on which they are based, have placed several of them in the rank of classical books, and have led to their translation into most of the languages of Europe. Scarpa commenced his career as an anatomist, but afterwards directed his attention principally to the practice of surgery; and if he sometimes maintains opinions that are paradoxical, if his theories and his precepts are at times hardly defensible, we still recognise, even in his errors, the views of a great master, and thoughts which direct the reader to useful reflection. Uniting to the love of science an exquisite taste for the fine arts, the author has illustrated his writings with engravings, which are models of exactness, elegance, and purity. The plates which represent the nerves of the heart, and those which accompany the treatises on hernia and aneurism, are among the most perfect productions of this kind. He died at Pavia, on the 30th of October 1832.

Scarpa is author of a number of writings, many of them inserted in the journals of Italy, and on local subjects which are little known. His principal works are, *Anatomicæ Disquisitiones de Auditu et Olfactu*, Pavia, 1789, in folio; *Tabulæ Neurologicæ ad Illustrandum Historiam Cardiacorum Nervorum*, Pavia, 1794, in folio; *Commentarius de Penitiori Ossium Structura*, Leips. 1799, in 4to; *Sull' Ernie, Memorie Anatomico-chirurgiche*, Milan, 1810, in folio; *Riflessioni ed Osservazioni Anatomico-chirurgiche sull' Aneurisma*, Pavia, 1804, in folio; *Saggio di Osservazioni ed Esperienze sulle principali Malattie degli occhi*, Pavia, 1801, in 4to; *Sul taglio Ipogastrico per l'Estrazione della pietra dalla Vesica Orinaria*, Milan, 1820, in 4to; *Sullo Scirro e sul Cancro*, Milan, 1821, in 4to; *Memoria sulla Ligatura delle principali Arterie; Lettera sulla Ligatura temporaria delle grosse Arterie degli arti*, Milan, 1823, in 8vo; *Saggio di Osservazioni sul taglio Retto-vesicale per l'Estrazione della pietra dalla Vesica Orinaria*, Pavia, 1823, in 8vo; *Esame della terza Memoria del Professore Vacca sul taglio Retto-vesicale*, Milan, 1821, in 8vo; *Memoria sull' Idrocele del Cordone Spermatico*, Pavia, 1823, in 4to.

Scarpa.

Scarpanto
Scarron.

Scarron.

SCARPANTO, an island of Asiatic Turkey, lying in the Mediterranean, 28 miles S.W. of Rhodes. It is about 30 miles long by 5 across; and is very lofty, rugged, and bare, having one summit near the centre, 4000 feet above the sea. Marble and iron are its chief productions; and there are some harbours on its coasts. The ancient name was Carpathus.

SCARRON, PAUL, a famous French burlesque writer, was the son of a counsellor in parliament, and born at Paris about the end of the year 1610, or in the beginning of the succeeding year. His father having married a second time, he was compelled to assume the ecclesiastical profession. At the age of twenty-four he visit Italy, where he freely indulged in licentious pleasures. After his return to Paris, he persisted in a life of dissipation, till a long and painful disease convinced him that his constitution was almost worn out. At length, when engaged in a party of pleasure, at the age of twenty-seven, he lost "the use of those legs which danced so gracefully, and of those hands which could paint and play on the lute with so much elegance." In the year 1638 he was attending the carnival at Mans, of which he was a canon. Having dressed himself one day as a savage, his singular appearance excited the curiosity of the children of the town. They followed him in multitudes, and he was obliged to take shelter in a marsh. This wet and cold situation produced a numbness which totally deprived him of the use of his limbs; but notwithstanding this misfortune he continued gay and cheerful. He took up his residence at Paris, and by his pleasant humour soon attracted to his house all the men of wit about the city. The loss of his health was followed by the loss of his fortune. On the death of his father, he entered into a process with his mother-in-law. He pleaded the cause in a ludicrous manner, though his whole fortune depended on the decision, and accordingly lost the cause. Mademoiselle de Hauteport, compassionating his misfortunes, procured for him an audience of the queen. The poet requested to have the title of valetudinarian to her majesty. The queen smiled, and Scarron considered the smile as the commission to his new office. He therefore assumed the title of "Scarron, by the grace of God, unworthy valetudinarian to the queen."

Cardinal Mazarin gave him a pension of 500 crowns; but that minister having received disdainfully the dedication of his *Typhon*, the poet immediately wrote a *Mazarinade*, and the pension was withdrawn. He then attached himself to the Prince of Conde, and celebrated his victories. He at length formed the extraordinary resolution of marrying, and was accordingly, in 1651, married to Mademoiselle d'Aubigné, afterwards Madame de Mainte-non, who was then only sixteen years of age. "At that time," says Voltaire, "it was considered as a great acquisition for her to gain for a husband a man who was disfigured by nature, impotent, and very little enriched by fortune." When Scarron was questioned about the contract of marriage, he said he acknowledged to the bride two large invincible eyes, a very beautiful shape, two fine hands, and a large portion of wit. The notary demanded what dowry he would give her. Scarron immediately replied, "The names of the wives of kings die with them, but the name of Scarron's wife shall live for ever." She restrained by her modesty his indecent buffooneries, and the good company which had formerly resorted to his house were not less frequent in their visits. Scarron now became a new man. He grew more decent in his manners and conversation; and his gaiety, when tempered with moderation, was still more agreeable. But, in the meantime, he lived with so little economy, that his income was soon reduced to a small annuity and his marquise of Quinet. By the marquise of Quinet, he meant the revenue he derived from his publications, which were printed by one Quinet. He was

accustomed to talk to his superiors with great freedom, in his jocular style. In the dedication to his *Don Japhet d'Armenie*, he thus addresses the king: "I shall endeavour to persuade your majesty that you would do yourself no injury were you to do me a small favour; for in that case I should become more gay. If I should become more gay, I should write sprightly comedies; and if I should write sprightly comedies, your majesty would be amused, and thus your money would not be lost. All this appears so evident, that I should certainly be convinced of it if I were as great a king as I am now a poor unfortunate man."

Although Scarron wrote comedies, he had neither time nor patience to study the rules and models of dramatic poetry. Aristotle and Horace, Plautus and Terence, would have frightened him; and perhaps he did not know that there was ever such a person as Aristophanes. He saw an open path before him, and he followed it. It was the fashion of the times to pillage the Spanish writers. Scarron was acquainted with that language, and he found it easier to use the materials which were already prepared, than to rack his brains in inventing a subject; a restraint to which a genius like his could not easily submit. As he borrowed liberally from the Spanish writers, a dramatic piece did not cost him much labour. His labour consisted not in making his comic characters talk humorously, but in keeping up serious characters; for the serious was a foreign language to him. The great success of his *Jodelet Maître* was a vast allurements to him. The comedians who acted it eagerly requested more of his productions. They were written without much toil, and they procured him large sums. They served to amuse him. When the office of historiographer became vacant, he solicited for it without success. At length Fouquet gave him a pension of 1600 livres. Christina, Queen of Sweden, having come to Paris, was anxious to see Scarron. "I permit you," said she to Scarron, "to fall in love with me. The Queen of France has made you her valetudinarian, and I create you my Roland." But Scarron did not long enjoy that title. He was seized with so violent a hiccough, that every person thought he would have expired. "If I recover," he said, "I will make a fine satire on the hiccough." His gaiety did not forsake him to the last. Within a few minutes of his death, when his domestics were shedding tears about him, "My good friends," said he, "I shall never make you weep so much for me as I have made you laugh." Just before expiring he said, "I could never believe before that it is so easy to laugh at death. He died on the 14th of October 1660, in the fifty-first year of his age.

His works have been collected and published by Bruzen de la Martiniere, in 10 vols. 12mo, 1737. There are *The Æneid travestied*, in eight books. It was afterwards continued by Moreau de Brasey; *Typhon, or the Gigantomachia*. Many comedies, as *Jodelet, or the Master Valet*, *Jodelet Cuffed*, *Don Japhet d'Armenie*, *the Ridiculous Heir*, *Every Man his own Guardian*, *the Foolish Marquis*, *the Scholar of Salamanca*, *the False Appearance*, and *the Prince Corsaire*, a tragi-comedy. Besides these, he wrote other pieces in verse. His *Comic Romance*, in prose, is the only one of his works that deserves attention. It is written with much purity and gaiety, and has contributed not a little to the improvement of the French language. It has been translated into English by Oliver Goldsmith. Scarron had great pleasure in reading his works to his friends as he composed them, which he called "trying his works." Segrais and another of his friends coming to him one day, "Take a chair," said Scarron to them, "and sit down, that I may examine my *Comic Romance*." When he observed the company laugh, "Very well," said he, "my book will be well received, since it makes persons of such delicate taste laugh." Nor was he deceived. His romance had a prodigious run. It was the only one of his works that Boileau could submit to read. *Spanish novels* translated into French. A volume of *Letters*. *Poems*, consisting of songs, epistles, stanzas, odes, and epigrams. The whole collection abounds with sprightliness and gaiety, and his works have nearly all been translated into English.

SCEPTICISM.

Scepticism described. **SCEPTICISM** (*σκέψις*, *doubt*), is that negative species of philosophy which, founding on the alleged contradiction, whether direct or indirect, of the primary data of consciousness, pronounces philosophy false and truth impossible; or, more briefly, it is that negative system of philosophy which, by doubting of everything beyond the region of phenomena, doubts the possibility of all speculation.

The relation of Scepticism to Dogmatism.

In order to doubt, man must begin somewhere, and the admission by the sceptic of the truthfulness of phenomena is alike necessary and convenient. For an absolute scepticism regarding the energies of the human faculties, even when admitted to be self-consistent, and acquitted of contradiction, is, as self-destructive, absolutely impossible.¹ If I am sceptical of my own faculties when they doubt, this very scepticism annihilates that doubt, and renders me incapable of advancing a step. The highest form which scepticism can assume is that of convicting the data of consciousness of mutual exclusiveness, whether possible or actual.² It is the business of the sceptic, accordingly, to destroy, not to establish; to pull down, not to build up. He accepts his premises from the dogmatist, and strives, by bringing them into hostile collision, to convict him of absurdity. It is the business of the dogmatist to develop with consistency the facts which consciousness reveals; it is the business of the sceptic to review the labours of the dogmatist, and discover, if possible, an inconsistency in the primary facts which are subjected to his criticism. The function of the sceptic is quite a legitimate one, accepting as he does both his method and his material from the dogmatist; but pursuing his aim in an entirely different spirit, and with a widely different end. The highest end of the dogmatist is to produce an intellectual harmony; the highest end of the sceptic is to generate an intellectual chaos. The intuition of truth is what the dogmatist seeks; what the sceptic longs for is the absolute doubtfulness of all conviction. Both start from common ground in starting from the acceptance of phenomena; both arrive at directly opposite conclusions in arriving, the one at affirmation, the other at doubt.³ The dogmatist, the emblem of impatience, is earnest and incessant in his pursuit of truth; the sceptic, the picture of composure, is finely indifferent and delightfully dubious over everything which claims the name of truth. The dogmatist, positive in his assurance of the criterion of what he seeks, has a constant trust in the attainability of philosophy; the sceptic, on the other hand, who harbours the sole conviction that all truth is vain, believes (if a sceptic can be said to believe) in the absolute impossibility of philosophy. Dogmatist and sceptic alike agree in accepting the foundations of knowledge; the dogmatist, reliant on the strength of his intuitions, boldly pushes beyond phenomena, and affirms his conviction of the existence of self, the world, and Deity as entities; the sceptic, again, who freely doubts all intuitions, chooses to think of these essences as so many popular illusions, or at best as so many fond dubieties. The dogmatist accepts of his intuitions, and carelessly multiplies or as carelessly diminishes them; the sceptic, ever on the watch, argues their original falsehood from their positive contradiction in the hands of the dogmatist. The veracity of consciousness, so far as testifying to the truthfulness of phenomena are, at the outset,

accepted alike by dogmatist and sceptic; and it depends entirely on the measure of consistency with which the dogmatist shall work out his problem, whether or not he shall have left room for the keen-eyed and persistent sceptic. If the dogmatist succeeds in elaborating his undertaking throughout with entire consistency, philosophy and nature will be reconciled; but if he does not succeed in this endeavour, consciousness will prove only a bundle of antilogies, and scepticism will reign supreme. Considered under one aspect, the sceptic stands opposed to the dogmatist and not to truth, in so far as he engages to convict of contradiction the principles which philosophy has developed. Considered under another and a higher aspect, he stands opposed both to truth and dogmatism, in so far as he doubts of everything beyond phenomena, in convicting of contradiction the principles on which philosophy itself is founded. The former may be called *relative*, the latter *absolute* scepticism.⁴ It will thus be seen what are the legitimate relations of sceptic and dogmatist. That man is not a sceptic who exercises doubt as a means, but not as an end. This temporary doubt is but a passing phase of every strong and earnest mind in search of the truth. In the intellectual constitution of some, and particularly of those in whom their intuitions prove too strong for their logic, this salutary disposition becomes temporarily tainted as by a sort of predominating disease. Yet it is the truth which the thinker is in search of, and not universal doubt as an ultimate end. Not a few of the most illustrious thinkers which the world has known seem to have spent much of their time in this atmosphere. Witness the *Analogy* of Bishop Butler and the *Pensées* of Blaise Pascal, where abundant evidence will be found, particularly in the under-current of those writers' minds, of the truthfulness of this statement. What is usually known as the Cartesian doubt is by no means an uncommon feature in the history of thoughtful men. "Who never doubted, never half believed."

Speculative thought had scarcely dawned upon the minds of the Grecian sages, when scepticism began stealthily to insinuate its doubts. No sooner had dogmatism fairly gained time to develop itself into full blossom, than we find scepticism, its negative correlate, springing up in its shade. As action and re-action constantly recur with the force of their compensating influence, so the speculative efforts of Socrates, of Plato, and of Aristotle, required to be succeeded by the destructive philosophy of Pyrrho of Elis and his school. Plato had developed his ideal theory to find it rudely taken to pieces by Aristotle, who afforded to philosophy as baseless a foundation, in his boasted *Logic*, as the system of speculation which he had so ruthlessly destroyed. If Plato's theory could be shown to be misleading, a similar proof could be led against that of his opponent. Sense could only furnish the mind with outward phenomena, and formal logic could carry it no farther. It is the privilege of logic to analyse and regulate, not to synthetize and amplify. It belongs not to logic, but to a quite different department of human knowledge, to furnish the material out of which to construct a philosophy of real convictions. As at once the law of thought and of things, logic is properly both subjective and objective. It is constantly engaged on the evolution of identical propositions,

¹ Yet this self-contradictory principle is that which Jouffroy, usually so just a thinker, calls the "one irrefutable argument of scepticism." (See *Mélanges Philosophiques*.)

² See Diog. Laërt., lib. ix., *Pyrrho*, passim.

³ See Sextus Empiricus, *Pyrrh. Hypotypos.*, passim; Diogenes Laërtius, lib. ix., *Pyrrho*; Hume's *Treatise of Human Nature*, vol. i.; Hamilton's edition of Reid, p. 744.

⁴ See Hamilton's *Discussions en Philosophie*, p. 87, second edition.

Scepticism. and at no point in any process of demonstration is it possible to detect any addition made to the quantum of existence already realized. To metaphysics it belongs to furnish the facts of existence which are competent to human knowledge.

Thinking, under this relative phase, neither Plato nor Aristotle had taken any definite account of; and hence Pyrrho and the sceptics seized upon this, the vulnerable portion of their systems. If one were to trust the absurd stories related of the practical life of Pyrrho,¹ one would be necessitated to suppose him to have been little less than crazy.

Pyrrho. Such, however, we may be assured he was not. He seems to have been strongly impressed with the mystery and consequent incomprehensibility (*ἀκαταληψία*) that surrounded the little life of man. He studied in his early years the doctrines of Democritus, and in his maturer life he followed Alexander into India, bent on philosophical conquest, as his master was upon territorial aggrandizement. He studied the doctrines of the Magi, and held converse with the Gymnosophists. Struck by the devout faith of the latter in doctrines so singular and so unusual to the mind of a Greek, he doubtless reflected deeply on the origin of knowledge, and particularly on the formation of belief. On his return to Elis, men found that he had lost all faith in philosophy: he viewed all doctrines with a profound scepticism, and began to live a life of wonderful simplicity and of wonderful indifference. He died at the age of ninety, and bequeathed his name to all succeeding sages who might choose to adopt his system of opinions.² The next thinker of any note who chose Pyrrhonism or Scepticism as his creed

Timon. was Timon, a physician of Phlius (B.C. 279), a keen and restless wit, and a man of genius, who wrote those satirical poems known as *Σάλλοι*. If further proof were wanting of the perfect sanity of Pyrrho, the faithful adherence of this caustic humorist, who was wont to wonder how his master could contrive to live "the only man as happy as a god," were sufficient of itself to establish it. Timon was much too great a humorist to follow Pyrrho if he had not been really worthy of being followed. After the Pyrrhonian Numenius, Cyprus and Seleucia afforded two pupils to Timon, in Dioscorides and Euphranor, who served to close the old sceptical school of Greece. Its adherents taught the complete renunciation of all science, and the necessity of maintaining a complete apathy to all impressions.³

New sceptical school of Greece. Ænesidemus. The Pyrrhonics gathered fresh strength in the new sceptical school, which was inaugurated by one of its most distinguished advocates, Ænesidemus, who flourished a little later than Cicero. To this philosopher is generally ascribed the systematizing or invention of the ten topics employed by Sextus Empiricus to justify a suspense of all positive opinion. The criticism offered by Ænesidemus of the principle of Causality is certainly the boldest and most ingenious to be found in the records of the ancient philosophy. The force of his argument lay in the alleged incapability of the human mind to understand the relations of cause and effect. Of his eight books of Pyrrhonian discourses (*Πυρρώνειων λόγων ὀκτα βιβλία*) only a few fragments now remain. Herodotus of Tarsus, Menodotus, Agrippa (said to be the author of the "five grounds of doubt" current among the later sceptical thinkers), and Antiochus of Laodicea, kept up the sinking credit of the Pyrrhonists till the appearance of Sextus Empiricus (about A.D. 290), a distinguished pupil of Herodotus of Tarsus, and an acute and thoughtful writer. In his Pyrrhonian Outlines, and his books against the Mathematicians (or dogmatists), he has left us an invaluable

repository of information respecting the schools of ancient Scepticism.⁴ This writer was a native of Mitylene, and received his surname, *Empiricus*, from his connection with that empirical school of physicians who, discarding all science, based their knowledge entirely upon experience.

While he availed himself of the labours of his predecessors, and especially of Ænesidemus, of Agrippa, and of Menodotus, it is evident from what he has left, that he was capable of higher efforts, both in defining the end and working out the details of a rigorous system of doubt. In his three books, *Πυρρώνειων ὑποτυπώσεων*, he discusses in a fair and unusually candid manner the radical distinction between the sceptics and the dogmatists, and works out with much acuteness and spirit the various contradictions, as they presented themselves to his mind, of the problems of Sense and of Logic, with an occasional detour into the region of Metaphysics. If he ever indulges in humour, it is usually of a mild and impersonal character, and never displays anything of that wild satirical banter with which Timon delighted to cover his opponents. The first book of the Pyrrhonian Outlines is occupied with a general exposition of scepticism; in the two remaining books the author takes the dogmatists to task respecting the various problems which occupy their philosophy. He opens his first book by a chapter devoted to Dogmatics and Sceptics, in which he shows that they form the two great classes of philosophical thinkers. Towards the end of that chapter he throws in a sceptical caution in these words: "I wish to advertise my readers as to what I shall advance, that I do not pretend to establish things as they are, and that I cannot at all assure them that things are as I speak of them." Having thus made his bow to his audience, he proceeds to lay before them a definition of scepticism. "The sceptical faculty is," according to Sextus, "that by which we oppose phenomena and noumena in all possible ways, and by which we arrive, through a counterpoise of things and arguments, first at a suspension of judgment (*ἐποχή*), and afterwards at entire freedom from passion (*ἀπαρξία*)."⁵ The aim which the sceptic proposed to himself was accordingly twofold: first, intellectual, to reach absolute suspension of judgment; and second, moral, to attain to a condition of perfect calm. The latter alternative was probably supposed to depend entirely on the accomplishment of the former; so that when the doubter had reached the absolute state of intellectual suspense, he would necessarily experience in his inmost soul that perfect quiet which the thinker so greatly longs for. At all events, little attention was given by the ancient Pyrrhonists to this the moral part of their task. We shall confine attention exclusively to the intellectual phases of scepticism, and give a running outline of these celebrated *Hypotyposes*. They are a summing up of all previous Pyrrhonic ideas, and succeeding sceptics, Hume included, have only, with a slight divergence, traversed the old road.

It will be observed, from the above definition of scepticism, that, as has already been stated, it is not the business of the thorough-going doubter to play the sceptic in the most absolute sense; on the contrary, he accepts of the phenomena of nature as he finds them, and, trusting to his instincts, he rests his practical life upon this empirical basis, and eschews altogether the dogmatical folly of perpetually pursuing that which he can never attain. The dogmatist tries to find a speculative criterion by which to test his philosophizings; while the sceptic, who fancies he

His Pyrrhonian Hypotyposes.

Sextus Empiricus.

¹ Biographies of the different philosophers referred to in this article will be found under the name of each throughout the work.

² See Diogenes Laërt., lib. ix., *Pyrrho*.

³ See *Geschichte und Geist des Skepticismus vorzüglich in Rücksicht auf Moral und Religion*, von D. Carl Fridrich Stäudlin, 2 vols., Leipzig, 1794.

⁴ The edition of Sextus employed in this article is *Sexti Empirici Opera* of Jo. Albertus Fabricius, Lipsiæ, 1 vol. folio, 1718.

⁵ The passage stands thus:—*Ἔστι δὲ ἡ σκεπτικὴ δύναμις, ἀντιθετικὴ φαινομένων τε καὶ νομένων, καθ' ὅσον δέποτε πέποιεν ἀφ' ἧς ἐρχόμεθα διὰ τὴν ἐν τοῖς ἀντικειμένοις πρόδημασι καὶ λόγοις ἰσοσθένειαν· τὸ μὲν πρῶτον ἐν ἐποχῇ· τὸ δὲ μετὰ τοῦτο ἐν ἀπαρξίᾳ.* (Pyrrhon. *Hypotyp.*, lib. i., cap. 4.)

Scepticism. has a thorough conviction of the fruitlessness of all such attempts, chooses to repose in his practical security, and leaves the dogmatist unaided to pursue his vain wanderings in search of his darling *ignis fatuus*. On this point Sextus is very explicit. "When," he says, "we inquire whether an object is such as it appears, we grant the appearance of it: we do not inquire and hesitate concerning what appears, but concerning what is said of this appearance." (*Pyrrh. Hypotyp.*, L. i., c. x.) The sceptic's conviction of the impossibility of finding a criterion of truth results from a multitude of considerations, all of which may be referred to the following three heads:—1. The subject of knowledge; 2. The object of knowledge; 3. The relation of subject and object, or from knowledge itself. Sextus Empiricus has chosen to follow a much more complicated order, but all his more important considerations will be found included under these three divisions.

No criterion of truth.

1. As to the sceptical contradictions which are found to emerge from a contemplation of the knowing mind or *subject* of knowledge, the first and most obtrusive are to be found in the region of Sensation, and the last and most recondite in the sphere of Intelligence. Phenomena are apprehended by the former faculties, Substances by the latter. Now, not only are those faculties found to disagree in themselves; they are found also to contradict one another. Not only do the results which the Senses supply contradict each other; these same results clash with those furnished by the Intelligence, which in turn are found to be mutually exclusive. The knowledge furnished by Sensation is as fallacious as it is patent. No one doubts that each separate sense affords at different times very different representations of the same object,—nay, are, and must be, diverse in their information at every different moment of time. Again, the senses themselves contradict one another as to the accuracy of their intelligence. Who can assure us, moreover, that the eye, ear, and touch of each separate individual affords him sensations exactly similar to ours? How do I know, for example, that what appears to me red, may not be felt by my neighbour to be yellow? Doubtless he would use the word *red* exactly as I do; but the puzzle is, does he mean precisely the same thing by it? For aught we know, the senses may be quite peculiar in each individual, and may give quite different reports to different men. What shall we say, then, of the accuracy of external observation, seeing that it is upon such testimony that the greater portion of it must rest? Human Sensations are modified by organization, by the distance of objects, by the physical and moral changes which take place in man, according as he is asleep or awake, in infancy or old age, in motion or at rest, pre-occupied with love or hatred, with joy or sorrow. And who is there can discover the means of rectifying such inevitable mistakes? Who will furnish man with a sensational criterion? The task is hopelessly in vain. The natural inference for the sceptic is of course *ἐπέχω*, or, I suspend my judgment.

But again, Sextus strives to find a basis for his doubt in the elements of the intelligence, and particularly in Logic and in logical phenomena. Let it not be supposed that a sceptic will be prepared to pass by any truth which is alleged to bear the special marks of an original conviction. It matters not how augustly these principles, affirmed to be *à priori*, may be ushered in, or with what profound reverence we would call upon men to fall down and worship when what is called a *primary truth* is unveiled in their presence; the sceptic replies calmly, as is his wont, that he must have evidence ere he bows down before those awful beliefs, warranting, nay, compelling him in a sort, to affix to them his unhesitating assent. Sextus takes a somewhat easier road to his doubt, and leads a proof of the radical falsehood

of those beliefs which we call original, by a simple reference to the various and equivocal representation which they have received at the hands of the dogmatists, real and apparent. And in doing so, unfortunately, his task was easy. He finds little difficulty, for example, in evolving discrepancies connected with the idea of Cause, which philosophers have since grappled with, and grappled in vain. But here he simply chronicled the labours of his predecessor Ænesidemus. "For," he remarks, "if we cannot understand a cause before its effect, seeing that it is relative; and if it is necessary to understand it as being before the effect, seeing that it is the cause of that effect; then it is quite impossible to understand anything to be before that which we cannot understand anything to be, and hence it is impossible to understand that there is a cause." The only respectable attempt made by philosophers, either ancient or modern, to solve this difficulty of the identity of Cause and Effect is that of Sir William Hamilton, and it may fairly be questioned whether that illustrious thinker has succeeded in unveiling the mystery which generated the ingenious quibble of the subtle old sceptic.¹ Having so far disposed of the data of consciousness, Sextus next directs his doubt against the faculties of Demonstration. And in combating Logic, he boldly affirms that "it may not exist." (*Pyrrh. Hypot.*, Lib. ii., c. 13.) He shows with much acuteness that demonstration never adds anything to the quantum of thought; but he does not succeed in disentangling the *form* from the *matter* of thought in the demonstrative process. Seeing that there is nothing but the evolution of identical propositions, so long as we choose to employ the method of demonstration, he at once sets the process aside as quite useless, or at least very doubtful; and in this his example has subsequently been followed by more than one philosopher who professed a very different creed. Sextus concludes thus:—"If these things which we have advanced in favour of demonstration be like the truth (for we do not at all oppose them), and if the arguments which we have advanced against demonstration be like the truth, we ought to arrest our judgment both for and against, and should say it is equally uncertain whether there is or is not any demonstration." (Lib. ii., c. 13.) So far the Subject of knowledge.

2. Scepticism may be inferred from the endless contradictions which emerge upon an examination of the *object* of knowledge. The object of knowledge is composed of phenomena and noumena. The former we apprehend through our faculties of observation, the latter we apprehend through the higher faculties of intelligence. In the first place, every object is in relation to some other or others; and hence, in order to comprehend the part, we would require previously to comprehend the whole. But this is impossible. Again, in external perception no object is apprehended by itself, and out of relation to a representing medium. However anxious we may be to seize upon the real object, the intervening medium perpetually presents itself. This Sextus, and all subsequent philosophers till Dr Thomas Reid, implicitly inferred from the principle first explicitly enounced by Empedocles, that "the relation of knowledge inferred an analogy of existence." A word on the second head of this subject; and to take a single example from one of the higher existences which human intelligence is affirmed capable of apprehending. Sextus opens his third book with a chapter on "God," towards the close of which he calmly expresses the following sentiment:—"Hence we also conclude that perhaps those who say there is a God cannot be excused from impiety; for in affirming that he exercises a providential care over all things, they say that he is the author of evil; and if they say that his providence extends only to some

¹ See the Eighth Opinion regarding Causality in Appendix i. to his *Discussions on Philosophy*, second edition.

Scepticism. things and not to all, they will be forced to confess that God is either envious or weak, all of which cannot be said without manifest impiety." The doubt which is thus generated by the heathen strikes at the very idea of a God. Proofs *à priori* and *à posteriori*, piled up like Ossa upon Pelion, would avail little against such an opponent.

3. Advancing to the third head, it becomes manifest from what has been affirmed of its constituents, the subject and the object of knowledge, that when they enter into relation, and form *knowledge*, this result must partake more or less of the character of its factors. Scepticism has already emerged from an examination of the subject and the object of knowledge, and it can hardly be supposed to be eliminated by bringing them into correlation. The incompleteness and inconsistency of knowledge render it for ever a favourite butt for those who are sceptically inclined.

To his general arguments against the leading principles of the dogmatists, Sextus added some special arguments against various of their theories, which we need not here examine. We shall add a word as to the manner in which he acquitted himself of his task.

That Sextus Empiricus was a sceptic in reality, as he was certainly in name, no one will be prepared to deny. That he proved his right to the title also, by proving his right to doubt, we are likewise prepared to admit. The dogmatists, one and all, quailed under the open blows which he dealt at their laboured edifice, and many of those blows unhappily took effect. Amid constant marks of acuteness, he occasionally betrays an ingenuity worse than frivolous, and now and then misses the real question by his fondness for logomachy. But from this criticism Sextus Empiricus could possibly shield himself by taking refuge in his historical calling. And from this position we are not anxious to drive him, as the remark very likely applies as much to his school as to himself. Were we to trust for the veracity of consciousness to the development which it received from the philosophers previous to Sextus, all thinking men would infallibly be sceptical. For a positive proof of falsehood in one particular datum of consciousness is sufficient to establish, on the principle *falsus in uno, falsus in omnibus*, a presumption of probable falsehood in them all. More than one supposed datum of internal experience had been convicted of falsehood, and the Dogmatists, and not Human Nature, stood chargeable with the offence.

With Sextus Empiricus the lists of Scepticism close for many centuries. The next to whom they shall be opened is to David Hume, the last and unquestionably the greatest of either ancient or modern sceptics. No name of any great lustre intervenes to fill up the long blank of sixteen centuries from Sextus to Hume. Practically, no doubt, many men like Montaigne (1533-1592) adhered to the sceptical creed. But they were in general either too wise to publish their opinions to the world, or too wary to let it know how they thought. When they gained boldness to let the world look on their views they for the most part strove to diminish any savour of odium which might be supposed to attach to a Pyrrhonist, by professing, at the conclusion of their speculations, the very greatest reverence for the Holy Scriptures. That this reverence was sometimes real, however inconsequent, cannot be denied. It was doubtless so in the case of La Mothe le Vayer, a French author of great learning and judgment (1586-1672), who openly professed Scepticism in favour of Religion. The same may be said of his disciples Sorbière (1615-1670) and Foucher (1644-1696); of Hirnhaym (died in 1679); of Huet (1630-1721); and of Joseph Glanvill, an Englishman (1636-1680), who may be regarded as the predecessor of Hume. One cannot speak so confidently of Charron (1541-1603), who was a disciple of Montaigne; of Sanches or Sanctius, a Spaniard by birth, who professed medicine

and philosophy at Toulouse till the time of his death in 1632; and of the celebrated P. Bayle (1647-1706). That these writers were at bottom genuine sceptics can hardly admit of a doubt. We should certainly have had to chronicle many names which now are forgotten, or which never were heard of, had not the Inquisition spread terror over the free thought and free expression of Europe during the middle ages. But the device, of fancying that men were never safe so long as they trusted a whit to their Reason—that they must discard this faculty as repugnant in the highest sense to that superior faculty of divine Faith which is conferred immediately by the Spirit of God, has been exceedingly common in the various Christian schools of theology. It is thus that Scepticism, during many centuries, has been called in to support the Roman Catholic religion, and its advocates have supposed that by sapping the entire intellectual convictions of their fellows, they should thereby advance in the highest degree the eternal interests of their souls.

The scepticism of Hume (1711-76) was beyond all question the most thorough and wide-reaching that philosophy had yet witnessed. He reduced philosophers to such straits that they were compelled either to refute his arguments (a thing not to be thought of upon his own principles), or ruefully to confess the vanity of their pursuits and the consequent folly of their lives. His *Treatise of Human Nature* was published in 1738, when Hume was in his twenty-seventh year. A book written by so young a man, with such marvellous acuteness and solidity of thought, displaying such a mastery over the difficulties of style, and such singular control over his own passions, was quite as unparalleled in the history of philosophy as the doctrines which it put forth were novel and alarming. Of the host of assailants which the book ultimately called forth, unquestionably the most respectable was Dr Thomas Reid. But so profoundly had the great sceptic meditated his task, and with such wondrous skill had he entrenched himself over the *débris* of all previous systems of philosophy, that Reid, who was not his match either in subtlety or in comprehension of thought, assailed Hume at first in a somewhat clumsy manner, and really missed the point of the very method which the Pyrrhonist had chosen. This method was no other than that of Pyrrho and the old sceptical school of Greece. Sextus Empiricus starts by the admission of phenomena, and proceeds to hew down all else which the dogmatists had raised; David Hume starts with the popular theory of experience, then so much vaunted by philosophers, and proceeds with surprising coolness to mow down every intellectual up-growth for which his theory was not capable of accounting. In open argument, in candid statement, and in solid attack, the Scottish sceptic is greatly in advance of the earlier Pyrrhonists of Greece. He is in a great measure free from that ingenious jugglery and conscious or unconscious sophistry with which the older sceptics are so justly chargeable. He seldom allows his logic to degenerate into logomachy, and very rarely substitutes a parallogism for a sound argument. To assure the reader of his genuine position, Hume takes pains to inform him as follows:—"Should it here be asked me," he says, "whether I sincerely assent to this argument, which I seem to take such pains to inculcate, and whether I be really one of those sceptics who hold that all is uncertain, and that our judgment is not in *any* thing possessed of *any* measure of truth and falsehood, I should reply, that this question is entirely superfluous, and that neither I nor any other person was ever sincerely and constantly of that opinion. Nature, by an absolute and uncontrollable necessity, has determined us to judge as well as to breathe and feel; nor can we any more forbear viewing certain objects in a stronger and fuller light, upon account of their customary connection with a present im-

Estimate
of the
Scepticism
of Sextus.

Scepticism
from Sex-
tus to
Hume.

Scepticism
of David
Hume.

Scepticism. precession, than we can hinder ourselves from thinking as long as we are awake, or seeing the surrounding bodies when we turn our eyes towards them in broad sunshine. Whoever has taken the pains to refute the cavils of this total scepticism, has really disputed without an antagonist, and endeavoured by arguments to establish a faculty which nature has antecedently implanted in the mind and rendered unavoidable." (Part iv., § 1.) Locke and the sensationalists had furnished Hume with the theory of experience, on which they had endeavoured to found all knowledge. "'Tis therefore," he informs us, "by experience only that we can infer the existence of one object from that of another." (Part iii., § 6.) Knowledge, according to him, had its origin in "impressions and ideas," meaning by the former "all our sensations, passions, and emotions as they make their first appearance in the soul," and by the latter "the faint images of these in thinking and reasoning." Knowledge was accordingly reduced in the last analysis to Sensation from which to derive all its elements, simple and complex. "Now, since nothing is ever present," writes Hume, "to the mind but perceptions, and since all ideas are derived from something antecedently present to the mind, it follows that 'tis impossible for us so much as to conceive or form an idea of anything specifically different from ideas and impressions." (Part ii., § 6.) This being posited, the work afterwards is comparatively easy. Our ideas of space and time he strips of their infinity, and as products of sense, are reduced, the one to visible and tangible extension, the other to an observed succession or simultaneousness of objects. Personal identity he shows to be a mere imagination of the philosophers. "It must," he reasons, "be some one impression that gives rise to every real idea. But self or person is not any one impression. It cannot therefore be from any of these that the idea of self is derived, and consequently there is no such idea." (Part iv., § 6.) His theory of Causation, on the refutation of which so much needless philosophical acumen has been expended, when examined closely, reduces itself to these very narrow limits. "We have no other notion of cause and effect," he tells us, "but that of certain objects which have been *always conjoined* together, and which in all past instances have been found inseparable." The theory was not new to philosophy, whatever it might be to Hume. It had been signalized before, to confine ourselves to British philosophers, both by Glanvill and by Hobbes; but whether or not Hume had the merit of discovering the doctrine, we must at least attribute to him the credit of having first awakened the zeal of philosophers towards the theory. It will be observed that, so far from ascribing anything to that alleged character of *power* which resides in every cause, he attributes the existence of such an idea to "a popular habit or custom." He could find no warrant for such an idea in the compass of his experience, and why should he adhere to it if it was not conformable to the basis of all his reasoning? "The mind," he tells us plainly, "feels no sentiment or inward impression from this succession of objects; consequently there is not in any single instance of cause and effect anything which can suggest the idea of power or necessary connection." (*Essays*, § 7.) Nothing can be more explicit than this. All substances, of whatever class, are on this theory simply foibles of the fancy—mere creatures of the imagination. Phænomena may now reign undisturbed in the safe enjoyment of a shadowy rule; the substances or noumena which had been contrived to sustain them being convicted of non-existence, must troop off like spectres at the approach of dawn. Advancing with the same stately tread among the moral judgments of men, the sceptic grinds down with relentless heel every vestige of a moral world beyond the mere sphere of sensations. The only rational motive for man is his personal interest; the only determining motive

is a necessary constraint upon his so-called free-will. But Scepticism. the sceptic is not content with treading down the intellectual and moral nature of man; he advances a step further, and prostrates his natural theology, by trying to prove that the belief in the existence of Deity is uncertain, as effected by the illegitimate exercise of the human faculties. (See *Dia-logues*, 1779.) With this last word the sceptic has completed the writing of destruction to which he held dogmatism doomed. The edifice of human knowledge, from its most general proposition down to its minutest detail, here received its final blow. The last pillar on which it stood has now been wrenched from under it, and the whole philosophic world cannot hold it up. The sceptic, so far from regretting the results of his industry, regards the spectacle with some measure of satisfaction; but without relaxing into any very hilarious merriment, he turns, bows an adieu to Reason, and, hand in hand with Nature, goes on his way. "I dine," Hume tells us, "I play a game of backgammon, I converse and am merry with my friends; and when, after three or four hours' amusement I would return to these speculations, they appear so cold, and strained, and ridiculous, that I cannot find in my heart to enter into them any further." (Part iv., § 7.) And so Scepticism again triumphs, and Dogmatism goes to the wall.

A word in conclusion in behalf of Truth and Dogmatism. Conclusion. And in the first place, one must deplore the variation and error which stand recorded against philosophy in all ages, by the rashness or prejudice of its votaries, by which it has become a by-word in the mouth of the unthinking, and a subject of scorn to the sceptical. This can hardly be wondered at. Were the inquirer not driven towards speculation as by a blind original instinct, which finds itself gratified by the merest husks which nature knows, he should long ere now have consigned philosophy, with all her solemn splendours, to the outermost regions of the reign of night. But so long as man is born into the world to inquire, men will continue to speculate, and, thankful to nature for the bestowal of such a boon, be content, if the results of their investigations were merely to feel the refreshing gale which blows towards them from the distant fields of reality, to lie down with a wistful sigh, and dream of the world which is beyond, whose balmy breezes they have experienced, but on whose shores they are not destined to set foot. It is matter of congratulation, to all who love Truth, that this august object of desire stands serene above the high strifes of men, and remains a pure and everlasting possession to all who humbly and faithfully seek it. In the war which the sceptic wages he aims his weapons not so much against Truth as against her pretentious high priest, who, in his haste for his own honour more than for the glory of her to whom he has sworn fealty, has made haste to deliver the oracle before the goddess had granted the response. Thus it has ever been, that in a sceptical combat the attention of the wise is directed to the dogmatist and to the sceptic, as to the sole combatants. There has hitherto been no sceptic who has attempted to show, much less who has succeeded in demonstrating, that the primary facts of consciousness, either in themselves or in their necessary consequences, are mutually exclusive—are reciprocally repugnant. Philosophy accordingly remains as of old, untainted by the fierce struggles which have been waged within her borders; ready as of old to welcome to her shrine all of clean hands and of pure heart; satisfied that, while her forbearance has been frequently converted into an encouragement of vanity, she possesses, nevertheless, the high prerogative of bestowing upon all her true worshippers the clear eye and the courageous heart. The crude Sensationalism which usurped the place of philosophy could hardly have been too rudely dethroned; and assuredly it met with as speedy a downfall as ever system knew.

Since Hume, the Scottish school can boast of Reid, Stewart, and Hamilton; the French of Royer Collard, Jouffroy, and Cousin; the Germans of Kant, Fichte, Hegel, and Schelling. The Scottish philosophers, who have generally been accused of timidity, have striven hard to erect a bulwark around our original beliefs which should defy all sceptical assault. The French, much more brilliant than either of their neighbours, have borrowed from them nearly all that is of much value in their Eclecticism. The German speculators have sought truth in a much more

profound and also in a much more profitless manner than either the French or the Scottish schools. They have pursued philosophy much beyond the verge of the romantic, and have exposed it to every possible evil. That which in the hands of Kant was meant to repel the Scepticism of Hume and the Sensationalism of Locke, in its turn produced a Scepticism as real as that which it had replaced, and grew under the hands of Hegel and Schelling into a wild agglomeration of Pantheism, in which no man can believe, because, it is said, no man can understand. (J. D.—S.)

SCEPTRE (*σκήπτρον*, a staff), was originally a wooden staff or support for the aged and infirm, and in course of time came to signify also a weapon of defence and assault; and from the privilege of habitually carrying it, it became emblematic of authority and station. The ancient Greek authors represent the sceptre as belonging more appropriately to kings, princes, and leaders of the people; but it was likewise borne by judges, heralds, priests, and seers. The transmission of the sceptre from father to son denoted the transfer of authority from the one member of a family to the other. The original wooden staff became, in consequence, a highly emblematic, and, of course, also a highly ornamental instrument. It was sometimes pierced with gold and silver studs, sometimes it was enriched with gems and ivory. The Roman kings and Roman consuls bore an ivory sceptre; and their divinities, Jupiter and Juno, as sovereigns over the rest of the deities, were represented with a sceptre, in token of their supreme authority. (Homer, *Iliad*, xviii. 416; ii. 46, 186, etc.; and i. 246.)

SCHADOW, JOHANN GOTTFRIED, an eminent sculptor of Germany, was born of poor parents, at Berlin, in 1764. Having made an elopement in his 21st year, his father-in-law subsequently forgave him, and furnished him with the means of proceeding to Italy, where he remained, diligently engaged in the study of the antique, till 1788. The first work of importance which came from his chisel after his return to Berlin, was the monument to Count Van-der-Mark, erected in 1790, in the Church of St Dorothy, at Berlin. Schadow was one of the first of his countrymen to break through the classic conventionalisms of his predecessors, and was one of the earliest to discover the dignified simplicity and natural elegance which slumbered behind those fixed classical forms. He put forth all his genius upon portraits, and it came back to him in ever-increasing reputation. He was appointed professor in the Academy of the Fine Arts at Berlin, in 1788, and its director-in-chief in 1822. A very large proportion of the best sculptors of the day, in Germany, were pupils of Schadow's. There were Rauch and Tieck, of Berlin; Dannecker, of Stuttgart; Zauner, of Vienna; Ruhl, of Cassel; and Pozzi, of Mannheim, all learned to handle the chisel under his eye. He died at Berlin, on the 25th of January 1850, aged 86.

The best works of Schadow are his equestrian statue of Frederick the Great, at Stettin; General Ziethen; Field-Marshal Blücher, at Rostock; General Tauenstein, at Breslau; Duke Leopold of Dessau, at Berlin; Luther, at Wittenberg; a colossal group, in marble, of Queen Louise of Prussia, and her sister, the Duchess of Cumberland; and the quadriga on the Brandenburg Gate, at Berlin. He likewise wrote the following works:—*Wittenberg's Denkmäler der Bildnerei, Baukunst und Malerei*, etc., 1825; *Polyklet*, etc., Berlin, 1834; *Nationalphysiognomien*, etc., Berlin, 1835.

Rudolf, the eldest son of Schadow, born in 1785, and died at Rome in 1822, displayed decided genius in his father's art. Friedrich-Wilhelm, who was in 1843 ennobled by the King of Prussia, was Schadow's second son, and has gained for himself a great reputation as a historical and portrait painter.

SCHAFFHAUSEN, a canton of Switzerland, the most northerly and also one of the smallest of the whole; bounded E., N., and W. by the grand-duchy of Baden, S. by the cantons of Zurich and Thurgau. It is divided by Baden into three portions; the largest of which lies farthest north, another to the south, and a third to the east of it. The southern boundary of all three is formed by the Rhine; on the other side there is no natural limit. Total area, 115 square miles. The surface is very rugged, though it can hardly be called mountainous, as there are no very high elevations. Several ridges of hills, ramifications of the Jura range, traverse the country from S.W. to N.E. These have, in general, a gradual slope towards the Rhine, but on the other side the declivities are steeper. Numerous long and narrow valleys stretch towards the Rhine, but nowhere do they open out into plains. The highest summit in the canton is the Randenberg, 2957 feet above the sea. Except the Rhine, which receives the whole drainage, there are no important rivers; but limpid rivulets abundantly water the land. The geological formation that is most prevalent is that of Jura limestone. Iron is obtained in considerable abundance, and is smelted at Laufen, on the Rhine. Gypsum, alabaster, and sandstone, are the only other important minerals. The soil is generally fertile, and the climate milder here than in most parts of Switzerland. Agriculture forms the occupation of the most of the people. In 1854 Schaffhausen contained 31,000 acres of arable land, 3100 of vineyards, 7058 of meadows and pasture land, 27,300 of forests, and 7000 of waste land. In the same year there were 1416 horses, 8726 horned cattle, 483 sheep, 2864 goats, and 748 swine. Few manufactures are carried on here, the chief being tanning, cotton-spinning, and distilling cherry-water. Some steel and hardware are also fabricated. A considerable transit trade is carried on through the canton, especially by the Rhine. The constitution of the canton is democratic; the electoral franchise being possessed by all citizens above twenty, with the exception of paupers, bankrupts, and criminals. The legislature consists of a great council of seventy-eight members, popularly elected; who appoint a smaller or executive council of nine members, at the head of whom stands a burgomaster. Both councils exist only for four years. Education is well attended to, there being a lyceum in the capital, and numerous elementary schools throughout the country. Schaffhausen is divided into six districts, but there are only three towns of any importance—Schaffhausen, the capital, Neunkirch, and Stein. The inhabitants are of German origin, and for the most part profess the reformed religion. Pop. (1850) 35,300; of whom 33,889 belong to the Reformed, and 1411 to the Roman Catholic Church.

SCHAFFHAUSEN, the capital of the above canton, on the side of a hill on the right bank of the Rhine, 24 miles N. of Zurich. It stands just at the place where the rapids and falls of the river render it unnavigable as far as Basle; and owes its origin, as well as its name, to the boat or skiff-houses that were built here for the lading and unlading of boats on the river. It is protected by walls and tower; and on the hill above stands an old feudal castle, with bomb-proof casemates. Schaffhausen is one of the most antique-look-

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ing towns in Switzerland; it has irregular streets, and many houses with their fronts and oriel-windows curiously carved. The chief public buildings are the Romanesque cathedral, of a cruciform shape, with a lofty tower; the large church of St John; the town-hall; and the arsenal. The principal manufactures of the place are silk, cotton, and steel; and there is a considerable trade with Germany. It is much resorted to by travellers, on account of its vicinity to the celebrated falls of the Rhine at Laufen, the finest cataract in Europe. The Rhine is crossed here by a wooden bridge of ordinary construction, which replaces the celebrated single-arched one of 365 feet in span, that was burned by the French in 1799. Schaffhausen was the birthplace of the Swiss historian, Müller. Pop. 7700.

SCHALKEN, GODFREY, was born at Dort, in 1643, and pursued his studies as a painter under Hoogstraten, and subsequently under Gerard Douw. He was esteemed one of Douw's best pupils, but his talent was rather mechanical than creative. This was visibly displayed in his attempts to imitate the bold contrasts of light and shade of Rembrandt. Having failed to represent sunlight, he had recourse to candle-light, in which he had more success. Some of his daylight pieces, however, display a great degree of care. He was patronised by William III. of England, who induced him to come over and settle in London, where he painted the portrait of his Majesty and several of the nobility. He returned to Holland, settled at the Hague, and died in 1706. There are three good paintings by Schalken in the Royal Collection, and one in the National Gallery of England.

SCHASSBURG (Magyar, *Segesvar*), a town of the Austrian empire, in Transylvania, 42 miles N.E. of Hermannstadt. It stands partly on a hill and partly in a valley, on the Great Kokel; and contains an ancient castle, a Franciscan convent, Roman Catholic and Protestant churches, and a Protestant gymnasium. Cotton, woollen, and linen cloth are made here; and wine and vegetables are produced in the neighbourhood. Near Schässburg the Hungarian insurgents were defeated July 31, 1849. Pop. 6900.

SCHAUMBURG-LIPPE. See LIPPE-SCHAUMBURG.

SCHEELE, CHARLES WILLIAM, was born on the 19th of December 1742, at Stralsund, where his father had kept a shop. At a very early age he showed a strong desire to follow the profession of an apothecary, and he was accordingly apprenticed to one Bauch at Gottenburg. Among the various books which he read that treated of chemical subjects, Kunckell's *Laboratory* seems to have been his favourite. He used to repeat many of the experiments contained in that work privately in the night, when the rest of the family had retired to rest. After Scheele's departure from Gottenburg in the year 1765, he served successively at Malmö, at Stockholm, and at Upsal. At the latter place he happily commenced the friendship which subsisted between him and Bergman. During his residence at this place, Prince Henry of Prussia, accompanied by the Duke of Sudermania, visited Upsal, and chose this opportunity to see the academical laboratory. Scheele was accordingly appointed by the university to exhibit to them some chemical experiments. This office he undertook, and showed some of the most curious processes in chemistry. The two princes asked him many questions, and expressed their approbation of the answers which he returned to them. The duke asked him of what country he was, and seemed to be much pleased when Scheele informed him that he was born at Stralsund. On their departure they told the professor, who was present, that they should esteem it a favour if he would permit the young man to have free access to the laboratory as often as he chose to make experiments. In the year 1777 Scheele was appointed by the medical college to be apothecary at Koping. It was at that place that he soon

showed the world how great a man he was, and that no place or situation could confine his abilities. When he was at Stockholm he showed his acuteness as a chemist, as he discovered there the new and wonderful acid contained in the fluor spar. It has been confidently asserted that Scheele was the first who discovered the nature of the aeril acid, and that whilst he was at Upsal he made many experiments to prove its properties. This circumstance might probably have furnished Bergman with the means of treating this subject more fully. At the same place he began the series of excellent experiments on that remarkable mineral substance manganese; from which investigation he was led to make the very valuable and interesting discovery of oxymuriatic acid. At the same time he examined the properties of ponderous earth. At Koping he finished his *Dissertation on Air and Fire*; a work which the celebrated Bergman most warmly recommended in the friendly preface which he wrote for it. The theory which Scheele endeavours to prove in this treatise is, that fire consists of pure air and phlogiston. The author's merit in this work, exclusive of the encomiums of Bergman, was sufficient to obtain the approbation of the public; as the ingenuity displayed in treating so delicate a subject, and the many new and valuable observations which are dispersed through the treatise, justly entitled the author to that fame which his book procured him. The English translation was executed by Kirwan.

Scheele now diligently employed himself in contributing to the Transactions of the Academy at Stockholm. He first pointed out a new way to prepare the salt of benzoin. In the same year he discovered that arsenic, freed in a particular manner from phlogiston, partakes of all the properties of an acid, and has its peculiar affinities to other substances. In a *Dissertation on Flint, Clay, and Alum*, he clearly overturned Beaumé's opinion of the identity of the siliceous and argillaceous earths. He likewise published an *Analysis of the Human Calculus*. He showed also a mode of preparing *mercurius dulcis* in the humid way, and improved the process of making the powder of algaroth. Having analysed the mineral substance called molybdena, or flexible black-lead, he discovered a beautiful green pigment, and showed us how to decompose the air of the atmosphere. He discovered that some neutral salts are decomposed by lime and iron, and he decomposed plumbago, or the common black-lead. After observing, with peculiar ingenuity, an acid in milk, which decomposes acetated alkali; he, in his experiments on the sugar of milk, discovered another acid, different in some respects from the above-mentioned acids and the common acid of sugar. He accomplished the decomposition of tungsten, the component parts of which were before unknown, and found in it a peculiar metallic acid united to lime. Having published an excellent dissertation on the different sorts of ether, he found out an easy way to preserve vinegar for many years. His investigation of the colouring matter in Prussian blue, the means he employed to separate it, and his discovery that alkali, sal ammoniac, and charcoal, mixed together, will produce it, are strong marks of his penetration and genius. He found out a peculiar sweet matter in expressed oils after they have been boiled with litharge and water, and showed how the acid of lemons may be obtained in crystals. He found the white powder in rhubarb, which Model thought to be selenite, and which amounts to one-seventh of the weight of the root, to be calcareous earth united to the acid of sorrel. This suggested to him the examination of the acid of sorrel. He precipitated acetate of lead with it, and decomposed the precipitate thus obtained by the vitriolic acid, and by this process he obtained the common acid of sugar; and by slowly dropping a solution of fixed alkali into a solution of the acid of sugar, he regenerated the acid of sorrel. From his examination of the acids contained in fruits and berries,

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he found not one species of acid alone, viz., the acid of lemon, but also another, which he denominated the malaceous or malic acid, from its being found in the greatest quantity in apples.

By the decomposition of Bergman's new metal, siderite, he showed the truth of Meyer's and Klaproth's conjecture concerning it. He boiled the calx of siderite with alkali of tartar, and precipitated nitrate of mercury by the middle salt which he obtained by this operation. The calx of mercury which was precipitated was found to be united to the acid of phosphorus, so that he demonstrates that this calx was phosphoretted iron. He found also that the native Prussian blue contained the same acid. He discovered, by the same means, that the perlate acid, as it was called, was not an acid *sui generis*, but the phosphoric united to a small quantity of the mineral alkali. He suggested an improvement in the process for obtaining magnesia from Epsom salts; and he advises the adding of an equal weight of common salt to the Epsom salt, so that an equal weight of Glauber's salt may be obtained; but this will not succeed unless during the cold of winter. These are the valuable discoveries of this great philosopher, which are to be found in the *Transactions of the Royal Society*, at Stockholm. Most of his essays have been published in French by Madame Picardet and M. Morveau, of Dijon. Dr Beddoes also has made a very valuable present to his countrymen of an English translation of a great part of Scheele's dissertations, to which he has added some useful and ingenious notes.

Viewing Scheele as a philosopher, we must judge of him from his many and important discoveries. What concerns him as a man we are informed of by his friends, who affirm that his moral character was irreproachable. It was matter of remark, that his chemical apparatus was neither neat nor convenient; his laboratory was small and confined; nor was he particular in regard to the vessels which he employed in his experiments, so that we may justly wonder how such discoveries and such experiments could have been made. He understood none of the modern languages except the German and Swedish; and he had not the advantage of being benefited by the early intelligence of discoveries made by foreigners, but was forced to wait till the intelligence was conveyed to him in the slow and uncertain channel of translation.

It was often wished that he would quit his retirement at Koping, and move in a larger sphere. It was suggested to him that a place might be procured in England, which might afford him a good income and more leisure; and indeed latterly an offer was made to him of an annuity of £300 if he would settle in this country. But death put an end to this project. For half a year before this melancholy event his health had been declining, and he himself was sensible that he would not recover. On the 19th of May 1786 he was confined to his bed; on the 21st he bequeathed all of which he was possessed to his wife, who was the widow of his predecessor at Koping, and whom he had lately married; and on the same day he departed this life. Thus, in less than two years, the world lost Bergman and Scheele, of whom Sweden may justly boast, as philosophers who were beloved and lamented by all their contemporaries, and whose memory posterity will never cease to revere.

SCHEEMAKER, SCHEEMAKERS, SCHUMAKER, or SCHUMACHER, PETER, a Flemish sculptor, who obtained considerable celebrity in England during the Rysbrack and Roubiliac period of sculpture, was born at Antwerp in 1691. He received his early instructions from his father and from a sculptor named Delvaux. In his youth he visited Denmark, and made a pilgrimage to Rome, which he performed on foot. He afterwards resolved to go to England, and performed a great part of that journey likewise on foot. He paid a second visit to Rome, and again settled in Eng-

Scheffer.

land in 1735. He lived first in Old Palace Yard, and subsequently in Vine Street, Piccadilly, where he was employed on numerous important works, particularly the monuments of Westminster Abbey. The time of his death is not known, but it must have been subsequent to 1770, the year of his return to Antwerp.

As a sculpture Scheemaker did not stand exceedingly high, although he was capable of rivalling Rysbrack and Roubiliac. He was an excellent designer, and managed well his elaborate costumes; but he rarely or never rose to any of the higher qualities of his art. In Westminster Abbey there are monuments by him to Shakspeare; Dryden; George, Duke of Albemarle; John Sheffield, Duke of Buckingham, &c. He likewise executed numerous busts and other pieces of sculpture.

SCHEFFER, ARY, an eminent French historical painter, was born at Dordrecht, in Holland, of French parents, in 1794 or 1795. He studied art under Baron Guerin at Paris, and practised historical and genre painting in that city with very great success. His progress has been, with few exceptions, steadily upwards from 1812, when he exhibited his "Abel and Tirza singing the praises of the Lord," down to his latest work in 1858. Among his most famous pictures are his Goethe's "Faust" and "Margaret," (1831-34); "Francesca da Rimini and her Lover meeting Dante and Virgil in Hell" (1835); "Christ the Comforter" (1836); Goethe's "Mignon," and a "Dead Christ" (1837-1845); "Dante and Beatrice" (1849), &c. He has likewise executed some excellent portraits, among which may be mentioned his La Fayette, Talleyrand, Beranger, Lamartine, Queen Amelie, and Charles Dickens.

Scheffer combines in his pictures many of the excellencies both of the German and French schools, and a few of the defects of both. In turn of thought and manner, for example, he is decidedly German, while in style and colour he is more obviously French, being often rich and beautiful, but wanting in softness and truth. Scheffer is, beyond doubt, a great painter, and many of his works leave but little to desire. He is looked up to, and with reason, by his countrymen as a master in devotional art; and he has fairly succeeded in breaking down that rigid classical conventionalism which so long had hedged in the French school of art. He is at times hurried and careless, though in his more elaborate pictures, he has put forth all the labour which time and genius could expend on them. He was made an officer of the Legion of Honour in 1825, and he was tutor to the family of Louis Philippe. He died on the 15th of June 1858.

Arnold Scheffer, who earned some distinction as a French political writer, and who died in 1853, was the younger brother of the painter; and Henri Scheffer, a younger brother still, and a painter of less note, still survives.

SCHEFFER, Jean, a learned antiquary, was born at Strasburg in 1621, of an ancient family, descended in a direct line, according to some, from Peter Schœffer, one of the inventors of the art of printing. (See PRINTING.) He made great progress in languages and in history; and at an early age he published, in 1643, a work of very great learning, *De Varietate Navium apud Veteres*. Meanwhile his native district of Alsace was frequently exposed to the license attendant on war, and Scheffer, anxious for a learned retirement, betook himself to Sweden, where Queen Christina took him by the hand, and obtained for him, in 1648, the chair of eloquence and of public law in the University of Upsala. Here he worked with surprising diligence till his death on the 26th of March 1679, at the age of fifty-eight.

Besides editing Ælian's *Varia Historia*, Phædrus, Arrian's *Tactica*, a newly discovered fragment of Petronius, Apthionius, Hyginus, Justin, Julius Obsequens, and others, he likewise wrote numerous theses, harangues, eulogies, and

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opuscula, besides seventeen distinct treatises which will be found in the 39th vol. of Nicéron and in the *Biographie Universelle*. His *Lapponia*, or History of Lapland, Frankfurt, 1673, has been translated into German, French, and English, Oxford, 1674. A Memoir of Scheffer, by Eric Michael Fant, professor of history at Stockholm, was honoured with the prize, in 1781, of the Society of Education of Upsala.

SCHEID, EVERARD, perhaps better known by his Latin name SCHEIDIUS, was a philologist of distinguished merits, who betrayed early a profound knowledge of the oriental languages, was born at Arnheim, in Holland, in 1742. He was, in 1768, appointed professor at Harderwyck, and on the death of J. Albert Schultens, he obtained the chair of oriental literature at Leyden, which he filled with distinguished ability. He died in 1795. Besides the *Minerva* of Francisco Sanchez, Scheid left other works, both original and edited, which still perpetuate his name. His most popular book was *Glossarium Arabico-Latinum Manuale*, being an abridgment of the Arabic Lexicon of James Golius, Leyden, 1769. He published besides, eight other works, which are to be found in the *Biographie Universelle*. There was projected by Scheid a new Dutch translation of the Bible, but he was prevented by death from carrying out his design.

SCHEINER, CHRISTOPH, a German mathematician and astronomer, eminent for being one of the first who discovered spots on the sun, was born at Schwaben, in the territory of Mundelheim, 1575. He first discovered spots on the sun's disk in 1611, a few months later than Galileo, and made observations on these phenomena at Rome, until at length reducing them to order, he published them in one volume folio in 1630. He wrote also some smaller pieces relating to mathematics and philosophy, invented the pantograph, and died in 1660.

SCHELDT, or SCHELDE (Fr. *Escaut*, Lat. *Scaldis*), a river of the Netherlands, issues from a small lake in the French department of Aisne, flows in an irregular course mostly N.E., through the department of Nord; enters the kingdom of Belgium, and traverses the provinces of Hainault and East Flanders. At Ghent, in the latter, it takes a sudden curve towards the east, and flowing between Antwerp and East Flanders, enters the Dutch territory below the city of Antwerp. Here it turns westwards, spreads itself out, and enters the sea by two broad estuaries; between which lie the islands of Walcheren and Beveland. Its whole length is about 200 miles, for nearly the whole of which it is navigable. Its principal affluents are the Haine, Dender, and Rupel, from the right; and the Scarpe and Lys from the left. Its commercial importance is very great, as it is connected by canals with the Somme, the Seine, and the Loire, while its estuaries communicate with the Meuse and Rhine, and lie directly opposite that of the Thames. In the lower part of its course the Scheldt is protected by dykes, as it traverses a very low and flat country.

SCHELESTADT, or SCHLESTADT, a fortified town of France, capital of an arrondissement, in the department of Bas-Rhin, on the left bank of the Ill, 26 miles S.W. of Strasburg. It has narrow, crooked, but clean streets, lined with irregular houses; and contains several fine churches and other buildings. The church of St George is a Gothic edifice of the fourteenth century; and St Foy is much more ancient, and is a copy of that of the Holy Sepulchre at Jerusalem. Near the latter is a large convent, now used for barracks. The chief other building is the court-house, once a Jesuit college. The fortifications are regular, the work of Vauban; and the place is entered by three gates. Flour, beer, vinegar, starch, leather, linen, and earthenware, are the chief manufactures of Schélestadt. There is some trade in these and other articles. Martin Bucer the reformer was born here. Pop. (1856) 9086.

SCHELLING, FRIEDRICH WILHELM JOSEPH VON, Schelling. the last of the great German philosophers inaugurated by Kant, was born at Leonberg, in the kingdom of Würtemberg, on the 27th of January 1775. He studied theology at the University of Tübingen, where he had Hegel for his college companion, and with whom he formed a friendship which lasted for long years, but which had subsequently to give way before the bitterness of philosophic rivalry. Schelling, though the younger man, was the older philosopher, and he had the honour of indoctrinating Hegel in the sublime mysteries of subjective idealism. Schelling continued his studies at Leipzig and at Jena, whither he had been attracted by the eloquence of Fichte, and whom he afterwards succeeded, on the removal of his master in 1798. His friend Hegel rejoined him at Jena, and wrought in conjunction with him at the Jena *Zeitschrift*, in promulgating their then common doctrine. Schelling published three works in 1795, ere he had completed his twentieth year:—*Vom Ich als Princip der Philosophie* (Of the Ego as the Principle of Philosophy); *Philosophische Briefe über Dogmatismus und Criticismus* (Philosophical Letters on Dogmatism and Criticism); *Ueber die Möglichkeit einer Form der Philosophie überhaupt* (On the Possibility of a form of Philosophy in general). These works were followed by others in quick succession:—*Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre* (Dissertations on the Idealism of the Theory of Science) appeared in 1796–97; *Ideen zu einer Philosophie der Natur* (Ideas for a Philosophy of Nature) 1797, second edition 1803; *Von der Weltseele* (On the Soul of the World) 1798, third edition 1809; *Erster Entwurf eines Systems der Naturphilosophie* (First Sketch of a System of the Philosophy of Nature) 1799; *Einleitung zu seinem Entwurf eines Systems*, &c. (Introduction to his Sketch of a System, &c.) 1799. When we reflect that those works were all written within the period of five years, we will not be inclined to find fault with the youthful philosopher for being too sluggish in the philosophic cause which he had espoused. The years which immediately preceded and which immediately succeeded the commencement of the century, constitute the most interesting epoch in the history of German philosophy. In 1802 Schelling graduated in medicine, and the following year quitted Jena, the principal centre of Protestant thought, for the Catholic university of Würzburg. He left Hegel to fill his shoes at the University of Jena, when this great dialectician began to forge a system of resolute logic, so wild and strange, that Germany, that land of chimeras, might have crowned him as the high priest of intellectual legerdemain. (See HEGEL.) In 1807 Schelling was appointed Member of the Academy of Sciences of Munich, and subsequently perpetual secretary of the Academy of the Fine Arts. Schelling continued still to ply his pen with untiring energy. For the next fifteen years he kept the printing-presses of Germany almost in constant operation, promulgating his transcendental philosophy. Hegel had now caught the ear of the German public with his "Logische Idee," and Schelling, in partial disgust, allowed the favourite to have his day. From 1815 till the day of his death, he wrote nothing of any importance. The following is a list of his works during this second period of his philosophical activity:—*Zeitschrift für die Speculative Physik*, containing a brief account of his system, under the title of *Darstellung meines Systems der Philosophie*, 2 vols., 1800–1803; *System des Transcendentalen Idealismus* (System of Transcendental Idealism) 1800, translated into French by Grimblot, Paris, 1842; *Bruno*, a dialogue on the divine and natural principle of things, 1802, in French, by Husson, Paris, 1845; *Neue Zeitschrift*, 1803; *Vorlesungen über die Methode des Akademischen Studiums* (Lectures upon the Method of Academical Studies), 1803, new edition, 1813; *Philosophie und Religion*, 1804; *Apho-*

Schelling. *rismen zur Einleitung in die Naturphilosophie* (Aphorisms for an Introduction to the Philosophy of Nature) 1806; *Ueber das Verhältniss des Realen und Idealen in der Natur* (On the Relation of the Real and the Ideal in Nature) 1806; *Darlegung des wahren Verhältnisses der Naturphilosophie zu der verbesserten Fichte'schen Lehre* (Exposition of the true relation of the Philosophy of Nature to the reformed doctrine of Fichte) 1806; *Ueber das Verhältniss der bildenden Künste zu der Natur* (Concerning the Relation of the Arts of Design to Nature) 1807; *Philosophische Untersuchungen über das Wesen der Menschlichen Freiheit* (Philosophical Researches on the Essence of Human Liberty) 1809; A reply to the accusations of Jacobi, entitled, *Denkmal der Schrift von den Göttlichen Dingen*, 1812; and *Die Gottheiten von Samothrake* (The Divinities of Samothrace) 1815. With the exception of his first lecture at Berlin in 1841 (*Erste Vorlesung in Berlin*), this work on the Divinities of Samothrace closed his published writings. In 1820 he retired to Erlangen, where he was ennobled by the King of Bavaria. On the creation of the University of Munich he was appointed to the chair of philosophy. He was afterwards chosen Chevalier of the Legion of Honour, and foreign associate of the Academy of Moral and Political Sciences of France. From 1841, when he was chosen professor in the University of Berlin, he elaborated in silence a new species of philosophy, which was to bear the name of the *positive* philosophy. This system he had not matured, or at least he had not given it to the public, when he died at Ragaz, in Switzerland, whither he had gone for the benefit of his health, in August 1854, at the age of seventy-nine.

Schelling never produced a definite system, and pursued his studies, as Hegel phrased it, "in the presence of the public." But it is necessary to add, that the public of Germany followed him with a lively interest, and the young and ardent writer exercised over it a very powerful influence. If he failed to expound his philosophy with a systematic precision, if he presented it under various guises, returning continually upon his former work, he in no case proved false to his own genius, and from first to last his works breathe out the same sublime spirit. When, in 1841, he made his first appearance before the public of Berlin, he could tell them, in his first lecture, without any sacrifice of truth, that he did not disavow the speculations of his youth. A man of genius cannot change his ideas as he changes his will; he is under their empire more than they are under his; his ideas belong to him in a more emphatic sense than he can be said to possess his ideas. Schelling is a philosopher in the largest sense of that term; and had he kept the intellectual rein more closely upon his Pegasus, he would doubtless have ranked with those sublime philosophers of which Plato is the acknowledged chief. He is a philosopher among poets, and a poet among philosophers. As he has frequently said, every system of philosophy, when it is pushed to the last source of intellectual inspiration, in its attempt to represent the physical and moral world, is not a poem in the highest sense of that word, does not adequately represent the universe, that vast and sublime poem, of which all philosophies, and all poems alike, are but the faint resemblances and imperfect imitations. His philosophical genius developed itself under the influence of the school of Kant and of Fichte, but he gave early indications of a tendency to soar over the heads of his instructors. He drank deeply at the fountain of the Neo-Platonists, of Giordano Bruno, and particularly of Spinoza; and arose from the draught, strong as a giant refreshed with wine, to weave the endless threads of his wandering thoughts into a web of idealistic pantheism.

The genuine philosophy of Schelling places him historically between Fichte and Hegel. It has never been presented by himself in a systematic form: he has proceeded

by adding fragment to fragment, without apparently heeding whether these were mutually exclusive or not. To say the truth, his mind was more under the government of the imagination than it was under law to the harder elements of the intelligence. The pure intellect was seldom permitted to shape out any proposition without being dazzled by the fiery light which the imagination threw upon it; so that, when he halted in his speculative course, he could not calmly survey his work by reason of the brilliant and blinding glow which was cast over it by this subtle and potent agent. After all, however, considering the region in which he chose to move, it mattered very little which faculty of the mind predominated, where all its faculties would have been at fault. Schelling's great error lay in permitting his mind to be bewildered in the pursuit of a vain phantom, which arose only to lure him on, and which allowed itself to be apparently grasped, only to destroy its pursuer. We shall here limit ourselves, in characterizing his philosophy, to point out in a very general manner its leading thoughts and its principal results.

The ruling idea of Schelling's philosophy is *the identity of the Subject and Object of thought*, of the Ego and the Non-ego, of the ideal and the real; an identity which Fichte had only presented as an ideal which the Ego should continually endeavour to realize. While Fichte accorded to ideas only a subjective value, Schelling attributed to them an objective meaning. This objective something which the Ego contemplated was not, however, according to Schelling, anything external to the Ego and independent of it; on the contrary, it was precisely within the sphere of the Ego where this subject-object was found. He identified thought with things, and things with thought. According to him, Reason is one, and human reason is identical with divine reason. The ideas of the divine intelligence realize themselves in being thought; things, again, are their reflection, or phenomenal expression. Human intelligence conceives, by its own laws, these divine ideas; and human thought is a faithful transcript of the divine dialectics which produced the universe. There is thus a pre-established harmony between our ideas and external objects, which are but identical copies of the same model. By the *Intellectual Intuition* (*Anschauung*) which enables the spectator to disrobe himself of his manhood, and temporarily to become a god, he rises above the region of the understanding, and identifies his reason with the divine. Thus the true philosophical method consists in casting aside reflection, by whose sluggish movement things had been taken for real existences, independent of the subject of thought, and rising into the genuine philosophical *Intuition*, by which thought and things are perceived to be one, even as human reason is identified with the absolute. To show how all things emanate from the absolute, is what Schelling calls the method of *construction*. Things are, according to this system, but the expression of the absolute reason, which necessitates the total indifference of subjective and objective. The absolute, by its tendency to objectify itself, moves forward by an expansive law, and out of the abundance of the *natura naturans* comes the whole variety of the *natura naturata*. Again, by its tendency to subjectify itself, it moves backward, as it were, and by a contractive excitement, draws the *natura naturata* back upon the *natura naturans*, when it becomes conscious of itself. The creation of the universe, in short, or the evolution of the absolute, is an *act* of eternal knowledge, and philosophy is the free reproduction in the reflective consciousness of this act of knowledge. Whoever, according to Schelling, cannot elevate himself to this Intellectual Intuition, or philosophic ecstasy, is entirely incapable of philosophy, and there is no true philosophy which does not recognise this as its genuine foundation. There is a speculative rapture, as there is a poetical enthusiasm, and

Schelling.

Schemnitz
||
Schenectady.

philosophy is the most magnificent and the most sublime of poems.

The philosophy of the absolute, or of the All-one (*die Alleinslehre*), as it has been called, divides itself into transcendental idealism and the philosophy of nature. The whole is sometimes comprised under the general designation of the philosophy of nature, or absolute idealism. Absolute idealism thus includes relative idealism, or the philosophy of the ideal world; and the philosophy of nature, properly so called, comprises the philosophy of the visible world. The degrees of identical development of mind and of nature are called powers or potences, and the potences of these two parallel systems are absolutely contemporaneous. Transcendental philosophy and the philosophy of nature express two parallel series, each of which develops itself under the three potences—of inorganic nature; of vegetable and animal life; and of conscious life. As the real world is divine knowledge, or the external manifestation which Deity has of his own thoughts, so philosophy is the knowledge of that knowledge. It is idealism in so far as it represents the ideal world; realism in so far as it represents the real world. But in so far as the sensible world is but an imperfect image of the intelligible world, it is thus far idealism in the most absolute sense. Besides the ideal world, as it exists in Deity, and as it is found by the intellectual intuition in the human reason, and the visible world or nature, its identical expression, there is yet another world to be recorded, the world of history. This third department, the product of our moral activity, and but another mode of active intuition, is the return of decayed ideas, so to speak, again to Deity, whose end is the final restoration of all things to the state of unity. Thus one sole and simple cause produces the real world and the world of ideas, of which the former exists without consciousness, and the latter exists with consciousness; and the same spirit which manifests itself in nature and in man, manifests itself also in history. It is by this third form of development that Deity realizes himself, and by it he brings back to himself the full and distinct consciousness of his own ideas. Deity, accordingly, manifests himself everywhere; in the mind, in nature, and in history. Absolute unity of substance lies beneath all the apparent forms of the world, as absolute unity of action works out all the developments of the universe. And thus the last threads of the web are woven, and man awakes to the discovery, that while he slept, he has been enveloped in a most subtle texture of idealistic pantheism. For a critical estimate of the system of Schelling, the reader is referred to the section on "Ontology," in the article METAPHYSICS, and especially to the masterly discussion of it in Sir William Hamilton's *Discussions on Philosophy*, p. 18.

The philosophy of Schelling has had numerous adherents, many of them men of the foremost reputation. Oken, Steffens, and G. H. Schubert have applied its principles to the natural sciences and to psychology; while others have applied them to æsthetics, to mythology, to history, and to religion. What was destructible in the philosophy has now well-nigh died out in Germany, while what was vital and fresh in it will grow and increase for ever. (J. D.—S.)

SCHEMNITZ, the principal mining town in Hungary, stands between two hills, in the county of Honth, 65 miles N. by W. of Buda. It is irregularly built on very uneven ground; and contains a mining academy, founded by Maria Theresa in 1760; and several other educational institutions. The gold and silver mines employ about 10,000 hands, and yield annually 300 lb. Troy of gold, and 43,400 of silver. The population of the town itself is only 8500; but including the adjacent villages, it amounts to 20,000.

SCHENECTADY, a town of the United States of North America, in the state of New York, on the right bank of the Mohawk, 16 miles N.W. of Albany. It is regularly

built; and contains several handsome churches, a town-hall, jail, lyceum, academy, and the Union College, which was founded in 1795, and contained, in 1857, 16 professors and teachers, 70 students, and a library of 17,000 volumes. It carries on several manufactures. The Erie Canal, which connects Lake Erie with the Hudson, passes through the town. Pop. (1850) 8921.

SCHERZO, a short musical composition, generally in $\frac{3}{4}$ time, of a light and playful style. It is more rapid than the old minuet. Some excellent examples of the scherzo are to be found in Beethoven's works; among others, one in his second Symphony, op. 36, in D major.

SCHEUFFELIN, or SCHAEUFFELEIN, HANS LEONARD, a celebrated old German painter and wood-engraver, was born at Nürnberg about 1490. Hans was placed early with Albrecht Dürer, with whom he became a great favourite. A good painting by Scheuffelin is his "Taking Down from the Cross," in Nördlingen, executed in 1521. He died at Nördlingen in 1539 or 1540.

SCHEVENINGEN, a fishing town and watering-place of Holland, in the province of South Holland, on the German Ocean, 2 miles N.W. of the Hague. It contains a royal pavilion, Protestant and Roman Catholic churches, several schools and hospitals, and bathing establishments. Pop. 5600, chiefly employed in fishing.

SCHIEDAM, a seaport of Holland, in the province of South Holland, at the confluence of the Schie with the Mense, 4 miles W. of Rotterdam. It has several regular, broad, and handsome streets, and not a few splendid buildings. The exchange is considered the finest of these; and there are also a town-hall, elegant concert-hall, and churches of various sects. Schiedam possesses numerous schools, a public library, benevolent institutions, &c. Its manufactures include hardware, glass, ropes, whitelead, linen, and flax. But it is best known for its distilleries of gin or Hollands, of which there are more than 200. There is a considerable trade in this, as well as in grain and coals. Many of the inhabitants are employed in the herring fishery. Pop. 12,500.

SCHILLER, JOHN CHRISTOPHER FREDERICK VON, was born at Marbach, a small town in the duchy of Würtemberg, on the 10th day of November 1759. It will aid the reader in synchronizing the periods of this great man's life with the corresponding events throughout Christendom, if we direct his attention to the fact, that Schiller's birth nearly coincided in point of time with that of Robert Burns, and that it preceded that of Napoleon by about ten years.

The position of Schiller is remarkable. In the land of his birth, by those who undervalue him the most, he is ranked as the second name in German literature; everywhere else he is ranked as the first. For us, who are aliens to Germany, Schiller is the representative of the German intellect in its highest form; and to him, at all events, whether first or second, it is certainly due, that the German intellect has become a known power, and a power of growing magnitude, for the great commonwealth of Christendom. Luther and Kepler, potent intellects as they were, did not make themselves known as Germans; the revolutionary vigour of the one, the starry lustre of the other, blended with the convulsions of reformation, or with the aurora of ascending science, in too kindly and genial a tone to call off the attention from the work which they performed, from the service which they promoted, to the circumstances of their personal position. Their country, their birth, their abode, even their separate existence, was merged in the mighty cause to which they lent their co-operation. And thus at the beginning of the sixteenth century, thus at the beginning of the seventeenth, did the Titan sons of Germany defeat their own private pretensions by the very grandeur of their merit. Their interest as patriots was lost and confounded in their paramount interest as cosmopolites. What

Scherzo
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Schiller.

Schiller. they did for man and for human dignity eclipsed what they had designed for Germany. After them there was a long interlunar period of darkness for the land of the Rhine and the Danube. The German energy, too spasmodically excited, suffered a collapse. Throughout the whole of the seventeenth century, but one vigorous mind arose for permanent effects in literature. This was Opitz, a poet who deserves even yet to be read with attention, but who is no more worthy to be classed as the Dryden whom his too partial countrymen have styled him, than the Germany of the Thirty Years' War of taking rank by the side of civilized and cultured England during the Cromwellian era, or Klopstock of sitting on the same throne with Milton. Leibnitz was the one sole potentate in the fields of intellect whom the Germany of this century produced; and he, like Luther and Kepler, impresses us rather as a European than as a German mind, partly perhaps from his having pursued his self-development in foreign lands, partly from his large circle of foreign connections, but most of all from his having written chiefly in French or in Latin. Passing onwards to the eighteenth century, we find, through its earlier half, an absolute wilderness, unreclaimed and without promise of natural vegetation, as the barren arena on which the few insipid writers of Germany paraded. The torpor of academic dullness domineered over the length and breadth of the land. And as these academic bodies were universally found harnessed in the equipage of petty courts, it followed that the lethargies of pedantic dullness were uniformly deepened by the lethargies of aulic and ceremonial dullness; so that, if the reader represents to himself the very abstract of birthday odes, sycophantish dedications, and court sermons, he will have some adequate idea of the sterility and the mechanical formality which at that era spread the sleep of death over German literature. Literature, the very word literature, points the laughter of scorn to what passed under that name during the period of Gottsched. That such a man indeed as this Gottsched, equal at the best to the composition of a Latin grammar or a school arithmetic, should for a moment have presided over the German muses, stands out as in itself a brief and significant memorial, too certain for contradiction, and yet almost too gross for belief, of the apoplectic sleep under which the mind of central Europe at that era lay oppressed. The rust of disuse had corroded the very principles of activity. And, as if the double night of academic dullness, combined with the dullness of court inanities, had not been sufficient for the stifling of all native energies, the feebleness of French models (and of these moreover naturalized through still feebler imitations) had become the law and standard for all attempts at original composition. The darkness of night, it is usually said, grows deeper as it approaches the dawn; and the very enormity of that prostration under which the German intellect at this time groaned, was the most certain pledge to any observing eye of that intense re-action soon to stir and kindle among the smouldering activities of this spell-bound people. This re-action, however, was not abrupt and theatrical: it moved through slow stages and by equable gradations: it might be said to commence from the middle of the eighteenth century, that is, about nine years before the birth of Schiller; but a progress of forty years had not carried it so far towards its meridian altitude, as that the sympathetic shock from the French Revolution was by one fraction more rude and shattering than the public torpor still demanded. There is a memorable correspondency throughout all members of Protestant Christendom in whatsoever relates to literature and intellectual advance. However imperfect the organization which binds them together, it was sufficient even in these elder times to transmit reciprocally from one to every other, so much of that illumination which could be gathered into books, that no Christian state could be much in advance of another, supposing that Popery op-

posed no barriers to free communication, unless only in those points which depended upon local gifts of nature, upon the genius of a particular people, or upon the excellence of its institutions. These advantages were incommunicable, let the freedom of intercourse have been what it might: England could not send off by posts or by heralds her iron and coals; she could not send the indomitable energy of her population; she could not send the absolute security of property; she could not send the good faith of her parliaments. These were gifts indigenous to herself, either through the temperament of her people, or through the original endowments of her soil. But her condition of moral sentiment, her high-toned civic elevation, her atmosphere of political feeling and popular boldness,—much of these she could and did transmit, by the radiation of the press, to the very extremities of the German empire. Not only were our books translated, but it is notorious to those acquainted with German novels, or other pictures of German society, that as early as the Seven Years' War (1756–1763), in fact, from the very era when Cave and Dr Johnson first made the parliamentary debates accessible to the English themselves, most of the German journals repeated, and sent forward as by telegraph, these senatorial displays to every village throughout Germany. From the polar latitudes to the Mediterranean, from the mouths of the Rhine to the Euxine, there was no other exhibition of free deliberative eloquence in any popular assembly. And the *Luise* of Voss alone, a metrical idyll not less valued for its truth of portraiture than our own *Vicar of Wakefield*, will show, that the most sequestered clergyman of a rural parish did not think his breakfast equipage complete without the latest report from the great senate that sat in London. Hence we need not be astonished that German and English literature were found by the French Revolution in pretty nearly the same condition of semi-vigilance and imperfect animation. That mighty event reached us both, reached us all, we may say (speaking of Protestant states), at the same moment, by the same tremendous galvanism. The snake, the intellectual snake, that lay in ambush among all nations, roused itself, sloughed itself, renewed its youth, in all of them at the same period. A new world opened upon us all; new revolutions of thought arose; new and nobler activities were born; “and other palms were won.”

But by and through Schiller it was, as its main organ, that this great revolutionary impulse expressed itself. Already, as we have said, not less than forty years before the earthquake by which France exploded and projected the scoria of her huge crater over all Christian lands, a stirring had commenced among the dry bones of intellectual Germany; and symptoms arose that the breath of life would soon disturb, by nobler agitations than by petty personal quarrels, the death-like repose even of the German universities. Precisely in those bodies however it was, in those as connected with tyrannical governments, each academic body being shackled to its own petty centre of local despotism, that the old spells remained unlinked; and to them, equally remarkable as firm trustees of truth, and as obstinate depositories of darkness or of superannuated prejudice, we must ascribe the slowness of the German movement on the path of reascend. Meantime the earliest torch-bearer to the murky literature of this great land, this crystallisation of political states, was Bodmer. This man had no demoniac genius, such as the service required; but he had some taste, and, what was better, he had some sensibility. He lived among the Alps; and his reading lay among the alpine sublimities of Milton and Shakspeare. Through his very eyes he imbibed a daily scorn of Gottsched and his monstrous compound of German coarseness with French sensual levity. He could not look at his native Alps, but he saw in them, and their austere grandeurs or their dread realities, a spiritual reproach to the hollowness and falsehood

Schiller.

Schiller. of that dull imposture which Gottsched offered by way of substitute for nature. He was taught by the Alps to crave for something nobler and deeper. Bodmer, though far below such a function, rose by favour of circumstances into an apostle or missionary of truth for Germany. He translated passages of English literature. He inoculated with his own sympathies the more fervent mind of the youthful Klopstock, who visited him in Switzerland. And it soon became evident that Germany was not dead, but sleeping; and once again, legibly for any eye, the pulses of life began to play freely through the vast organization of central Europe.

Klopstock, however, though a fervid, a religious, and for that reason an anti-Gallican mind, was himself an abortion. Such at least is our own opinion of this poet. He was the child and creature of enthusiasm, but of enthusiasm not allied with a masculine intellect, or any organ for that capacious vision and meditative range which his subjects demanded. He was essentially thoughtless, betrays everywhere a most effeminate quality of sensibility, and is the sport of that pseudo-enthusiasm and baseless rapture which we see so often allied with the excitement of strong liquors. In taste, or the sense of proportions and congruences, or the harmonious adaptations, he is perhaps the most defective writer extant.

But if no patriarch of German literature, in the sense of having shaped the moulds in which it was to flow, in the sense of having disciplined its taste or excited its rivalry by classical models of excellence, or raised a finished standard of style, perhaps we must concede that, on a minor scale, Klopstock did something of that service in every one of these departments. His works were at least Miltonic in their choice of subjects, if ludicrously non-Miltonic in their treatment of those subjects. And, whether due to him or not, it is undeniable that in his time the mother-tongue of Germany revived from the most absolute degradation on record, to its ancient purity. In the time of Gottsched, the authors of Germany wrote a macaronic jargon, in which French and Latin made up a considerable proportion of every sentence: nay, it happened often that foreign words were inflected with German forms; and the whole result was such as to remind the reader of the medical examination in the *Malade Imaginaire* of Molière,

Quid poetæ est à faire ?
Saignare
Baignare
Ensuita purgare, &c.

Now is it reasonable to ascribe some share in the restoration of good to Klopstock, both because his own writings exhibit nothing of this most abject euphuism (a euphuism expressing itself not in fantastic refinements on the staple of the language, but altogether in rejecting it for foreign words and idioms), and because he wrote expressly on the subject of style and composition.

Wieland, meantime, if not enjoying so intense an acceptance as Klopstock, had a more extensive one; and it is in vain to deny him the praise of a festive, brilliant, and most versatile wit. The Schlegels showed the haughty malignity of their ungenerous natures, in depreciating Wieland, at a time when old age had laid a freezing hand upon the energy which he would once have put forth in defending himself. He was the Voltaire of Germany, and very much more than the Voltaire; for his romantic and legendary poems are above the level of Voltaire. But, on the other hand, he was a Voltaire in sensual impurity. To work, to carry on a plot, to affect his readers by voluptuous impressions,—these were the unworthy aims of Wieland; and though a good natured critic would not refuse to make some

allowance for a youthful poet's aberrations in this respect, yet the indulgence cannot extend itself to mature years. An old man corrupting his readers, attempting to corrupt them, or relying for his effect upon corruptions already effected, in the purity of their affections, is a hideous object; and that must be a precarious influence indeed which depends for its durability upon the licentiousness of men. Wieland, therefore, except in parts, will not last as a national idol; but such he was nevertheless for a time.

Bürger wrote too little of any expansive compass to give the measure of his powers, or to found national impression; Lichtenberg, though a very sagacious observer, never rose into what can be called a *power*—he did not modify his age; yet these were both men of extraordinary talent, and Bürger a man of undoubted genius. On the other hand, Lessing was merely a man of talent, but of talent in the highest degree adapted to popularity. His very defects, and the shallowness of his philosophy, promoted his popularity; and by comparison with the French critics on the dramatic or scenical proprieties he is ever profound. His plummet, if not suited to the soundless depths of Shakspeare, was able ten times over to fathom the little rivulets of Parisian philosophy. This he did effectually, and thus unconsciously levelled the paths for Shakspeare, and for that supreme dominion which he has since held over the German stage, by crushing with his sarcastic shrewdness the pretensions of all who stood in the way. At that time, and even yet, the functions of a literary man were very important in Germany: the popular mind and the popular instinct pointed one way, those of the little courts another. Multitudes of little German states (many of which were absorbed since 1816 by the process of *mediatizing*) made it their ambition to play at keeping mimic armies in their pay, and to ape the greater military sovereigns, by encouraging French literature only, and the French language at their courts. It was this latter propensity which had generated the anomalous macaronic dialect, of which we have already spoken as a characteristic circumstance in the social features of literary Germany during the first half of the eighteenth century. Nowhere else, within the records of human follies, do we find a corresponding case in which the government and the patrician orders in the state, taking for granted, and absolutely postulating the utter worthlessness for intellectual aims of those in and by whom they maintained their own grandeur and independence, undisguisedly and even professedly sought to ally themselves with a foreign literature, foreign literati, and a foreign language. In this unexampled display of scorn for native resources, and the consequent collision between the two principles of action, all depended upon the people themselves. For a time the wicked and most profligate contempt of the local governments for that native merit which it was their duty to evoke and to cherish, naturally enough produced its own justification. Like Jews or slaves, whom all the world have agreed to hold contemptible, the German literati found it hard to make head against so obstinate a prejudice; and too often they became all that they were presumed to be. *Sint Mæcenates, non deerunt, Flacce, Marones.* And the converse too often holds good—that when all who should have smiled scowl upon a man, he turns out the abject thing they have predicted. Where Frenchified Fredericks sit upon German thrones, it should not surprise us to see a crop of Gottscheds arise as the best fruitage of the land. But when there is any latent nobility in the popular mind, such scorn, by its very extremity, will call forth its own counteraction. It was perhaps good for Germany that a prince so eminent in one aspect as *Fritzer der einziger*,¹ should put on record so emphatically his intense conviction, that no good thing could arise out of Ger-

¹ "Freddy the unique;" which is the name by which the Prussians expressed their admiration of their martial and indomitable, though somewhat fantastic, king.

Schiller. many. This creed was expressed by the quality of the French minds which he attracted to his court. The very refuse and dregs of the Parisian coteries satisfied his hunger for French garbage; the very offal of their shambles met the demand of his palate; even a Maupertuis, so long as he could produce a French baptismal certificate, was good enough to manufacture into the president of a Berlin academy. Such scorn challenged a re-action: the contest lay between the thrones of Germany and the popular intellect, and the final result was inevitable. Once aware that they were insulted, once enlightened to the full consciousness of the scorn which trampled on them as intellectual and predestined Helots, even the mild-tempered Germans became fierce, and now began to aspire, not merely under the ordinary instincts of personal ambition, but with a vindictive feeling, and as conscious agents of retribution. It became a pleasure with the German author, that the very same works which elevated himself, wreaked his nation upon their princes, and poured retorted scorn upon their most ungenerous and unparental sovereigns. Already, in the reign of the martial Frederick, the men who put most weight of authority into his contempt of Germans,—Euler, the matchless Euler, Lambert, and Immanuel Kant,—had vindicated the pre-eminence of German mathematics. Already, in 1755, had the same Immanuel Kant, whilst yet a probationer for the chair of logic in a Prussian university, sketched the outline of that philosophy which has secured the admiration, though not the assent, of all men known and proved to have understood it, of all men able to state its doctrines in terms admissible by its disciples. Already, and even previously, had Haller, who wrote in German, placed himself at the head of the current physiology. And in the fields of science or of philosophy, the victory was already decided for the German intellect in competition with the French.

But the fields of literature were still comparatively barren. Klopstock was at least an anomaly; Lessing did not present himself in the impassioned walks of literature; Herder was viewed too much in the exclusive and professional light of a clergyman; and, with the exception of John Paul Richter, a man of most original genius, but quite unfitted for general popularity, no commanding mind arose in Germany with powers for levying homage from foreign nations, until the appearance, as a great scenical poet, of Frederick Schiller.

The father of this great poet was Caspar Schiller, an officer in the military service of the Duke of Würtemberg. He had previously served as a surgeon in the Bavarian army; but on his final return to his native country of Würtemberg, and to the service of his native prince, he laid aside his medical character for ever, and obtained a commission as ensign and adjutant. In 1763, the peace of Paris threw him out of his military employment, with the nominal rank of captain. But, having conciliated the duke's favour, he was still borne on the books of the ducal establishment; and, as a planner of ornamental gardens, or in some other civil capacity, he continued to serve his serene highness for the rest of his life.

The parents of Schiller were both pious, upright persons, with that loyal fidelity to duty, and that humble simplicity of demeanour towards their superiors, which is so often found among the unpretending natives of Germany. It is probable, however, that Schiller owed to his mother exclusively the preternatural endowments of his intellect. She was of humble origin, the daughter of a baker, and not so fortunate as to have received much education. But she was apparently rich in gifts of the heart and the understanding. She read poetry with delight; and through the profound filial love with which she had inspired her son, she found it easy to communicate her own literary tastes. Her husband was not illiterate, and had in mature life so

laudably applied himself to the improvement of his own defective knowledge, that at length he thought himself capable of appearing before the public as an author. His book related simply to the subjects of his professional experience as a horticulturist, and was entitled *Die Baumzucht im Grossen* (On the Management of Forests). Some merit we must suppose it to have had, since the public called for a second edition of it long after his own death, and even after that of his illustrious son. And although he was a plain man, of no pretensions, and possibly even of slow faculties, he has left behind him a prayer, in which there is one petition of sublime and pathetic piety, worthy to be remembered by the side of Agar's wise prayer against the almost equal temptations of poverty and riches. At the birth of his son, he had been reflecting with sorrowful anxiety, not unmingled with self-reproach, on his own many disqualifications for conducting the education of the child. But at length, reading in his own manifold imperfections but so many reiterations of the necessity that he should rely upon God's bounty, converting his very defects into so many arguments of hope and confidence in heaven, he prayed thus: "Oh God, that knowest my poverty in good gifts for my son's inheritance, graciously permit that, even as the want of bread became to thy Son's hunger-stricken flock in the wilderness the pledge of overflowing abundance, so likewise my darkness may, in its sad extremity, carry with it the measure of thy unfathomable light; and because I, thy worm, cannot give to my son the least of blessings, do thou give the greatest; because in my hands there is not any thing, do thou from thine pour out all things; and that temple of a new-born spirit, which I cannot adorn even with earthly ornaments of dust and ashes, do thou irradiate with the celestial adornment of thy presence, and finally with that peace that passeth all understanding."

Reared at the feet of parents so pious and affectionate, Schiller would doubtless pass a happy childhood; and probably to this utter tranquillity of his earlier years, to his seclusion from all that could create pain, or even anxiety, we must ascribe the unusual dearth of anecdotes from this period of his life; a dearth which has tempted some of his biographers into improving and embellishing some puerile stories, which a man of sense will inevitably reject as too trivial for his gravity or too fantastical for his faith. That nation is happy, according to a common adage, which furnishes little business to the historian; for such a vacuity in facts argues a condition of perfect peace and silent prosperity. That childhood is happy, or may generally be presumed such, which has furnished few records of external experience, little that has appeared in doing or in suffering to the eyes of companions; for the child who has been made happy by early thoughtfulness, and by infantine struggles with the great ideas of his origin and his destination (ideas which settle with a deep, dove-like brooding upon the mind of childhood, more than of mature life, vexed with inroads from the noisy world), will not manifest the workings of his spirit by much of external activity. The *fallentis semita vite*, that path of noiseless life, which eludes and deceives the conscious notice both of its subject and of all around him, opens equally to the man and to the child; and the happiest of all childhoods will have been that of which the happiness has survived and expressed itself, not in distinct records, but in deep affection, in abiding love, and the hauntings of meditative power.

Such a childhood, in the bosom of maternal tenderness, was probably passed by Schiller; and his first awaking to the world of strife and perplexity happened in his fourteenth year. Up to that period his life had been vagrant, agreeably to the shifting necessities of the ducal service; and his education desultory and domestic. But in the year 1773 he was solemnly entered as a member of a new aca-

Schiller.

Schiller. demical institution, founded by the reigning duke, and recently translated to his little capital of Stuttgart. This change took place at the special request of the duke, who, under the mask of patronage, took upon himself the severe control of the whole simple family. The parents were probably both too humble and dutiful in spirit towards one whom they regarded in the double light of sovereign lord and of personal benefactor, ever to murmur at the ducal behests, far less to resist them. The duke was for them an earthly providence; and they resigned themselves, together with their child, to the disposal of him who dispensed their earthly blessings, not less meekly than of Him whose vicegerent they presumed him to be. In such a frame of mind, requests are but another name for commands; and thus it happened that a second change arose upon the first, even more determinately fatal to the young Schiller's happiness. Hitherto he had cherished a day-dream pointing to the pastoral office in some rural district, as that which would harmonize best with his intellectual purposes, with his love of quiet, and, by means of its preparatory requirements, best also with his own peculiar choice of studies. But this scheme he now found himself compelled to sacrifice; and the two evils which fell upon him concurrently in his new situation were, first, the formal military discipline and monotonous routine of duty; secondly, the uncongenial direction of the studies, which were shaped entirely to the attainment of legal knowledge, and the narrow service of the local tribunals. So illiberal and so exclusive a system of education was revolting to the expansive mind of Schiller; and the military bondage under which this system was enforced, shocked the aspiring nobility of his moral nature, not less than the technical narrowness of the studies shocked his understanding. In point of expense the whole establishment cost nothing at all to those parents who were privileged servants of the duke: in this number were the parents of Schiller, and that single consideration weighed too powerfully upon his filial piety to allow of his openly murmuring at his lot; while on *their* part the parents were equally shy of encouraging a disgust which too obviously tended to defeat the promises of ducal favour. This system of monotonous confinement was therefore carried to its completion, and the murmurs of the young Schiller were either dutifully suppressed, or found vent only in secret letters to a friend. In one point only Schiller was able to improve his condition; jointly with the juristic department, was another for training young aspirants to the medical profession. To this, as promising a more enlarged scheme of study, Schiller by permission transferred himself in 1775. But whatever relief he might find in the nature of his new studies, he found none at all in the system of personal discipline which prevailed.

Under the oppression of this detested system, and by pure re-action against its wearing persecutions, we learn from Schiller himself, that in his nineteenth year he undertook the earliest of his surviving plays, the *Robbers*, beyond doubt the most tempestuous, the most volcanic, we might say, of all juvenile creations anywhere recorded. He himself calls it "a monster," and a monster it is; but a monster which has never failed to convulse the heart of young readers with the temperament of intellectual enthusiasm and sensibility. True it is, and nobody was more aware of that fact than Schiller himself in after years, the characters of the three Moors, father and sons, are mere impossibilities; and some readers, in whom the judicious acquaintance with human life in its realities has outrun the sensibilities, are so much shocked by these hypernatural phenomena, that they are incapable of enjoying the terrific sublimities which on that basis of the visionary do really exist. A poet, perhaps Schiller might have alleged, is entitled to assume hypothetically so much in the previous positions or circumstances of his agents as is requisite to the

basis from which he starts. It is undeniable that Shakspeare and others have availed themselves of this principle, and with memorable success. Shakspeare, for instance, *postulates* his witches, his Caliban, his Ariel: grant, he virtually says, such modes of spiritual existence or of spiritual relations as a possibility; do not expect me to demonstrate this, and upon that single concession I will rear a superstructure that shall be self-consistent; every thing shall be *internally* coherent and reconciled, whatever be its *external* relations as to our human experience. But this species of assumption, on the largest scale, is more within the limits of credibility and plausible verisimilitude when applied to modes of existence, which, after all, are in such total darkness to us (the limits of the possible being so undefined and shadowy as to what can or cannot exist), than the very slightest liberties taken with human character, or with those principles of action, motives, and feelings, upon which men would move under given circumstances, or with the modes of action which in common prudence they would be likely to adopt. The truth is, that, as a coherent work of art, the *Robbers* is indefensible; but, however monstrous it may be pronounced, it possesses a power to agitate and convulse, which will always obliterate its great faults to the young, and to all whose judgment is not too much developed. And the best apology for Schiller is found in his own words in recording the circumstances and causes under which this anomalous production arose. "To escape," says he, "from the formalities of a discipline which was odious to my heart, I sought a retreat in the world of ideas and shadowy possibilities, while as yet I knew nothing at all of that human world from which I was harshly secluded by iron bars. Of men, the actual men in this world below, I knew absolutely nothing at the time when I composed my *Robbers*. Four hundred human beings, it is true, were my fellow-prisoners in this abode; but they were mere tautologies and reiterations of the self-same mechanic creature, and like so many plaster casts from the same original statue. Thus situated, of necessity I failed. In making the attempt, my chisel brought out a monster, of which [and that was fortunate] the world had no type or resemblance to show."

Meantime this demoniac drama produced very opposite results to Schiller's reputation. Among the young men of Germany it was received with an enthusiasm absolutely unparalleled, though it is perfectly untrue that it excited some persons of rank and splendid expectations (as a current fable asserted) to imitate Charles Moor in becoming robbers. On the other hand, the play was of too powerful a cast not in any case to have alarmed his serenity the Duke of Würtemberg; for it argued a most revolutionary mind, and the utmost audacity of self-will. But besides this general ground of censure, there arose a special one, in a quarter so remote that this one fact may serve to evidence the extent as well as intensity of the impression made. The territory of the Grisons had been called by Spiegelberg, one of the robbers, "the Thief's Athens." Upon this the magistrates of that country presented a complaint to the duke; and his highness, having cited Schiller to his presence, and severely reprimanded him, issued a decree that this dangerous young student should henceforth confine himself to his medical studies.

The persecution which followed exhibits such extraordinary exertions of despotism, even for that land of irresponsible power, that we must presume the duke to have relied more upon the hold which he had upon Schiller through his affection for parents so absolutely dependent on his highness's power, than upon any laws, good or bad, which he could have pleaded as his warrant. Germany, however, thought otherwise of the new tragedy than the serene critic of Würtemberg: it was performed with vast applause at the neighbouring city of Mannheim; and thither, under

Schiller. a most excusable interest in his own play, the young poet clandestinely went. On his return he was placed under arrest. And soon afterwards, being now thoroughly disgusted, and, with some reason, alarmed by the tyranny of the duke, Schiller finally eloped to Mannheim, availing himself of the confusion created in Stuttgart by the visit of a foreign prince.

At Mannheim he lived in the house of Dalberg, a man of some rank and of sounding titles, but in Mannheim known chiefly as the literary manager (or what is called director) of the theatre. This connection aided in determining the subsequent direction of Schiller's talents; and his *Fiesco*, his *Intrigue and Love*, his *Don Carlos*, and his *Maria Stuart*, followed within a short period of years. None of these are so far free from the faults of the Robbers as to merit a separate notice; for with less power, they are almost equally licentious. Finally, however, he brought out his *Wallenstein*, an immortal drama, and, beyond all competition, the nearest in point of excellence to the dramas of Shakspeare. The position of the characters of Max. Piccolomini and the Princess Thekla is the finest instance of what, in a critical sense, is called *relief*, that literature offers. Young, innocent, unfortunate, among a camp of ambitious, guilty, and blood-stained men, they offer a depth and solemnity of impression which is equally required by way of contrast and of final repose.

From Mannheim, where he had a transient love affair with Laura Dalberg, the daughter of his friend the director, Schiller removed to Jena, the celebrated university in the territory of Weimar. The grand duke of that German Florence was at this time gathering around him the most eminent of the German intellects; and he was eager to enrol Schiller in the body of his professors. In 1799 Schiller received the chair of civil history; and not long after he married Miss Lengefeld, with whom he had been for some time acquainted. In 1803 he was ennobled; that is, he was raised to the rank of gentleman, and entitled to attach the prefix of *Von* to his name. His income was now sufficient for domestic comfort and respectable independence; while in the society of Goethe, Herder, and other eminent wits, he found even more relaxation for his intellect, than his intellect, so fervent and so self-sustained, could require.

Meantime the health of Schiller was gradually undermined: his lungs had been long subject to attacks of disease; and the warning indications which constantly arose of some deep-seated organic injuries in his pulmonary system ought to have put him on his guard for some years before his death. Of all men, however, it is remarkable that Schiller was the most criminally negligent of his health; remarkable, we say, because for a period of four years Schiller had applied himself seriously to the study of medicine. The strong coffee, and the wine, which he drank, may not have been so injurious as his biographers suppose; but his habit of sitting up through the night, and defrauding his wasted frame of all natural and restorative sleep, had something in it of that guilt which belongs to suicide. On the 9th of May 1805 his complaint reached its crisis. Early in the morning he became delirious; at noon his delirium abated; and at four in the afternoon he fell into a gentle unagitated sleep, from which he soon awoke. Conscious that he now stood on the very edge of the grave, he calmly and fervently took a last farewell of his friends. At six in the evening he fell again into sleep, from which, however, he again awoke once more to utter the memorable declaration, "that many things were growing plain and clear to his understanding." After this the cloud of sleep again settled upon him; a sleep which soon changed into the cloud of death.

This event produced a profound impression throughout Germany. The theatres were closed at Weimar, and the funeral was conducted with public honours. The position in point of time, and the peculiar services of Schiller to the

German literature, we have already stated: it remains to add, that in person he was tall, and of a strong, bony structure, but not muscular, and strikingly lean. His forehead was lofty, his nose aquiline, and his mouth almost of Grecian beauty. With other good points about his face, and with auburn hair, it may be presumed that his whole appearance was pleasing and impressive, while in later years the character of sadness and contemplative sensibility deepened the impression of his countenance. We have said enough of his intellectual merit, which places him in our judgment at the head of the Trans-Rhenish literature. But we add in concluding, that Frederick von Schiller was something more than a great author; he was also in an eminent sense a great man; and his works are not more worthy of being studied for their singular force and originality, than his moral character for its nobility and aspiring grandeur.

(T. DE Q.)

SCHINKEL, KARL FRIEDRICH, a very eminent German architect, was born on the 13th of March 1781, at Neuruppin, in Brandenburg. Having lost his father at an early age, he was placed by his mother at the gymnasium of his native town, where he remained till his fourteenth year, when he removed to Berlin. He soon found an entrance to the office of David Gilly, then an able practical architect; but he had hardly got fairly settled when his master died. Friedrich Gilly, his son, a youth of an ardent imagination, had just returned from his travels; and he began, full of hope and of ambition, to elevate architecture to the level of the other arts of design. His career was short, for he died in 1800, within two years after he had taken up his father's place. Schinkel was now left to pursue undivided the ambitious projects which the younger Gilly had designed, or if possible to realize higher architectural aims than either of his masters had entertained. Schinkel had already had considerable practical experience in the erection of buildings, and he now resolved to pursue his theoretical studies by a pilgrimage to Italy. Accordingly, in 1803, he set out, and after visiting Dresden, Prague, and Vienna, he entered the land sacred to art, and after spending a considerable time in minutely surveying all its architectural monuments, and noting down all its important architectural designs, he returned to Vienna in 1805, filled with the grandest imaginations which young wonder knows. The backward state of public affairs rendered his residence in Germany as an architect exceedingly problematical, and with a mind teeming with the richest art-knowledge, and aspiring after the richest field of development, he at once resolved to combine his architectural skill with his knowledge of landscape scenery, and to become a painter. Architecture, however, was still to hold the prominent part in his labours; the introduction of scenery was merely to act as an expression of his taste and imagination in the accessorial portion of his work. It was at this time he executed his admirable panorama of Palermo; and he likewise designed numerous scenes for the theatre, which were greatly esteemed. Meanwhile, these labours with his brush had brought him prominently before the public, and on the restoration of order in 1815, he was chosen by the king to adorn the city of Berlin and its environs. Those who know the beauties of that graceful city, and the artificial adornments of the surrounding neighbourhood, can testify to how well Schinkel performed his task, and to how great an amount of originality of conception and boldness of design he expended upon the embellishment of the capital of Prussia. Among his earliest buildings are the *Hauptwache*, the Theatre, and the Museum of Berlin; all treated in a purely Hellenic style, the latter of which displays a fulness of ornamentation, combined with a simple severity of outline, such as had not been witnessed before in Germany. A very fair idea of the range of Schinkel's art-knowledge may be

Schinkel.

Schinznach gained from his *Entwürfe* (designs), which contain a complete gallery, with explanatory letterpress, of his unusually numerous and varied architectural productions. Besides presenting ready materials for a descriptive catalogue of his buildings, they likewise present a variety of six several designs for a monument to the great Friedrich, in which the artist had given the rein to his imagination, and indulged freely in the pomp of architectural circumstance and structural display. His *Werke der höheren Baukunst* exhibits a series of grand designs with which he proposed to adorn the acropolis of Athens, but the barrack-like fabric of Gürtner was preferred. Perhaps the most poetical of all Schinkel's designs was his plan of a summer palace for the Empress of Russia at Orianda, in the Crimea, overlooking the Black Sea. Besides being chosen professor in the Academy of Fine Arts at Berlin, and member of the Prussian Academical Senate, he had in 1839 the highest rank of his profession bestowed upon him. He was made "Oberlandesbaudirector," but he did not long enjoy the honour. He died of an organic affection of the brain on the 9th of October 1841. Dr Kugler and O. F. Gruppe have both written biographies of Schinkel.

SCHINZNACH, the most frequented watering-place in Switzerland, in the canton of Aargau, on the Aar, 7 miles N.E. of Aarau. It is well built, and has a fine church, but owes its importance entirely to the medicinal spring; and its chief buildings are the great inn and the bath-house, both very large and splendid. Pop. 1334.

SCHIO, a town of Austrian Italy, in the delegation and 15 miles N.W. of Vicenza. It stands in a fertile plain, between the rivers Leogra and Timonchio, and contains churches, hospitals, law courts, and public offices. There are here mineral springs, and several manufactures are carried on, especially those of woollen cloth, silk, and dyeing. Pop. 6620.

SCHISM (*σχίσμα*, a *rent*), in its general acceptation signifies division or separation; but it is chiefly used in speaking of separations happening from diversity of opinions among people of the same religion or faith. Thus we say the schism of the ten tribes of Judah and Benjamin, the schism of the Persians from the Turks and other Mahomedans, &c. Among ecclesiastical authors, the great schism of the west is that which happened in the times of Clement VII. and Urban VI., which divided the church for forty or fifty years, and was at length ended by the election of Martin V. at the council of Constance. The Romanists number thirty-four schisms in their church, and bestow the name of English schism on the reformation of religion in this kingdom. Those of the church of England apply the term schism to the separation of the nonconformists, viz., the Presbyterians, Independents, and Baptists, for a further reformation.

SCHLAN, or SLANY, a town of the Austrian Empire, Bohemia, in the circle and 20 miles N.W. of Prague. It is walled, and contains a town-hall, Franciscan convent, Piarist college, and high school. There are in the town manufactures of cloth and beet-root sugar; and in the vicinity, salt-springs and coal-pits. Pop. 4531.

SCHLAWE, a town of Prussia, province of Pomerania, in the circle and 23 E.N.E. of Cöslin, at the confluence of the Wipper and the Motze. Linen weaving is carried on here, and some trade in linen and timber. Pop. 4382.

SCHLEGEL, AUGUST WILHELM VON, the elder brother of Friedrich Carl Wilhelm Von Schlegel, and an eminent philologist and critic of Germany, was the son of Johann Adolphus Schlegel, and was born at Hanover in the month of September 1767. He betrayed early a natural gift for language, which carried him through the grammar school of Hanover with great reputation. On leaving school he accepted of a tutorial appointment which demanded of the holder a knowledge both of the French and English lan-

guages. He was chosen in his eighteenth year to deliver an oration before the Lyceum of his native city in honour of a royal birthday. This address, which was written in German hexameters, excited considerable sensation in the citizens of Hanover, both from the range of information displayed in it and from the elegant style in which it was composed. Proceeding to the University of Göttingen, he engaged in the study of theology, but which he shortly afterwards abandoned for the more congenial one of philology. He had already made great progress in classical learning, and his Latin Dissertation on the geography of Homer was warmly applauded by Voss, the most competent judge of his age. While at the university he made the acquaintance of Heyne, for whose Virgil he completed an index in 1788. He likewise gained the friendship of the distinguished Michaëlis, and of the poet Bürger, to whose *Academie der Schönen Redekünste* he contributed his *Ariadne* and his Essay on Dante. Having from his early youth had a leaning to poetry, he now, in conjunction with Bürger, made considerable advances in that species of composition, and had the honour of naturalizing the Italian sonnet in his native country. On leaving the university he became tutor to the son of a wealthy banker of Amsterdam, and after a three years' engagement, he again sought retirement in the University of Jena, where he was appointed professor. He now contributed largely to the *Horen*, and to Schiller's *Musen-Almanach*; and down to 1779 he was one of the most elegant and fertile writers for the *Allgemeinen Literatur-Zeitung* of Jena. It was here he began to disclose to his countrymen the enchanted world of Shakspeare (9 vols., Berlin, 1797-1810), which produced a decided change in the dramatic criticism of Germany. He subsequently renounced in favour of Tieck the work of rendering Shakspeare into German, a change with which the public were not at all dissatisfied, as the exceeding elegance, amounting sometimes to starchedness, of Schlegel's manner, did not always suit the free and unfettered genius of the English poet. During his residence in Jena he became acquainted with Schiller, and professed admiration for Goethe, who, however, did not return the compliment. Schlegel now commenced a course of lectures on æsthetics, and joined his brother, Frederick, in the editorship of the *Athenæum* (3 vols., Berlin, 1796-1800), a journal of literary criticism, designed by its freedom and impartiality to discover and foster every spark of genuine literary development in Germany. In 1800 he published his exceedingly ill-natured satire on Kotzebue, in reply to his attack of the *Hyperborean Ass* (Hyperboreischen Esee). About this period appeared his *Gedichte* (poems), Tübingen, 1800, which were much admired for their elegance and spirit.

He collected his own and his brother Friedrich's contributions to various periodicals, and brought them out under the title of *Characteristiken und Kritiken*, 2 vols., Königsberg, 1801. He undertook with Tieck the editorship of the *Musen-Almanach* for 1802; and with minds of a kindred temper continued to promulgate the doctrines of the so-called romanticists. Fired by ambition, and perhaps also by vanity, August Schlegel now left Jena for Berlin, where he found the most intellectual public of Germany ready to listen to his lectures. He was accordingly induced to deliver a course in 1802, which subsequently appeared in the *Europa*, a review edited by his brother. They bore the title of *Vorlesungen über Literatur und Kunst des Zeitalters* (Lectures on the Literature and Fine Arts of the Age). His *Ion*, a drama in imitation of the ancients, published in 1803, and not marked by any peculiar vigour either of conception or of execution, led to an interesting discussion between the author and some literary men of the day regarding dramatic representation in general, and which was carried on in the *Zeitung für die elegante Welt*. It was from this journal, also, that A. Schlegel shot

Schlegel. forth his darts against Kotzebue and the classicists, who constantly infested him, with all manner of weapons, from the lightest arrowy banter to the deadliest personal abuse. And in giving them back their blows, the galled romanticist did not bate a jot either in keenness of weapon or force of stroke. Schlegel was now engaged upon his Spanish Theatre, which he gave to the world in 2 vols. at Berlin, 1803-1809. In this version he observed all the measures, rhythms, and assonances of the original, and earned for himself a foremost place among successful translators. The German public had another proof of his skill in his *Blumenstrausse d. Ital. Span. u. Portug. Poesie*, Berlin, 1804.

An important career now presented itself to August Schlegel by his introduction to the celebrated Madame de Staël. That lady had arrived in Berlin in 1805, with the intention of making a tour through Germany and of making herself more thoroughly acquainted with German literature. She chose A. Schlegel to direct her studies and to complete the education of her children. Quitting Berlin, he accompanied her to Italy, France, Austria, and Sweden, and subsequently repaired with her to her paternal seat at Coppet, on the Lake of Geneva. It was here he wrote, in 1807, his *Comparaison de la Phèdre d'Euripide, et de celle de Racine*, which produced a lively sensation in the salons of Paris. He is said to have had many friends and admirers in the French capital, despite his attack upon Racine, and his having called Molière a mountebank. In the spring of 1808 he visited Vienna, and there read before a brilliant audience his *Vorlesungen über Dramatische Kunst und Literatur*, 3 vols., Heidelberg, 1809-11, which were received throughout Europe with marked approbation. These lectures on dramatic art and literature are, with all their defects, unquestionably his most popular work. They were rendered into English by John Black, 3 vols., 8vo, London, 1840, reprinted in Bohn's "Standard Library," 1 vol. 1846. He was introduced about this time to the Crown Prince of Bavaria, who gratified the vanity of August Wilhelm Schlegel by bestowing upon him some marks of the royal favour. A new edition of his *Gedichte* appeared in 1811, among which are his "Arion," "Pygmalion," "Der Heilige Lucas," &c., which are said to be the best of his poetical efforts. He likewise took part in the *Deutsche Museum*, a publication issued by his brother Friedrich, and contributed to it some learned dissertations on the *Nibelungen Lied*. In 1812 he visited Stockholm together with De Staël, where he duly made the acquaintance of Bernadotte, Crown Prince of Sweden, who made him his secretary and counsellor. He continued to write political papers for Bernadotte till the taking of Paris, when he retired to the country-seat of Madame de Staël, with whom he remained till her death in 1818. He was ennobled about this time by the Crown Prince of Sweden, as an expression of his esteem for him during his residence in Stockholm. On the creation, in 1819, of the university of Bonn, August Von Schlegel was chosen professor of history, for what particular reason does not appear. He had never written anything historical, and if one may judge of his fitness for such a position from his ridiculous critique of Niebuhr's *Roman History* in 1828, one would be inclined to say he should have remained at Berlin or Vienna, where he could have had abundant means of enlightening the fair intellects of the elegant beauties which frequent those courtly cities. He added nothing to his reputation by his Bonn professorship. He married this year a daughter of Professor Paulus, a union which was destined to be as short-lived as had been his previous one with the daughter of Michaëlis. He now resolved to devote himself exclusively to the study of Sanscrit. With this view he established the printing-office at Bonn for the publication of that language. In 1820 he founded the *Indische Bibliothek* (2 vols., Bonn, 1820-26),

a review devoted exclusively to Indian languages and antiquities. Inferior to Bopp and Lassen as a Sanscrit scholar, he surpassed them in his general views, and contributed very considerably to the diffusion of a taste for the Indo-Persian languages. Indeed, it is mainly owing to his exertions in this department, and to his critical essays on æsthetics and poetry, that August Von Schlegel stands so high as he does in the esteem of his country. He published the *Ramâyana*, Bonn, 1825; and the *Bagavad-Gita*, an episode in the great Indian epos, *Mahabharata*, Bonn, 1829, which afford favourable specimens of his Sanscrit learning. He likewise visited France and England in pursuit of oriental manuscripts. On his return to Berlin he delivered a course of *Vorlesungen über Theorie und Geschichte der bildenden Kunst*, Berlin, 1827; and the following year he published his *Kritische Schriften*, Berlin, 1828. This same year he published an *Explication de quelques Mal-entendus*, in reply to an accusation which had been repeatedly preferred against him, of having a leaning towards Roman Catholicism. In 1832, he addressed to Sir James Mackintosh his *Reflexions sur l'Etude des Langues Asiatique*. After publishing, in 1842, his *Essais Littéraires et Historiques*, and after spending a long career of successful literary labour, August Von Schlegel died at Bonn on the 12th of May 1845. His printed works amounted to one hundred and twenty-six in all, and he bequeathed his unpublished manuscripts to Professor Welcker of Bonn, with a view to their publication.

August Schlegel, although possessed of a more lively imagination and greater powers of illustration than his brother Friedrich, was wanting in those solid critical faculties which gained for him his fame. He was a man of immoderate vanity, and possibly this natural defect may have qualified in an important manner the development of his critical faculties. With more brilliant talents than his brother, he earned for himself a less enduring reputation.

SCHLEGEL, *Friedrich Carl Wilhelm von*, an eminent German critic and philosophical writer, was born at Hanover in 1772, of a family which had already produced more than one writer of ability. He was the third son of the family, being three years younger than his distinguished brother, August Wilhelm. In his earlier years he is said to have displayed no remarkable genius. Though intended for the mercantile profession, he received an admirable classical education; and ultimately prevailed on his father to allow him to follow the bent of his own inclination, and to devote himself to literature. He then began to devote himself in earnest to study, which he pursued, first at Gottingen and afterwards at Leipzig. From the age of seventeen, as he himself informs us, the writings of the Greek tragedians, and of Plato, combined with Winkelmann's enthusiastic criticisms on art, formed the intellectual world in which he lived. This admiration for the antique was increased by a visit which he was enabled to pay to Dresden in 1789, where he was for the first time enabled to contemplate, in their marble forms, those gods, heroes, and sages, who had been the companions of his thoughts. As might be expected, his first literary effort, which appeared in 1794, took the direction of these his early studies. It was a short Essay on the different Schools of Greek Poetry, which appeared in the *Berlin Monatschrift*, displaying not only an erudition of considerable depth and extent, but an elegance of style and a clearness of classification less frequently to be found among his countrymen. Two little treatises followed, composed in 1795 and 1796—the *Diotema*, a view of the condition of the female sex in Greece; and a parallel between Cæsar and Alexander, which, however, was not published till twenty-six years afterwards. In this work we trace the first indications of that talent which was afterwards so conspicuously displayed in the field of philosophical and criti-

Schlegel.

Schlegel. cal history. A more important work, entitled the *Griechen und Römer*, appeared in 1797, which was highly praised by Heine. It was followed two or three years afterwards by a *History of Greek Poetry*, in which, taking Winkelman's *History of Art* as his model, he has thrown into criticism an imaginative and poetical tone, which combining as it did with profound learning and breadth of philosophical views, succeeded in bringing before the mind the true spirit of antiquity, with a freshness and distinctness of portraiture which mere erudition could not have effected. The work, however, is incomplete. In 1799 he published his *Lucinde*, a work, as Mrs Austin describes it, "of fancy, sentiment, and reflection;" in which, however, the very anti-platonic character of his descriptions of love occasioned not a little scandal and censure. In the year 1800 he established himself as a private teacher in Jena, where he delivered a course of philosophical lectures with success. His first poetical compositions, which appeared in the *Athenæum*, seem to have been the productions of this period. In 1801 he published, in conjunction with his brother, August W. Schlegel, two volumes, entitled *Characteristiken und Critiken*, one of the most popular and pleasing of his works. The second volume includes his "Hercules Musagetes," an elegiac poem of some length; and in 1802 he published a tragedy, *Alarcos*, in which he has tried, with no remarkable success, to impart the severe and gloomy simplicity of Æschylus to a legend of the middle ages. In fact, it is neither as a lyric nor as a dramatic poet that the name of F. Schlegel is likely to be remembered. Goethe, at least, always appeared to estimate the poetical talent of Schlegel at a low standard (*Characteristics of Goethe*, vol. i. p. 120). But the study of the poetry and literature of the west was near about to be exchanged for that of the eastern nations. Following in the footsteps of Sir William Jones, and filled with the idea of the important additions which might be made to Europe by naturalizing, in Germany, the results of Indian research, and of the still greater benefits which he conceived might be derived from the pursuit of Indian literature, philosophy, and antiquities, in an enlarged, philosophical, and at the same time religious spirit, he resolved to devote himself to the study of Sanscrit. He probably overrated, on the whole, both the importance of the labour in which he was about to engage and its probable interest to the public mind. With a view, however, to his intended investigations, he repaired to Paris in 1802, accompanied by his wife, the daughter of the celebrated Moses Mendelssohn, and, with the assistance afforded by the valuable stores of the National Library, and the hints derived from those distinguished orientalists, M.M. de Langlès and Chézy, he is said to have made considerable progress in the study of Persian and Sanscrit poetry. During his residence in Paris, which continued till 1805, he delivered a course of lectures on metaphysics, which met with but partial success. During the same period he wrote a variety of articles on the early Italian, Spanish, Portuguese, and Provençal poetry; and published, in 1804, a collection of the romantic poems of the middle ages, and a series of letters on the different schools and epochs of Christian painting and Gothic architecture, a work for which the temporary concentration of the various treasures of modern art in the Parisian capital afforded ample materials. These letters, which he afterwards revised and enlarged, form one of the most pleasing of his compositions. He takes up the subject nearly where Winkelman had left it, and performs, in the same spirit of love, the same service for the arts of the middle ages which that critic had done for those of antiquity.

It was at this period of F. Schlegel's life (1805) that he took the step of embracing Roman Catholicism, as Count Stolberg had done a few years before.

In 1808 appeared his work on the *Language and Wisdom of the Indians*. The first part of this work is occupied with a comparative examination of the etymology and grammatical structure of the Sanscrit, Persian, Greek, Roman, and German languages. The second traces the connection of the different religions and philosophical systems that prevailed in the ancient oriental world. The last consists of metrical versions from the sacred and didactic poems of the Hindus. It cannot be denied that this work, with all its learning and sagacity of conjecture, is yet a very imperfect one. The profounder learning of Jacob Grimm has demolished many of the ingenious theories of Schlegel as to the original monuments of the German language. Much, too, has of course been added to Indian learning since it appeared; many of its views have so completely passed into commonly-received opinions, that they have ceased to strike us as novelties; and other truths which are there only hinted at, have been elucidated and confirmed. But it had the merit of opening a comparatively new path in Germany, and perhaps in other countries of Europe. After Schlegel's return from France, he proceeded, in 1808, to Vienna, with the view, it is said, of completing from historical documents an unfinished drama on the subject of Charles V. In the following year he was appointed imperial secretary at the Archduke Charles's head-quarters, and contributed much, by his spirited proclamations, towards rousing the patriotic ardour of the country in the contest against Napoleon. After the unfortunate issue of the war, he resumed his literary activity, and in 1810 delivered his course of lectures on modern history. By many these lectures were considered as his masterpiece. They embodied in a systematic form the various opinions and incidental views which he had thrown out in his earlier essays, and contained, in a more detailed form, the proofs of many of those positions which he afterwards stated in a more brief and general form in his *Philosophy of History*. In 1812 Schlegel delivered, before a numerous and distinguished audience at Vienna, his celebrated *Lectures on the History of Literature*, the work by which he is best known beyond the limits of his own country. Of course a work which exhibits an outline of the literary history of the world, and traces the influence of its various literatures on one another, within the compass of two volumes, cannot descend to much minuteness of detail, or delineate, with that precision which would be desirable, the characteristics of individuals. The style of the work is elegant and enthusiastic without being extravagant. Yet some deductions must be made, both from the impartiality of the work and from the soundness of its views. It is difficult to conceive on what grounds of sound criticism the *Lusiad* of Camoens can be exalted above the *Jerusalem* of Tasso; and still more how the "romantic witchery" of the drama of Calderon, rich and fantastical as it is, can ever be placed on the same level with the profound imagination which combines with this romantic beauty in the theatre of Shakspeare. English literature, with the exception of Shakspeare, can hardly be said to be appreciated at all. French literature, at least after the time of Corneille, is treated with great injustice; Pascal is passed over with a single word; Malebranche is not mentioned at all. And indeed the literature of the seventeenth and eighteenth centuries is discussed in a very perfunctory and unsatisfactory manner. Some of the faults of the work are undoubtedly owing to the strong religious bias of the author. For the Catholic literature of Spain and Italy he shows an undue preference, with a corresponding coldness and indifference towards that of Protestant nations. "Friedrich Schlegel," says Heine, in his lively work on Germany, "has examined all literatures from a lofty point of view; but this high position of his is always on the belfry of the Catholic church; and whatever Schlegel says, you can't

Schleier-
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help hearing the bells jingle about him, and now and then the croaking of the ravens that haunt the old weathercock." With the *History of Literature* the critical career of F. Schlegel may be said to have closed; for a flattering and somewhat exaggerated criticism on Lamartine's *Méditations Poétiques*, which subsequently appeared in the *Concordia*, scarcely deserves to be noticed as an exception. From 1812 he was much occupied with political and diplomatic employments. Having acquired the friendship and confidence of Prince Metternich, he was employed by him in various diplomatic missions; and for several years after the peace of 1814 he was one of the representatives of the court of Vienna at Frankfurt. A pension, with letters of nobility, and the title of councillor-confessor were conferred upon him by the emperor. These diplomatic functions, of course, occasioned a temporary interruption to his literary pursuits; but in 1818 he returned to Vienna, where they were resumed with ardour.

In 1827 he delivered at Vienna another course of *Lectures on the Philosophy of Life*, of which, indeed, an outline had appeared in the *Concordia* for 1820. This work was almost immediately followed by another course of *Lectures on the Philosophy of History*, which have lately been translated into English, and which appear not unworthy of the reputation of the author. Towards the close of the year 1828 Schlegel went to Dresden, where he delivered nine *Lectures on the Philosophy of Language*, in which he farther developed and expanded those philosophical views which he had already laid down in his *Philosophy of Life*. The course, however, was interrupted by death, on the 11th of January 1829.

The genius of F. Schlegel was philosophical and critical, rather than poetical; but he had that species of poetical imagination without which there can be no lofty or useful criticism, which enables the critic to rise above artificial and natural peculiarities, and to judge with truth and certainty upon broad and universal principles. Even when his criticism is imperfect or erroneous, it is often valuable; for it abounds in new and original views, excites the mind to independent speculation, and teaches the habit of viewing literature, the arts, and philosophy, not as isolated subjects of study, but as acting and re-acting with the most important influences upon each other. From his powerful and inventive mind many of the speculations of his brother appear to have been derived. Translations of four volumes of F. Schlegel's works are included in Bohn's "Standard Library." (G. M.—R.)

SCHLEIERMACHER, FRIEDRICH DANIEL ERNST, a philosophic theologian of great eminence, was born at Breslau on the 21st of November 1768. He was the son of a poor army-chaplain in Silesia, who belonged to the reformed or Calvinistic communion; and hence he learned early the meaning of poverty and principle. The earliest instructions of young Schleiermacher was received from his mother, and he betrayed early great quickness and susceptibility. Removing from Pless, on the borders of Galicia, whither his family had gone to reside, and where he had the privilege of enjoying the instructions of a pupil of Ernestis, he was, at the age of fourteen, conducted to the educational establishment of the Moravians, at Niesky. He got through his term of years at this seminary of the United Brethren, with much profit, and no small questioning of the religious tenets taught him at this institution. Meanwhile, he remained lively, earnest, and thoughtful. At the age of seventeen he entered the theological seminary of the Herrnhüter, or Moravians, at Barby; and here he had to wrestle with his old doubts, grown tenfold stronger by reason of the keenness of his own vision. He cut his way through the narrow theological forms of the brotherhood; and proclaims to his father, that he has no chance of becoming a thorough theologian so long as he remains at

Schleier-
macher.

Barby. The army-chaplain, whose mind had never been perplexed with the dark phantom-forms conjured up by religious doubt, answered him in a stern, unsympathizing tone: "O you fool of a son, who has bewitched you that you obey not the truth," and so forth; in what, in another case, would be called a decidedly savage style. This rough upbraiding hurt the poor lad's heart, which was one of the gentlest and tenderest. His days at Barby must now be short, and his religious guides manifest a mournful solicitude for the youthful Schleiermacher, going forth in such wild weather, in such a frail bark as was his to sail in. He must go, however, let the sea rage as it may, and be the bark of what texture it may. Schleiermacher left the Herrnhüt communion in 1787, and entered the University of Halle, under the guardianship of his maternal uncle, the pastor Stubenrauch, who seems to have regarded his condition with more favour than had been shown by the army-chaplain. Here he studied with great distinction under Nösselt, Knapp, Eberhard, and Wolf. He paid great attention to philology and antiquities, as essential subordinates, in his estimation, to the study of theology, which was to be the study of his life. In May 1790, the young licentiate undertook a tutorship, till other work might turn up for him. He went to the residence of Count Dohna-Schlöbitten, of Finkenstein, in Prussia, where he spent three fruitful years in educating that nobleman's children. On his removal from Finkenstein, he was engaged for some time at Berlin, as an assistant teacher in the Friedrich-Werder Gymnasium. In the spring of 1794 he went to assist a clergyman at Landsberg on the Wartha, where he gained much distinction as a preacher. Two years afterwards he was brought back to Berlin, to occupy the pulpit of the Charité, the chief hospital in the Prussian capital. Schleiermacher's mind was here exposed to new and stimulating influences, by which his views were widened and his sympathies increased. With his purely ideal views of human life, he would find much to unlearn amid the mixture of rudeness and refinement which met his eye, wherever he turned, among high and low, in the busy life of Berlin. He would come to correct his sweeping contempt for conventionality, and would nourish his love of the society of cultivated men and women. He began his literary career by aiding Sack in his translation of Blair's *Sermons*; by translating Fawcett's *Sermons*, in 1798; and by contributing several papers for the *Athenæum*, a journal then conducted by the brothers Schlegel. His friendship for the younger Schlegel was formed in 1797, and Schleiermacher's questionable, though innocent, commendation of his novel, *Lucinde*, has rendered their connexion somewhat notorious.

In 1799, Schleiermacher's outward life began. In this year he published his *Discourses on Religion* (Reden über die Religion, an die Gebildeten unter ihren Verächtern), and let the German world know what was yet in store for them. These *Discourses* were very characteristic. They were a product of the personal development of the author up to the time of their publication. F. Schlegel pronounced them the first of their kind in the German language. They were full of energy and fervour, and the doctrines were set forth in a style which, while it reminded one of the recent studies of their author in Plato, Spinoza, Kant, Jacobi, and Fichte, they nevertheless exhibited an uncommon degree of individuality, and were set forth with a singularly brilliant eloquence. They are rather apologies for religion in general, than for Christianity; and they have been again and again accused, in more or less definite terms, of inculcating Pantheism. Certainly here and there he verges almost as close upon the doctrine as those who teach it in express language. But after the explanations which Schleiermacher has given of his more matured opinions, in the third edition of the *Discourses*, no one but the captious will be disposed

Schleier-
macher.

to father over upon the man the production of his youth. It will be seen that this book is essentially a somewhat crude production; which Schleiermacher could only have produced at the time he wrote it. It has a slight smack of *heathenism* about it; but still it possessed the much higher merit of setting forth, in no unmistakable terms, the bases, or essentials, of the theology which he was afterwards to erect upon its foundation. It was full of deep, wide-reaching thought, and was better calculated than all the works that had gone before it to fill the minds of the educated classes with a profound reverence for religion. These *Discourses*, with all their defects, marked a new era in theology; their influence is still fresh, and the impulse which they communicated to the study of theological doctrine and history has not yet been expended. In 1800 he published a profound work called *Monologen, eine Neujahrsgabe*. The Monologues were followed by *Briefe eines Predigers ausserhalb Berlin* (Letters of a Preacher residing out of Berlin), being a reply to a public letter addressed by certain Jews to Teller, the Protestant theologian. He likewise agreed this year to join F. Schlegel in translating Plato, but afterwards undertook the task himself. This German translation of Plato is esteemed by scholars to be the most correct that has appeared in any European language. He wrote at the same time valuable introductions to each of the dialogues which he translated (for he unfortunately did not finish them), displaying a much deeper acquaintance both with the language and the thoughts of his author, than was at all common in the most learned country in Europe. These introductions to the Dialogues of Plato have been rendered into English by Dobson. In 1801 he sent forth a valuable set of *Predigten*, or sermons, which were followed up in succeeding years by six other collections. These discourses were characterized by what was a marked feature in all his productions, a singular luminousness of thought and vividness of expression, such as could only arise from remarkable dialectical gifts, and an uncommon faculty of language. Hence Schleiermacher and the school of theologians which he originated, have been called "*Denkgläubigen*," in contradistinction to the old school of literalism and pietism which prevailed in Germany at the time he appeared. Schleiermacher removed to Stolpe as court-preacher in 1802, and here he meditated his work on *Morals*, which he published next year under the title of *Grundlinien einer Kritik der bisherigen Sittenlehre*, and wrote his *Zwei unvorgreifliche Gutachten in Sachen des Protestantischen Kirchenwesens*. He declined a call in 1804 from the University of Würzburg, at the request of the Prussian government, which appointed him to the chair of theology and philosophy at Halle. Schleiermacher was driven from Halle in 1806 by the violent political struggles of that year, and on his return to Berlin he bated no jot of high-hearted patriotism, but continued, both in the pulpit and out of it, to denounce in the most unmeasured terms the violent rapacity of their foreign oppressors. During these years he published *Die Weihnachtsfeier, ein Gespräch*, Halle, 1806; *Ueber den sogenannten ersten Brief des Paulus an den Timotheus*, Berlin, 1807; *Ueber Universitäten*, Berlin, 1808; and an Essay on Heracleitus for F. A. Wolf's *Museum der Alterthumswissenschaften*.

In 1809 he was chosen preacher at Trinity Church, Berlin, and next year he was appointed professor of theology in the new university of the same city. He was likewise attached to the Ministry of the Interior for the Department of Public instruction, and was chosen a member of the Academy of Sciences. He was no sooner appointed to his chair in Berlin, than the reforming spirit of his theology began to be felt. In 1811 appeared his *Kurze Darstellung des Theologischen Studiums* (Brief Outline of the Study of Theology), only a few sheets,

but pranked full of new thoughts. In this wonderful little treatise, which has been given to the English public by Farrer, Edinburgh, 1850, theology appears under a fresh and inviting aspect by the originality of the lecturer's method and the strength and force of his theological ideas. He divides theology into philosophical, historical, and practical. Under the philosophical head he includes the principles of apologetics and the principles of polemics; under the historical head, he includes exegetical theology, the past history and present condition of Christianity, dogmatic theology, and ecclesiastical statistics; under the practical portion, he includes the principles of church service and of church government. This is perhaps the most thorough distribution theology has ever received. And to the filling up of this brief outline he set himself with great energy. His lectures are described as something wonderful. To his vast sweep of thought, now ranging round the outposts of theological systems, and again darting upon the smallest detail and opening it up to the light, he united immense learning, not of the cumbrous bibliographical sort so peculiar to Germans, but of the living facts and principles of all times, combined with a grand faculty of utterance, which gave the most musical form to the most golden thoughts, holding his hearers in raptures while he spoke, and carrying them breathlessly away with him in his airy chariot of fire. No wonder that lectures like these still live although the speaker has been long silent. Schleiermacher was made secretary to the philosophical class in the academy, and was released from his connection with the Minister of Public Instruction. In 1817 he was chosen president of the synod of Berlin, and wrote his *Ueber die Schriften des Lukas, ein Kritischer Versuch*, Leipzig, 1817 (Critical Essay on the Writings of Luke), which has been translated into English in 1825, said to be by the Rev. Dr Connop Thirlwall, afterwards Bishop of St David's. Schleiermacher was engaged during these years in revising and editing afresh his former works; and in the course of the year 1817-18, he published a number of small polemical writings directed chiefly against Schmalz and Von Ammon. Although by the higher faculties of his nature he was kept free from degenerating into a mere controversialist, yet he relished immensely the occasional flagellation of a fat bishop or of a conceited "Prediger," which he did with approved elegance, spicing his drubbing with tart, attic salt, and letting his subject go just without killing him.

In 1821-22 Schleiermacher crowned his theological labours by the publication of his greatest work, viz., his *Darstellung des christlichen Glaubens nach den Grundsätzen der evangelischen Kirche* (Exhibition of the Christian Faith, according to the principles of the Evangelical Church). In this work we have all the characteristics of his earlier productions, mellowed by the light of a riper wisdom and a more matured Christianity. He gives a decided prominence from first to last to the positive character of the Christian system of belief, and has contributed in a high degree to give force to the genuine truth of the Christian faith. Twisten justly observes that "Schleiermacher, by conducting the science of dogmatics to the facts of the Christian consciousness, as its basis and its true object, secured faith itself against the assaults of a science which mistakes its own boundaries, as well as restored to the system of faith its own proper independence." The *Studien und Kritiken*, a genuine product of his spirit, was begun in 1828. In 1833, Schleiermacher visited England and opened the German chapel at the Savoy. He had not returned many months to Germany when he was seized with his last illness. His bodily constitution, which never had been strong, was now worn so much by the ceaseless activity which characterized him, that it became evident to his friends they

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must soon part with that gentle and loving heart which had heat so true amongst them. As he lay on his death-bed, he gave a short exhortation to the friends who were present to join him in celebrating the Lord's Supper, and after repeating the words, "Take, eat," &c., he said, "Upon those words of Scripture I abide; they are the foundation of my faith." He laid himself back upon his pillow, and in a few minutes he was taken away from among men. This was on the 12th of February 1834. His body lies interred at some distance from the city on its south side. A simple monument, with a marble bust executed by Rauch, marks the spot where one of Germany's greatest sons reposes. The whole of his works, published and unpublished, were issued after his death in 1835.

SCHLEITZ, the chief town and residence of the prince, but not the seat of the government of Reuss-Schleitz, on the Wiesenthal, 37 miles S.E. of Weimar. It contains an ancient church, with the vaults of the ducal and princely family, a normal seminary, and a Latin school. Woollen and cotton cloth, leather, and beer are manufactured here, and there is a considerable trade. Pop. 5000.

SCHLESWIG (Danish, *Slesvig*), a seaport of Denmark, capital of the duchy of the same name, at the head of the Schlei, a long narrow inlet of the Baltic, 23 miles N.W. of Kiel, and 70 N.N.W. of Hamburg. It has a beautiful situation, being almost surrounded by the water; and is neatly but irregularly built, mostly of brick. There are three distinct parts of the town,—*Altstadt*, called the Old town, the *Lollfuss*, and the *Freidricksberg*. Among the public buildings, the most remarkable is the cathedral, containing the monuments of many dukes and bishops of Schleswig, and an altar-screen beautifully carved in wood. The large and handsome old castle of Gottorp, once the ducal residence, stands on an island connected with the town by two dams. It is now used for barracks, and its park for an exercise-ground. East of the town stands the nunnery of St John, for noble ladies, the only one now remaining of the conventual establishments in the duchy. It possesses extensive lands in the vicinity. Schleswig has also a gymnasium, deaf and dumb hospital, lunatic asylum, and other benevolent institutions. Manufactures of sail-cloth, woollen cloth, lace, china, earthenware, leather, &c., are carried on here, and there is a considerable trade and navigation. The harbour has been improved, but is only accessible to small vessels. About 100 families, who live in a separate part of the town, are employed in fishing. Schleswig is a very old place, having been in existence as early as 808; and for nearly six centuries it was the chief commercial city in Denmark, and a member of the Hanseatic League. The deposits of mud that obstruct the mouth of the Schlei have been the chief cause of its decline. Pop. 11,600.

SCHLESWIG, or SLESWICK, DUCHY OF. See DENMARK.

SCHLÖZER, AUGUST LUDWIG VON, a German historian, was born, on the 5th of July 1737, at Jagstadt, in Hohenlohe-Kirchberg. He lost his father at a very early age, but the lad's education was not neglected. In 1751 he was sent to the University of Wittemberg, where he displayed a strong liking for oriental languages. He went to Göttingen to study theology, and, after continuing there for the next two years, he, in 1756, engaged himself as tutor to a Swedish family, and started forthwith for Stockholm. While engaged on this occupation he contrived to gain time for the writing of a *History of Commerce* in Swedish, which he published at Stockholm in 1758. Next year he returned to Göttingen, with the full intention of proceeding to Asia on a philological mission, an idea which he had long entertained. But in 1761 this grand design was overthrown by a proposal from Müller, historiographer to the Emperor of Russia, to become tutor in his family, and to assist him in his literary projects, with the prospect of a professorship in the academy of St Petersburg. The great progress of

Schlözer, or some other cause, roused the jealousy of his employer, and he pursued him, on his retiring from his tutorship, with the most virulent opposition. In 1764 he was offered a professorship in the University of Göttingen by the influence of his friend, J. D. Michaëlis. But Müller again appeared, and by his interference Schlözer was withheld from leaving the Russian capital. In 1765, despite the persevering insinuations of Müller, he was chosen professor of Russian history to the academy of St Petersburg. This situation he only held for two years, when, turning his back on Müller and the Russian capital, he proceeded to Göttingen, where he had just been elected to the chair of political science. Here a new field of activity opened up to him, and he worked in it with great energy and success for a long series of years. His works, published during this period, are written in a lively though somewhat coarse style, and they still attract a fair share of the attention of the reading public of Germany. His historical works include *Allgemeine Nordische Geschichte*, 2 vols., Halle, 1772; *Nestor's Chronik*, down to 980 A.D., Gött., 1802–9; *Weltgeschichte in Auszuge und Zusammenhange*, Gött., 1792–1802; *Vorbereitung zur Weltgeschichte für Kinder*, Gött., 5th ed. 1800. His political writings include his *Briefwechsel*, 10 vols., 1779–82; and his papers in the journal *Staatsanzeigen*, 18 vols., from 1782 till 1793. In 1804 he was raised to the rank of a nobleman by the Emperor of Russia, the father of Russian history "no longer standing in his way." He died on the 9th of September 1809. (See A. L. Von Schlözer's *Oeffentliches und Privatleben aus Originalurkunden*, by his son, Carl von Schlözer, 2 vols., Leipzig, 1828.)

SCHLÜSSELBURG, a town of European Russia, in the government and 21 miles E. of St Petersburg, at the point where the Neva issues from Lake Ladogo. It is partly built on an island, on which stands an old fortress, frequently used as a state-prison. The town is chiefly built of wood, and has manufactures of chintz and calico, and some trade with St Petersburg. Pop. 4000.

SCHMALKALDEN, a town of electoral Hesse, in the province and 34 miles E.N.E. of Fulda, among the Thuringian Mountains, at the confluence of the Schmalkalde and Stille. It is an ancient town, still encircled by its walls and moat, and containing antique wooden houses, with lofty carved gables. Their lower portions are almost all smiths' shops, as the inhabitants for the most part are of that occupation. The chief buildings are a large Gothic church and two castles. One of the inns is the place where the celebrated Schmalkaldic League was formed by the Protestant princes in 1531, and the house is shown where the articles were drawn up. There is also a town-hall, hospital, schools, &c. The chief productions of the place are iron, steel, and cutlery; for not only the town, but the whole valley may almost be considered as one great smithy. Pop. 5500.

SCHMÖLLN, a town of Saxe Altenburg, on the Sprotta, 7 miles S.W. of Altenburg. It is surrounded by walls; and contains two churches, weaving and spinning works, and manufactories of woollen cloth. Pop. 4049.

SCHMÖLNITZ, a town of Hungary, in the county of Zips, in a mountain-enclosed valley, 21 miles S.S.E. of Leutschan. It is a mining town, built of wood, and the seat of an imperial board of mines, and of a mint for copper coins. There is also a high school and an hospital. Silver and copper are the minerals obtained here. Pop. 4530.

SCHNEEBERG, a town of Saxony, in the circle of Zwickau, on a hill near the western Mulde, 20 miles S.S.W. of Chemnitz. It is well built, and has a Gothic church of the sixteenth century, said to be the largest in Saxony. In it is the masterpiece of the elder Cranach—an altar-piece representing the crucifixion, and other specimens of Protestant art. There are also a gymnasium and other schools, orphan hospital, &c., in the town. The inhabitants are for

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Schnorr
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the most part employed in mining; silver, cobalt, iron, and tin being the chief ores obtained. The total value of the minerals obtained in 1854 was L.2120. Various manufactures are carried on here, the principal of which are those of lace and chemical articles. Pop. 7452.

SCHNEIDEMÜHL, or PILA, a town of Prussia, province of Posen, in the circle and 52 miles W. of Bromberg, on the Küddow. It has a castle, two churches, and a synagogue. Manufactures of woollen cloth, lace, hosiery, hats, and leather, and some trade in cattle, are carried on here. Pop. 5474.

SCHNEIDER, JOHANN GOTTLÖB, an eminent German philologist and naturalist, was born on the 18th of January 1750, in the village of Kolm, in Saxony, whence the application of the epithet "Saxo," which he joined to his name on the title-page of his works. His father, who was a village mason, could do little to advance his prospects; but his uncle, who was in better circumstances, took him under his charge, and, after having prepared him for college, he sent him to the University of Leipzig to study law, at the age of eighteen. Ancient literature had more attractions for him than the pursuit of law, and he resolved to prosecute that study with untiring diligence. His first work was his *Anmerkungen über den Anacreon*, Leipzig, 1700; and it was followed up next year by *Periculum Criticum in Anthologiam Constantini Cephalæ*. Schneider left Leipzig for Göttingen, where he lived in great straits, till his engagement to assist Brunck, at Strasburg, with his edition of the Greek poets. Here he studied anatomy, botany, and zoology, and published works on Pindar and Plutarch in 1774 and 1775. In 1776 he was called to the chair of philology and eloquence in the University of Frankfurt-on-the-Oder. He continued with unabated zeal his inquiries into the natural history of the ancients, and omitted no opportunity of informing himself regarding his favourite science. He began his work in his new sphere by publishing *De Dubia Carminum Orphicorum Auctoritate et Vetustate*. He likewise edited Demetrius Phalereus, Ælian, Xenophon, Nicander, and Aristotle on the history of animals and on politics; Theophrastus, Orpheus' *Argonautica*, Æsop, Epicurus, and Oppian. He also wrote *Eclogæ Physica*, 2 vols. 8vo, 1801, which contained the most important parts of natural history known to the ancients. A complete list of his works may be seen in Meusel's *Gelehrtes Deutschland*; and in the *Biographie Universelle*, which contains a life of him by Cuvier and Schoell. On the death of Bredow in 1816, the office of chief librarian to the university (then removed to Breslau) was conferred on Schneider, who held it till his death in 1822.

SCHNORR VON KAROLSFELD, JULIUS, an eminent German painter, was born at Leipzig on the 26th of March 1794. His father, who was likewise a painter of some note, designed him for a different profession; but his strong attachment to art at an unusually early age induced the father to change his mind, and he was accordingly sent to study in the Academy of Painting at Vienna. Having shown considerable artistic ability at that institution, he proceeded to Rome in 1815, and attached himself to the school of young German artists, then on the ascendant in that ancient city of art. Schnorr was reckoned among the most promising of these artists, and he was chosen, with Cornelius and Overbeck, to paint the walls of the villa Massimo at Rome in fresco, with designs from the great Italian poets Dante, Ariosto, and Tasso. Schnorr had the good fortune to gain an introduction to Ludwig, afterwards King of Bavaria, who employed him to assist in decorating the great works on which he was then engaged at Munich. His first task was to paint a series of frescoes from the ancient German poem, the *Nibelungen Lied*, to adorn the state apartments of the new palace. This series of paintings occupy five chambers, each bearing the name of the

portion of the *Lied* depicted in it. There is the "Entrance Hall," the "Marriage Hall," the "Hall of Treachery," the "Hall of Revenge," and lastly, "the Hall of Lamentation." These paintings, all of which were executed by Schnorr and his pupils, attract great attention, and perhaps they are the most generally popular of all the great modern pictures in the galleries of Munich. He likewise, while these frescoes were in progress, was engaged upon that portion of the "Fest-Saalbau," devoted to an illustration of the history of Charlemagne, Frederick Barbarossa, and Rudolf of Hapsburg. He executed only the more important pictures in this series, the rest being painted by his pupils after his designs. They display, however, in their magnificent abundance, great technical skill and vigour of imagination; but they exhibit glaring defects of colouring and much redundancy of drapery. Schnorr had been appointed professor of historical painting in the Academy of the Fine Arts at Munich in 1827, and this situation he continued to fill till 1846, when he was chosen director of the Picture Gallery, and professor of the fine arts in Dresden. He died on the 13th April 1853.

SCHNURRER, CHRISTIAN FRIEDRICH, was born at Kanstadt, in Würtemberg, on the 28th of October 1742. He began his career as an academical teacher in 1762, at his native University of Tübingen. He subsequently visited Holland, England, and France, and on his return in 1775 he was elevated to the chair of philosophy in Tübingen. He likewise lectured on oriental languages, of which he had an accurate knowledge, was chosen ephorus of the theological faculty in 1777, and some years later he was made chancellor of the university. Schnurrer lost, however, his academical position by his freedom in criticising the proposed constitution of Würtemberg. He was a man of great learning, and wrote pretty extensively on historical and theological subjects, notwithstanding his numerous engagements. He took an active share in the *Tübinger Literarische Nachrichten*, and published a *Bibliotheca Arabica*, which evinced great acquaintance with his subject. His Life was written by Weber, Kanstadt, 1823.

SCHÖFFER, PETER. See PRINTING.

SCHOLIAST, or *Commentator*, a grammarian who writes *scholia*, that is, notes and glosses, upon ancient authors who have written in the learned languages.

SCHOLZ, JOHANN MATTHIAS AUGUST, a German philologist, was born at Kapsdorf, in Prussian Silesia, on 8th February 1794. He studied languages and theology at the Roman Catholic College of Breslau. He began his critical labours on the text of the New Testament, and visited Austria, England, France, Switzerland, and Italy, in quest of the necessary materials. His *Novum Testamentum Græce* appeared in 2 vols., in 1830-35. Having joined the expedition under Minutoli for the exploration of Egypt, the travellers subsequently disagreed and parted; but Scholz pursued his journey through Egypt, Palestine, and Syria, and published a selection from his diary in 1822. In 1823 he was chosen professor of theology at the University of Bonn. He published his *Handbuch of Biblical Archæology* in 1834, and died in 1852.

SCHOMBERG, FRIEDRICH ARMAND, DUKE OF, a distinguished officer, the son of Count Schomberg and a daughter of Lord Dudley, was born in 1612, but others, without any reason, adopt the year 1619. He began his military career under Frederick-Henry, Prince of Orange, and served successively under the courts of Sweden, the Netherlands, France, Portugal, Prussia, and England, with the greatest lustre. In France he was accounted second only to such men as Marshal Turenne and the Prince of Condé; and in the subsequent campaign with Spain, he humbled that country so much that it solicited a peace in 1668, and acknowledged the house of Braganza as the just heirs to the crown of Portugal. For this piece of distinguished

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Schools of
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service he received a pension of L.5000 from the kingdom of Portugal, with reversion of it to his heirs. In 1673, after an unsuccessful attempt to obtain command in England, he betook himself to the Netherlands, and subsequently to France. Involved in the persecution which ensued of the French Protestants, the old soldier was compelled by the Edict of Nantes to seek refuge elsewhere. After trying Portugal and Holland, he was chosen commander-in-chief of the forces of the elector of Brandenburg. He joined the prince of Orange on his expedition to England in 1688, and was made commander-in-chief of the English forces. The following year he was made baron, earl, marquis, and duke successively, and had the honour of L.100,000 voted to him by the English House of Commons. In the month of August, he was sent to Ireland to oppose the progress of the late King James II., who ranged the country with a force three times the strength of that possessed by the Duke of Schomberg. He accordingly posted himself at Dundalk, five or six miles from the hostile army, where he spent some six weeks in utter inaction, which lost him the half of his army. For this conduct he was severely blamed by some; but the subsequent battle of the Boyne, fought on the 1st July 1690, effectually wiped out any stain upon his previous conduct; but unfortunately it proved too late for the Duke of Schomberg. He was killed while gallantly leading a body of French Protestants across the river. Thus died a man who had done signal service to Protestant Europe during his long career, and who had the reputation, on his appointment to command the English forces, of being "the greatest living master of the art of war." (Macaulay's *History of England*, vol. iii., p. 195, 1858.)

SCHÖMBERG, or SCHONBERG, a town of Austria, Moravia, in the circle and 27 miles N.N.W. of Olmütz. It has a castle, belonging to the princes of Liechtenstein, to whose family, in 1621, the town and district was given by Ferdinand II. In the vicinity are iron-mines; and in the town, manufactories of cotton, linen, and needles; also bleach-fields, &c. Pop. 5388.

SCHOOLS. See NATIONAL EDUCATION and UNIVERSITIES.

SCHOOLS OF MUSIC. The establishments themselves, with their buildings and apparatus, their masters and pupils, are called conservatories or academies. In another sense, the term *school of music* is applied to the district or the country in which a particular style and manner of composition has been practised and taught by eminent musicians. Thus, we speak of the Flemish, the German, the French, the Italian schools of music. In Flanders arose the oldest school of music in Europe. The greatest contrapuntists of the fourteenth and fifteenth centuries were Flemings, many of whom visited or established themselves in various countries, more especially the Italian states, practising and teaching their art. Thus, the famous Flemish composer, Josquin Deprès, was established in the chapel of Pope Sixtus IV. from 1471 to 1481; and Adrian Willaert founded the Venetian school of music in 1527. After the close of the seventeenth century, Flanders ceased to possess a distinctive school of music. According to Padre Martini (*Saggio di Contrappunto Fugato*, parte 2^{da}, pagine 207-8), the Neapolitan school of music was founded by King Ferdinand of Arragon in the latter part of the fifteenth century. In the same work, page 194, Padre Martini reckons five great schools of music in Italy, subdivided into a great number of particular schools named after distinguished masters. 1. The Roman School of Palestrina, the two brothers Nanini, O. Benevoli, and F. Foggia. 2. The Venetian School of Adrian Willaert, Zarlino, and Lotti. 3. The Neapolitan School of Rodio, Scarlatti, Leo, and Durante. 4. The Lombard School of Porta, Monteverde, Ponzio, and Vecchi. 5. The Bolognese School of Rota, Giacobbi, Colonna, and Perti. To these last the name of

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Schott.

Martini himself should be added. Some writers divide the schools of Italy geographically into three, viz.—1. The School of Lower Italy (the Neapolitan), which is distinguished by variety of expression; 2. That of Middle Italy (the Roman and Bolognese), the character of which is purity and grandeur of style; 3. That of Upper Italy (the Venetian and Lombard), which was marked by its forcible colouring. In the last century there were at Naples four conservatories of music, which, in 1806, were all united into a royal academy of music. In 1818 the writer of this article found it in a very low and useless condition. At Venice, in 1819, he found that the only conservatory remaining (out of four existing in the last century) was that of La Pietà, under Signor Agostino Perotti, who said that it was starved by the Austrian government. At Bologna, in 1819, the musical academy was the Liceo, and Padre Mattei, the successor of P. Martini, was then old and feeble. At Milan, in 1819, the conservatory (founded in 1807) was thriving and well conducted. It is now the only important conservatory remaining in Italy. (See CONSERVATORY, MARTINI, and MATTEI.) (G. F. G.)

SCHÖNEBECK, a town of Prussia, in the province of Saxony, circle and 10 miles S.S.E. of Magdeburg, on the left bank of the Elbe, and on the railway between Magdeburg and Leipzig. It is an old town, and contains a brewery, distillery, paper-mills, and manufactories of white-lead and chemical substances. But it is chiefly remarkable for its salt-work, which is the largest in the kingdom, employing one thousand men, and yielding yearly about 672,000 cwt. of salt. Pop. 8526.

SCHÖNHAIDE, a town of Saxony, in the circle of Zwickau, among the Erz Mountains, 15 miles E. of Plauen. It has manufactories of nails, tin ware, brushes, lace, embroidery, &c. Pop. 4468.

SCHÖNLINDE, a market-town of Bohemia, in the circle and 36 miles N.N.E. of Leitmeritz. It has manufactories of linen, woollen, and cotton fabrics, stockings, and yarn; also bleach-fields; and in the vicinity there are stone-quarries and alum-mines. Pop. 4107.

SCHOOTEN, FRANCIS, a Dutch mathematician of some note, regarding the date of whose birth or life nothing almost is known. He must have flourished during the seventeenth century, for his death is known to have taken place in 1659. He was professor of mathematics at Leyden, and taught there, at an unusually early period, the algebra of Descartes and the infinitesimal calculus. He published, in 1646, a treatise on the conic sections; and in 1649 a Latin translation, coupled with a learned commentary on Descartes' Geometry. In 1651 were published his *Principia Matheseos*; and in 1657 his *Exercitationes Mathematicæ*, which contained some curious and interesting examples of the application of algebra to geometry.

SCHOTT, ANDREW, a learned Jesuit, was born at Antwerp on the 12th of September 1552. He studied philosophy at Louvain, and subsequently became teacher of rhetoric there, but the disturbances in the Low Countries obliged him to retire to Douay in 1577. Shortly after we find him in Paris assisting Busbecq in his literary pursuits. After spending nearly two years in the French capital, he went to Spain, and obtaining the intimacy of some persons of influence about the court of Philip II., he was made professor of Greek at Toledo, and afterwards was elevated to the chair of Greek and Rhetoric in Saragossa. Becoming a Jesuit in 1586, he taught theology for some time, until an invitation to Rome induced him to leave Spain. He was made professor of rhetoric in the Jesuits' college of the Italian capital, where, after remaining for three years, he obtained leave to proceed to his native town of Antwerp. Here he spent the rest of his days in literary engagements. He died on the 23d of January 1629. Schott, who is more celebrated for learning than genius,

Schrevelius was a man of simple manners and of an industrious life. He was greatly devoted to letters, and although a Jesuit, he esteemed it always an honour to be introduced to any man who had the character of being a scholar, without too nicely inquiring whether he was a Roman Catholic or a Protestant. His works amounted in all to forty-seven, of which the following are the most important:—*Laudatio funebris Ant. Augustini*, Archiep. Tarraconensis, Leyden, 4to, 1586; *Vitæ comparatæ Aristotelis ac Demosthenis*, Augsburg, 4to, 1603; *Hispania Illustrata*, Frankfurt, 4 vols., 1603–8; *Thesaurus*, from the best authors, Antwerp, 1607; *Hispaniæ Bibliotheca*, Frankfurt, 4to, 1608; *Adagia*, a collection of Greek proverbs, Antwerp, 1612; *Observationum Humanarum libri quinque*, Hanau, 1615; *Tabulæ rei nummaræ*, Antwerp, 1616. Schott likewise edited numerous ancient authors, such as Aurelius Victor, Pomponius Mela, Orosius, St Basilus, and Theophylactes.

SCHREVELIUS, CORNELIUS, a laborious Dutchman, who was born about 1615, and who has published some editions of the ancient classics, more distinguished for elegance than accuracy. His *Lexicon Manuale*, which is full of blunders, but which was a good book for its day, is esteemed the best of all his works. He died in 1667.

SCHUJA, a town of European Russia, capital of a circle in the government and 60 miles N.N.E. of Vladimir, on the Tesia, which is here crossed by two handsome bridges. It contains five churches, several schools, and an hospital. It is chiefly, however, as a manufacturing town that Schuja is remarkable; it had in 1855 no less than 65 manufactories, among which were 18 for weaving, 10 for calico-printing, 4 for tanning, &c. The total value of goods manufactured here in 1855 was about L.500,000. Schuja is thus the most important manufacturing town in Russia, and has been distinguished from a remote period for its industrial activity, and the intelligence of its inhabitants. Pop. 8414.

SCHULTENS, ALBERT, professor of Hebrew and of the oriental languages at Leyden, and one of the most learned men of the eighteenth century, was born at Groningen in 1680, where he studied till the year 1706, and thence continued his studies at Leyden and Utrecht. Schultens at length applied himself to the study of Arabic, both printed and in manuscript, in which he made great progress. A short time afterwards he became minister of Wassenaar; and in two years professor of oriental languages at Franeker. At length he was invited to Leyden, where he remained till his death in 1750. He wrote many learned works, the principal of which are—his *Commentarii* on Job, 2 vols., 1737; on the Proverbs, 1748; and his *Origines Hebraeæ*, 2 vols., 1724–38; *Vetus et regia Via Hebraizandi*, Leyden, 1738; *Animadversiones philologicæ et criticæ ad varia loca Veteris Testamenti*, 1769. Schultens discovered in all his works sound criticism and much learning. He maintained against Gousset and Driessen, that in order to have a perfect knowledge of Hebrew, it is necessary to join with it not only the Chaldaic and Syriac, but more particularly the Arabic.

SCHULTENS, Henry Albert (1749–1793), grandson of the learned orientalist, likewise attained to very considerable reputation in his grandsire's footsteps.

SCHULTZE, ERNST CONRAD FRIEDRICH, a young German poet of distinction, was born at Celle on the 22d of March 1789. Of a wayward enthusiastic character, he spent his school days in comparative idleness, reading only the chance volumes of romance and chivalry which came in his way. His conduct did not materially alter at the University of Göttingen, whether he was sent in 1806. He gained the notice of Bouterwek, who was struck by some college exercises given in by him; but to the rest of the professors he was in a measure unknown. He occupied his time while living at Göttingen in the composition of a

poem called *Psyche*, in which he caught the charming style of the poet Wieland. Always extravagant, he resolved to immortalize a youthful attachment which he had formed, the object of which had been removed by an early death, by writing a great poem. This composition, which he called *Cecilia*, after the name of the departed, abounds in passages of uncommon beauty and power; but its plan is wild and improbable, and it is altogether beyond the range of ordinary sympathy or of ordinary interest. A subsequent poem, *Die Bezauberte Rose* (The Enchanted Rose) obtained the prize held out by the publishers of *Urania* in 1818. This is unquestionably his best production. He fell a victim to consumption, and died at Celle on the 22d of June 1817, in his twenty-eighth year.

SCHUMACHER, HEINRICH CHRISTIAN, a Danish astronomer of distinction, was born at Bramstedt in Holstein, on the 3d of September 1780. Having early distinguished himself in mathematics and astronomy, he was chosen, at the age of thirty, professor extraordinary of astronomy at the University of Copenhagen. Called to the University of Mannheim in 1813, he returned two years later to Copenhagen, where he was appointed professor of astronomy and director of the university. He was employed by the Danish government in 1817 on the mathematical survey then in progress through their dominions, and received the superintendence, from the Royal Scientific Society of Copenhagen, of the survey and mapping of Holstein and Lauenburg. In 1824 he was engaged on fixing the measure of differences between the observatories of Greenwich and Altona. The king had, in 1821, built for Schumacher a very convenient observatory at Altona, where he resided till his death in December 28, 1850. He had commenced the publication in 1813 of the *Astronomische Nachrichten*, a journal which still exists, and which embraces the astronomical facts and discoveries of the whole world. A good example of his patience and correctness as an astronomer will be found in his *Astronomische Hülfsstafeln*, issued during the nine years previous to 1829. From 1836 he aided Bessel in editing the *Astronomischen Jahrbuchs*. Schumacher was a man who united genius with modesty, and liberality with courtesy. He was easy of access, and he never ceased to aid by his advice all who sought access to him to ask his counsel.

SCHWABACH, a town of Bavaria, in the circle of Middle Franconia, on a river of the same name, an affluent of the Regnitz, 10 miles S.W. of Nuremberg. It is a well-built old town, encircled by walls, and entered by four gates. In the market-place is a handsome fountain erected in 1716. The Gothic parish church is interesting, and contains some valuable old paintings. There are various other places of worship and schools, a town-hall, and several hospitals. Manufacturing industry is actively carried on, especially that of needles, of which it is the principal seat, not only in Germany, but probably in Europe. There are produced weekly 4,000,000 of ordinary needles, and 100,000 English darning, packing, and other needles. There are also made here hosiery, gold and silver lace, &c. This place is memorable in the history of the Lutheran Church. At Schwabach the earliest Protestant confession was drawn up by Luther in 1529. Pop. 7000, many of whom are Jews.

SCHWANTHALER, LUDWIG MICHAEL, an eminent German sculptor, descended from a family of Tyrolese artists, was born at Munich on the 26th of August 1802. Having early received a good education, he entered duly his father's studio to learn the family calling. His free notions of art are said to have disgusted the director of the Munich Academy of Fine Arts, who urged his friends to induce him to pursue some other profession, where his talents would not be likely to render him ridiculous. So much for the insight of academy directors. Schwanthaler, by his father's death in 1821, was compelled to forego the counsel of the Munich director, and to adhere to his father's

Schumacher
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Schwanthaler.

Schwarz. business for the support of his family. He shortly afterwards proceeded to Rome, where he derived much benefit from the friendship of Thorwaldsen. On his return he was employed, through the influence of Cornelius, to execute two extensive bassi-relievi friezes for the Glyptothek. He produced about this period a statue of Shakspeare for the theatre, and a basso-relievo frieze of the Apotheosis of Bacchus, for the palace of Duke Maximilian. He revisited Rome in 1832, to complete Rauch's design for the south pediment of the Walhalla, and to execute other commissions for King Ludwig's new palace. In 1835 he was chosen professor of sculpture to the academy of Munich; and from that period till the day of his death, he displayed uncommon industry and genius in the execution of designs for his art-loving patron, King Ludwig. The northern pediment of the Walhalla at Ratisbon contains a work of great sculptural merit from the chisel of Schwanthaler, called the Hermann-Schlacht, a fine rendering of old Teutonic history. He likewise executed various statues and caryatides for the Walhalla, and numerous cartoons and friezes for the Neue Königsbau, consisting of compositions from Æschylus, from Sophocles, from Aristophanes, and from Hesiod. He likewise ornamented many parts of the Fest-Staalbau, the Pinakothek, and the Neue-Kunststellungs-Gebäude, and the magnificent Ludwigs Kirche. For the latter he modelled statues of Christ and the four Evangelists, St Peter, and St Paul. He likewise erected numerous monumental statues for public and private purposes throughout the greater part of Germany, among which we may mention those of Mozart at Salzburg, of Goethe at Frankfurt, and of Jean Paul Friedrich Richter at Baireuth. But his greatest work, beyond all question, was his colossal statue of Bavaria, executed for his native city, representing a maiden crowned with an oak-garland, in the centre of the Bavarian Hall of Fame. This vast work was designed by Stiglmeier, and begun in 1844. It was inaugurated on the 9th of October 1850, nearly four years after Schwanthaler had died. This work is alike remarkable for its dimensions and its grandeur; and the artist seems to have lavished on it all the wealth of his mind. It was the last work on which he was occupied, and it will remain the most signal monument of his genius. He died on the 17th of November 1848, worn out by ill health and ceaseless industry. He bequeathed to the Academy of Fine Arts of Munich his studio and models. The Crystal Palace contains casts of the head of his "Bavaria," and of his "Shield of Hercules," besides various other products of Schwanthaler's skill.

SCHWARZ, CHRISTIAN FRIEDRICH, an eminent Protestant missionary, was born October 8, 1726, at Sonnenburg, a small town in the Electorate of Brandenburg. In his eighth year he entered the grammar school of his native place, and in a few years was removed to an academy of higher pretensions at Cüstrin. In 1746 he repaired to Halle, intending to become a pupil in the grammar school of the Orphan House, founded by Augustus Francke. But the missionary Schultz, who had recently returned from Madras, persuaded him to enter the university, where he attended the lectures of Michaelis and other professors of note, though still an inmate at the Orphan House. Schultz, who had been twenty years in India, was projecting an edition of the Tamil Bible, and prevailed on Schwarz to commence the study of that language, in order to assist him in bringing the translation through the press. His attention was thus directed to foreign missions, and at the suggestion of Professor Francke (son of the founder of the Orphan House) he formed the intention of devoting himself to this department of Christian labour. Before making his decision he visited Sonnenburg, to obtain his father's consent, which, after serious deliberation, was cordially granted. Schwarz gave a pledge of the disinterested spirit which animated his future course by renouncing his

share of his father's property in favour of his brothers and sisters. After spending some months at Halle he proceeded, August 8, 1749, to Copenhagen, for the purpose of receiving ordination in the Danish Church, to which the mission he was about to join belonged. In December he and two other missionaries repaired to England, with the twofold object of acquiring the English language and of obtaining the patronage of the Society for promoting Christian Knowledge, which had previously rendered important aid to the mission on the Coromandel coast. Early in 1750 they proceeded on their voyage, and arrived at Tranquebar July 30. Within four months from that time Schwarz preached his first sermon in the Tamil language. Though Tranquebar continued for some time to be his head-quarters, he paid frequent visits to Tanjore and Trichinopoly,—to the latter place he removed in 1766, and remained there about twelve years. He then left for Tanjore, where he spent the last twenty years of his life. At Trichinopoly he acted as chaplain to the garrison, and so great was his influence that they erected a church for his use capable of holding from 1500 to 2000 persons. The government of Madras allowed him a salary of L.100 per annum, which he devoted to the erection of a mission-house and school-room; and when these were completed, he applied one half of it to the relief of the poor. In 1769 he was introduced to the Rajah of Tanjore, who frequently held conversations with him on religious subjects, and though he never embraced Christianity, always countenanced Schwarz in his missionary labours. On one occasion he observed, "He makes out our gods to be downright demons. We must keep him here to instruct this foolish people." He would have made use of Schwarz's mediation with the English, but was opposed by the officers of his court. "Padre," he said, "I have confidence in you, because you are indifferent to money." Just before his death he committed to him the education of his adopted son and successor. Schwarz discharged his trust in a most effective manner, and succeeded in establishing the claims of the young prince to the throne, when the regent his uncle had attempted to set them aside. In 1779 he was called by the Madras government to undertake a private embassy to Hyder Ali. "Do not send me," said Hyder, "any of your agents, for I do not trust their words or treaties; but if you wish me to listen to your proposals, send me the missionary of whose character I have heard so much from every one: him I will receive and trust." The nabob answered all the questions put to him by Schwarz in a very straightforward manner, and on his leaving, after a stay of three months, presented him with 300 rupees to defray the expenses of his journey; but in accordance with his resolution "to keep his hands undefiled by any present," he appropriated the sum to founding an English orphan school at Tanjore. When Hyder invaded the Carnatic, the inhabitants were reduced to the greatest distress—on the one hand by the invader, on the other by the combined exactions of the English and their own ruler, and even the garrison at Tanjore was almost in a state of starvation. In this extremity Schwarz requested the cultivators of the surrounding districts to send in their cattle, simply pledging his word for their payment. In two or three days a thousand bullocks were thus obtained.

After labouring for nearly half a century in his self-denying vocation with an assiduity which places him in the first rank of modern missionaries, Schwarz died February 13, 1798, full of years and of honours. His direct success was perhaps greater than that of any other Protestant missionary in India; the converts from idolatry through his agency amounted to several thousands. The part he took in political transactions was evidently forced upon him, and prompted in no degree by worldly ambition. No man probably ever won such esteem and reverence from all parties,

Schwarz.

Schwarz-
burg.

though "he deprecated posthumous praise, and was in constant dread of fame." Mohammedans and Hindoos vied with his converts and countrymen in extolling his virtues and deploring his decease. The Rajah of Tanjore erected a monument, executed by Flaxman, in the mission church, in which he is represented as grasping the hand of the dying missionary, and receiving his benediction. The East India Company also sent out a splendid monument by Bacon, which was placed in St Mary's church at Madras. (*Memoirs of the Life and Correspondence of Schwarz, &c.*, by Hugh Pearson, D.D., 3d edit., Lond. 1839.) (J.E.R.)

SCHWARZBURG, a portion of Germany, geographically divided into a northern and a southern part; and politically into the two principalities of SCHWARZBURG-RUDOLSTADT and SCHWARZBURG-SONDERSHAUSEN. The northern portion, called the Lower County (*Unterrherrschaft*), lies close upon the valley called *Güldene Aue*, and is entirely surrounded by Prussia and Saxe-Coburg-Gotha; the southern or Upper County (*Oberherrschaft*) lies on the northern slope of the Thuringian Mountains, and is encircled by the Saxon duchies, having Weimar on the N., Altenburg on the E., Meiningen on the S.E. and S., and Gotha on the W. The country is divided between the principalities as follows:—

	Sq. miles.	Pop. 1855.	
Rudolstadt, upper county,.....	285	54,012	
„ lower do.	85	14,962	
	370		68,974
Sondershausen, lower county,.....	189	35,127	
„ upper do.	138	26,325	
	327		61,452
Total of both principalities,	697	130,426	

The lower county is traversed by a chain of hills called the Hainleite, stretching from the Harz to the Unstrut. They are well wooded, and at the highest part reach the height of 1419 feet above the sea. Here, also, is an isolated peak called Kyffhäuser, 1458 feet high. The principal heights in the upper county belong to the Thuringian chain, but no remarkable summits rise within the limits of the principality. The highest point is Wurzelberg, 2600 feet high. The surface of the whole is undulating, and the soil fertile, especially in the lower county. This portion, too, enjoys a milder climate than the upper county. Both counties are watered entirely by affluents of the Saale; which river itself forms for a short distance the boundary of the upper county. The Schwarz, Ilm, and Gera, in the upper county; the Wipper and Helbe, in the lower, are the chief rivers; the first two joining the Saale directly, and the others through its affluent, the Unstrut. Agriculture is well attended to; and the chief crops raised are corn, potatoes, and flax, which yield abundantly. The extensive forests also furnish a large amount of timber. Vines are grown in some places; and vegetables and fruit are plentiful. Horses, cattle, sheep, swine, and goats are reared, many of them of good breeds. Game abounds in the country, and fish in the rivers. The mineral riches of the land are great, and many of the inhabitants are employed in mining. Iron is the most important of the minerals; and of it Rudolstadt produces annually about 18,000 cwt., and Sondershausen, 9500 cwt. Salt is also obtained in the former principality, to the amount of 60,000 cwts. yearly. Alum, vitriol, cobalt, marble, gypsum, building-stone, porcelain earth, etc., are found here. The manufactures of the country are not very important. Rudolstadt, however, has one peculiar to itself; that of oils and medicinal substances, chiefly carried on in the village of Oberweissbach. Woollen and linen weaving, brewing, distilling, paper-making, and the preparation of pitch, tar, and lamp-black, employ many people in both principalities. A considerable export trade is carried on, chiefly in salt, timber, corn, and manufactured goods. Education is well attended

to in both principalities: each has numerous elementary schools and a normal seminary; while Rudolstadt has one, and Sondershausen two gymnasiums. The religion of the princes and majority of the people in both states is the Lutheran. In both the constitution is a limited monarchy, the executive power being in the hands of a prince, and the legislative residing in a diet; that for Rudolstadt consisting of sixteen, and that for Sondershausen of fifteen members. The public revenue of the former, according to the budget for 1858, was L.67,149; the expenditure, L.66,578. Of the latter, according to the budget for 1856-59, the revenue was L.80,167; and the expenditure L.79,127. In Sondershausen, in 1856, the debt of the country amounted to L.93,447; and that of the chamber of finance to L.139,056. Both principalities belong to the Germanic confederation; and the contingent furnished by Rudolstadt is 809, that furnished by Sondershausen, 676 men. The history of Schwarzburg is distinguished by no event of any great importance. The most illustrious of the princes was Gunther XXI., who was chosen emperor by a party among the electors, in opposition to Charles IV., in 1347, but who soon after withdrew his pretensions. The Counts, as they were called then, of Schwarzburg, were originally, and for a long time, vassals of Saxony, but in 1699 obtained, for a compensation, their independence from the needy monarch of that country. The two reigning families are descended from the two sons of Gunther XL., who died in 1552; that of Sondershausen from the elder, and that of Rudolstadt from the younger son.

SCHWAZ, a town of the Austrian empire, in the Tyrol, on the right bank of the Inn, sixteen miles E.N.E. of Innsbruck. It has a beautiful Gothic parish church, containing some interesting monuments; also an old Franciscan convent, and a curious tower known by the name of the Mint. Schwaz was formerly celebrated for its silver mines, which were worked in the fifteenth century, in partnership, by the Emperor Maximilian and the Fuggers of Augsburg, and yielded to the latter alone 200,000 florins (about L.22,000) annually. These mines are now exhausted; but iron and copper are still obtained here in abundance. Pop. 4628.

SCHWEDT, a town of Prussia, in the province of Brandenburg and circle of Potsdam, on the left bank of the Oder, 28 miles S.S.W. of Stettin. Its houses are in general well built, and its broad streets are partly lined with chestnut-trees. Here is a palace, with a garden, a riding-house, and a theatre attached to it. This was formerly the residence of the Counts of Brandenburg-Schwedt, a branch of the Brandenburg family that became extinct in 1759. Woollen and linen cloth, tobacco, and starch are made here. Many of the inhabitants are of French origin; for many emigrants settled here after the revocation of the Edict of Nantes. Pop. 7396.

SCHWEIDNITZ, a fortified town of Prussia, in the province of Silesia, on a hill near the left bank of the Weistritz, 29 miles S.W. of Breslau. It is entered by six gates, and has broad regular streets, and two large squares. Most of the houses are well built. The most important buildings are the council-hall and one of the Roman Catholic churches. The latter has a tower 327 feet high, the loftiest in the kingdom; and a beautiful view is obtained from its summit. There are also several other churches, an Ursuline convent, gymnasium, hospital, &c. Here are large barracks, public offices, and a court of law. An active trade is carried on; and there are breweries, distilleries, paper-mills, silk-mills, dye-works, tanneries, and manufactories of woollen and linen fabrics, hosiery, and hats. Schweidnitz is only 11 miles from the Bohemian frontier; and it has, in consequence, been frequently exposed to sieges. Several times during the Thirty Years' War was this its fate; and after being regularly fortified by Frederick

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the Great in 1747, it was taken by the Austrians in 1757, but recovered by Prussia in 1759. It was subsequently taken by the French in 1807, and its outer defences were then destroyed. It is now a second-rate fortress. Pop. 14,488.

SCHWEINFURT (anc. *Trajectus Suevorum*), a town of Bavaria, in the circle of Lower Franconia, on the right bank of the Main, 22 miles N.N.E. of Würzburg. It is an ancient place, still encircled by the old wall and ditch, and entered by two of the old gates. There are here a handsome town-hall, several churches, a gymnasium founded by Gustavus Adolphus, several other schools, and various benevolent institutions. The town has manufactures of woollen and linen goods, hosiery, leather, hardware, tobacco, brandy, &c. Pop. 7800.

SCHWELM, a town of Prussia, in the province of Westphalia, on the Schwelmbach, 35 miles W.S.W. of Arensburg. It has manufactures of linen, woollen, and cotton goods, iron, steel, and hardware, leather, &c.; and some trade in cattle. In the vicinity are medicinal springs. Pop. 4598.

SCHWERIN, a town of Germany, capital of the Grand Duchy of Mecklenburg-Schwerin, on the west side of the lake of Schwerin, 35 miles S.E. of Lübeck. It lies in a beautiful situation, on an irregular piece of ground, almost encircled by the lake and its branches, and by other small sheets of water; and where not surrounded by these, is defended by walls, which are pierced by seven gates. There are an old town and several more modern suburbs. On an island, in the lake of Schwerin, stands the old castle, built by Wallenstein in 1629. It is almost of royal size and magnificence, and has extensive gardens on the other side of the lake. Opposite the castle is a large public place, adorned with a bronze statue of the late grand-duke, Paul Frederick, and lined with the theatre, the grand ducal palace, and the college. The ducal picture gallery, in another part of the town, contains many fine paintings. The ancient cathedral is a fine specimen of the Gothic style, peculiar to the Baltic countries. It contains many interesting monuments. Among the public buildings of Schwerin, are another palace, a town-hall, council-houses for the old and new town respectively, several churches, a mint, and an arsenal. There are numerous schools, a large infirmary, and other benevolent institutions. Some manufactures, chiefly of brandy, vinegar, and tobacco, are carried on here. Pop. 20,723.

SCHWERIN, or **SCHWIERZINA**, a town of Prussia, in the province and 60 miles W.N.W. of Posen, at the confluence of the Obra and the Warthe. It consists of a town proper and a suburb; and besides Protestant and Roman Catholic churches, has also a synagogue. Weaving is extensively carried on here; also brewing and tanning. Pop. 5636.

SCHWIEBUS, a town of Prussia, in the province of Brandenburg, circle and 41 miles E. of Frankfort-on-the-Oder. It stands in a beautiful country, near the Schwemnie, and contains a castle and two churches. Important manufactures of cloth are carried on here. Pop. 5228.

SCHWYTZ, one of the cantons of Switzerland, bounded on the N. by those of Zurich and St Gallen, E. by that of Glarus, S. by those of Uri and Unterwalden, and W. by those of Luzern and Zug. Its northern boundary is formed by the Lake of Zurich and the River Linth; its southern boundary by the Lake of Luzern and a branch of the Alps called the Rosstock (between 6000 and 7000 feet high); and its western boundary by the Rigi (5676 feet), the lake of Zug, the Rossberg (5195 feet), and the ridge of Morgarten. On the east the canton has no natural limit. Area, 338 square miles. The whole of the surface is mountainous and rugged, being occupied by ridges of the Alps, and lofty valleys lying between them. The mountains that occupy the centre of the country consist of the western

branches of the lofty Alps of Glarus, which attain in that canton the height of 9528 feet, but gradually diminish towards the west, and nowhere within the limits of Schwytz reach so great an elevation. From the principal chain, stretching westwards near the south of the canton, several branches extend in a northerly direction to the lake of Zurich. In the valleys thus formed rise the upper waters of the Sihl, which flows north and joins the Lemmat below Zurich; and to the south of the main ridge lies the valley of the Muotta, which falls into the Lake of Luzern. The principal mountain-peaks, besides those already mentioned, are Mieseren, 6995 feet; Mythen, 5860 feet; and Rhone, 4026 feet. Schwytz enjoys a milder climate than many other parts of Switzerland, as its mountains are of less elevation, and nowhere rise above the snow line. But very little of the ground is fit for the plough; and this, like many of the other cantons, is almost entirely a pastoral country, raising on its wide mountain-pastures a large number of cattle and other live stock. The canton is estimated to contain 20,000 horned cattle, about 1000 horses, 6000 sheep, 7000 goats, and 6000 swine. There are some vineyards along the Lake of Zurich; and corn, potatoes, flax, and hemp, are raised in some places, but only to a small extent. The forests of the canton yield an abundant supply of valuable timber. Schwytz is very poor in minerals, and has only some stone-quarries. The manufactures of the country are very insignificant; weaving, cotton-spinning, and lace-making being almost the only branches carried on. The principal articles exported are cattle, horses, and other live stock, butter, cheese, and timber; while corn, wine, brandy, coffee, sugar, and manufactured articles are imported. The inhabitants are of German origin, and belong, with the exception of a very few Protestants, to the Roman Catholic Church. For the education of the people, there is a college at Schwytz, a clerical seminary at Einsiedeln, and numerous elementary schools throughout the country. The constitution is democratical; the legislative power is in the hands of a canton council of eighty-one members, elected by the people in thirteen districts; and the executive power is committed to a government council of seven members—a landamman or president, a vice-president, a treasurer, and four councillors, all appointed by the canton council. The legislative body exists for four years, but one-half of the members retire every two years. The general assembly (*landes gemeinde*) of all the citizens, that formerly met every two years, and had an important share in the legislature, was abolished in 1848, when the present constitution was adopted. The judicial establishment consists of a canton court of thirteen members, with as many supplementary ones, elected by the whole people in the assemblies of each of the six districts; and a criminal court of five judges, appointed by the canton council. Schwytz was one of the three original cantons that formed the confederation in 1308, against the Austrian power; and from its name the modern appellation of the entire country has been derived. See SWITZERLAND. Pop. (1850) 44,168.

SCHWYTZ, the capital of the above canton, is merely a small village in the valley of the Muotta, at the foot of Mythen, a two-peaked mountain, so called from its resemblance to a mitre, 3 miles from the Lake of Luzern and 24 S.S.E. of Zurich. It has a handsome parish church, a council-hall, and an arsenal, in which are the banners captured at Morgarten, as well as those that have been borne by the Schwytz troops on various other occasions. Pop. 5432.

SCIACCA, a seaport town of Sicily, in the province and 30 miles W.N.W. of Girgenti. It stands on the south coast of the island, occupying the slope of a hill, between steep cliffs; and is protected by a citadel, as well as by walls and bastions. The chief buildings in this somewhat mean-looking town are churches, convents, hospitals, and a college. In the vicinity are salt lagoons, sulphur mines, and

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hot sulphur springs. Some manufactures are carried on; but the chief occupation of the people is the taking and curing of sardines. There is a small harbour, and a good anchorage; but owing to the want of shelter, the trade, which consists chiefly in the export of corn and sardines, is only carried on in summer. Pop. 12,670.

SCICLI, a town of Sicily, in the province of Syracuse, on a river of the same name, 6 miles S.W. of Modica. It has a college and manufactories of cloth and leather. Pop. 9650.

SCIENCE (*Scientia*), in its strictest sense, is a body of organized knowledge, whose phenomena are arranged so as to exhibit the reasons or causes by which they are influenced, in their legitimate connection and interdependence. That science which deals with the succession of reason and consequent, is entitled an *abstract* science; while that which deals with causes and effects is called, for the most part, a *natural* or *physical* science. Those sciences which are supposed to be complete are called *exact* sciences, such as geometry. But the great majority of what are called sciences—that is, all those branches of knowledge in which discovery is possible—hardly deserve the name, being only a bundle of theories or of facts, bound together with more or less exactness, and which a fresh discovery may any day untie. Science not only sees, and sees with certainty, but the distinguishing characteristic of it is, that it *foresees*. Thus it is distinguished from *art*. It is distinguished again from *literature*, in so far as it is its business to discover and apply self-evident principles.

The various sciences will be found under their appropriate heads throughout the work.

SCILLY ISLANDS, a group belonging to England, and included in the county of Cornwall, about 30 miles W.S.W. of Land's End. N. Lat. (of the lighthouse on St Agnes) 49. 53.; W. Lon. 6. 20. The form of the group is nearly circular, about 30 miles round; and the number of islands is very great, but only six of them are inhabited. These are the following:—

	Acres.	Pop. (1851.)	Villages.
St Mary's.....	1600	1668	Hugh Town.
Tresco.....	700	416	Dolphin Town.
St Martins.....	550	211	Higher Town.
St Agnes.....	350	204	...
Bryher.....	300	118	...
Samson.....	80	10	...

Pop. of the whole (1851.)..... 2627

The sea around them is very deep, and they rise out of it with steep and rugged sides; but between the islands the water is much shallower, and some of them are connected by shallows, left entirely dry at low-water. Their geological structure is entirely granitic, with a mixture of quartz, felspar, and mica. The granite is, however, coarse and of little value. The scenery is exceedingly picturesque; and the climate milder and less variable than that of Cornwall; but the soil is in general barren, and, except in a few sheltered spots, no trees grow on the islands. Corn and potatoes are grown on St Mary's, and there is some pasture-ground on others; but the most of the inhabitants are sailors, pilots, or fishermen. It is generally thought that these islands are the Cassiterides or Tin islands of the ancients; but as no trace of that metal is found here, the extremity of the mainland was probably included under that name. They were sometimes used as a place of banishment by the Romans. The sea between them and the mainland is called Lethowsow, or the Lioness; and if we believe ancient tradition, there was formerly here a tract of slaty rock connecting the islands with the Land's End. This was that "sweet land of Lionnesse," where the knights of the Round Table fell around their lord, King Arthur, and where he was mysteriously carried away from mortal sight.

SCINDE. See SINDH.

SCIO, CHIO, or KHIO (anc. *Chios*), an island belonging to Asiatic Turkey, lying in the Grecian Archipelago, off the coast of Asia Minor, from which it is separated by the Strait of Scio, about 7 miles wide at the narrowest point. N. Lat. (of the capital) 38. 33.; E. Lon. 26. 1. Length from N. to S. 32 miles, greatest breadth 18; area, 508 square miles. The surface is rocky and uneven, being traversed by several limestone ridges, with rich and beautiful valleys between. It is, indeed, one of the most beautiful of all the Grecian islands; and is abundantly watered by many springs and rivulets, so as to preserve a constant verdure. As only a small portion of the soil is fit for the plough, corn is not raised to any great extent; but the ground is suitable to various other valuable crops. The wine of Chios was one of the most esteemed beverages of the ancient world, and is still held in some repute. In modern times, however, the chief production of the island has been gum mastic, obtained from the juice of a certain shrub. Figs, oranges, lemons, and other fruits, are also raised; and among its other productions are silk, cotton, oil, and wool. The only mineral of importance is marble, of which there is a quarry near the chief town. The chief articles imported into the island are corn, iron, tin, earthenware, and colonial produce. A considerable navigation is carried on, both in the foreign and coasting trade. The port, however, is so choked up with mud as to be difficult and dangerous of entrance. Hence few European vessels anchor here. Scio is connected by ancient tradition with the father of Greek poetry, "the blind old man of Scio's rocky isle;" it was one of the seven places that contended for the honour of having given him birth. Apart from this doubtful renown, the history of the island, both in ancient and modern times, has much interest. The original inhabitants are believed to have been Pelasgians, who came, according to one tradition, from Thessaly. Subsequently Ionian settlers established themselves here, but did not entirely expel the previous occupants. Chios thus became a member of the Ionian confederation of twelve states on the Asiatic islands and coast. Its insular position protected it against the Lydian, and for a time against the Persian power. But in the Ionian revolt, the Chians lent their assistance to their fellow-countrymen by furnishing ships to the fleet, which was totally defeated by the Persians off Miletus, 494 B.C. The conquerors in consequence landed on the island, and ravaged it with fire and sword. The battle of Mycale, in 479, liberated Chios from the Persian yoke, but only to become a dependency of Athens. To this power it remained faithful, till after the outbreak of the Peloponnesian war; but as that disastrous contest proceeded, and the fortune of war began to prove adverse to Athens, the Chians attempted to assert their liberty. They suffered several defeats from the Athenians, who laid waste the island, but could not conquer the capital. At a later period Chios was again subject to Athens, and again revolted, and seems to have maintained its independence for some time. It gave assistance to the Romans in their war with Antiochus, 190 B.C.; and afterwards, when allied with Mithridates, that monarch, suspecting the people of a bearing towards the Romans, sent a lieutenant, who carried the inhabitants away from the island, 86 B.C. They were restored by the Romans; and, in consideration of this calamity, the island was made a free state and an ally of Rome. Under the Roman empire the history of Chios presents no event of importance; but in subsequent times the place appears as the scene of as great calamities as before. Early in the fourteenth century, the Turks conquered the capital, and perpetrated a general massacre of its inhabitants; but from 1346 to 1566 Scio was held by the Genoese. In the latter year it was conquered by Solyman the Magnificent; and since that time, with the exception of a short period

Scioppius. when the Venetians possessed it, the island has belonged to the Ottoman empire. In 1822, during the Greek insurrection, a number of Samians landed in Scio, and persuaded or forced its peaceful inhabitants to rise against the Turks. They did not succeed in mastering the castle; and soon an army was landed from Asia, who renewed the ancient calamities of the island. The plunder and massacre that ensued were so unsparing, that in a short time only 2000 Christians were left out of a population of 110,000. Many traces of this disaster may yet be seen in Scio, but it is beginning to recover from its desolation, and the population is estimated at 62,000. The capital, called Khio or Castro, occupies the site of the ancient Chios, near the middle of the east coast. It is generally well built, in the Italian style, and has a castle and a harbour. Some remains of ancient buildings are still to be seen. Previous to 1822 the population was 30,000; it is now not half that number.

SCIOPIIUS, GASPAR, a learned German writer of the seventeenth century, was born at Neumark, in the Upper Palatinate, on the 27th of May 1576. He studied at the university with so much success, that at the age of sixteen he became an author, and published books, says Ferrari, which deserve to be admired by old men. But his disposition did not correspond with his genius. Naturally passionate and malevolent, he assaulted without mercy the characters of eminent men. He abjured the system of the Protestants, and became a Roman Catholic about the year 1599; but his character remained the same. He possessed all those qualities which fitted him for making a distinguished figure in the literary world—imagination, memory, profound learning, and invincible impudence. He was familiar with the terms of reproach in most languages. He was entirely ignorant of the manners of the world. He neither showed respect to his superiors nor did he behave with decency to his equals. He was possessed with a frenzy of an uncommon kind, being a perfect firebrand, scattering around him, as if for his amusement, the most atrocious calumnies. Joseph Scaliger, above all others, was the object of his satire. That learned man, having drawn up the history of his own family, and attempted to deduce its genealogy from princes, was severely attacked by Scioppius, who ridiculed his high pretensions. Scaliger, in his turn, wrote a book entitled the *Life and Parentage of Gaspar Scioppius*, in which he informs us that the father of Scioppius had been successively a grave-digger, a journeyman stationer, a hawker, a soldier, a miller, and a brewer of beer! These statements almost set Scioppius mad. He collected all the calumnies that had been thrown out against Scaliger, and formed them into a huge volume, to crush him at once. He treated James I., king of England, with great contempt, in his *Ecclesiasticus* and in his *Collyrium Regium Britanniae Regi* (that is, An Eye-salve for his Britannic Majesty). In one of his works he had the audacity to abuse Henry IV. of France in a most scurrilous manner, on which account his book was burned at Paris. He was hung in effigy in a farce which was represented before the king of England, but he gloried in his dishonour. Provoked with his insolence to their sovereign, the servants of the English ambassador assaulted him at Madrid and corrected him severely, but he boasted of the wounds he had received. He published more than thirty defamatory libels against the Jesuits; and what is surprising, in the place where he declaims with most virulence against that society, he subscribes his own name with expressions of devotion: "I, Gaspar Scioppius, already on the brink of the grave, and ready to appear before the tribunal of Jesus Christ, to give an account of my works." Towards the end of his life he employed himself in studying the Apocalypse, and affirmed that he had found the key to that mysterious book. He sent some of his expositions to

Cardinal Mazarin, but the cardinal did not find it convenient to read them.

Ferrari tells us that, during the last fourteen years of his life, Scioppius shut himself up in a small apartment, where he devoted himself solely to study. The same writer acquaints us that he could repeat the Scriptures almost entirely by heart; but his good qualities were eclipsed by his vices. For his love of slander, and the furious assaults which he made upon the most eminent men, he was called the Cerberus of literature. He accuses even Cicero of barbarisms and improprieties. He died on the 19th of November 1649, at the age of seventy-four, at Padua, the only retreat which remained to him from the multitude of enemies whom he had created. He was a man of prodigious learning, and of great acuteness. He had no equal in his knowledge of the Latin language, and he might have attained as great a reputation as his opponent, Joseph Scaliger, had his temper been a little better, and had he indulged less frequently in satire and general intolerance. He edited and wrote notes to a great many authors. One hundred and four works are ascribed to him, which discover great genius and learning. Many of his works were published under assumed names. The chief of his writings are *Verisimilium Libri* iv. 1596, in 8vo; *Commentarius de Arte Critica*, 1661, in 8vo; *De sua ad Catholicos Migratione*, 1660, in 8vo; *Notationes Criticae in Phaedrum, in Priapeia*, Patavii, 1664, in 8vo; *Suspectarum Sectionum Libri* v. 1664, in 8vo; *Classicum Belli Sacri*, 1619, in 4to; *Collyrium Regium*, 1611, in 8vo; *Grammatica Philosophica*, 1644, in 8vo; *Relatio ad Reges et Principes de Stratagematibus Societatis Jesu*, 1641, in 12mo.

SCIPIO (Lat. a staff), the name of an illustrious patrician family of Rome, of the gens Cornelia. It rose to great power in the Roman state, and to this family more than to any other Rome was indebted for her empire over the world. Of the thirty-six names usually given in connection with that distinguished house, unquestionably the most illustrious were Publius Cornelius Scipio Africanus Major, and Publius Cornelius Scipio Æmilianus Africanus Minor.

SCIPIO AFRICANUS MAJOR, *Publius Cornelius*, the son of Publius Cornelius Scipio, who fell in Spain, was probably the greatest man in Rome after Julius Cæsar. He was born B.C. 234, since he was twenty-four years of age when appointed to the command in Spain, B.C. 210. From his early youth he displayed an uncommon reverence for the worship of the gods; and his quiet but deep enthusiasm burned in him like a flame. Before engaging in any business he first went to the Capitol, and there, in the high retirement of his own soul, held converse with the unseen powers, who gave or withheld their approval of the project which he had in view. Those Romans who still held on by any vestige of faith in the old Roman religion, entertained his assertions, and stood in awe of his person. There germinated in this man, despite the scepticism of Polybius, a deep and strong faith in the permanence of religious ideas, and in the constancy of religious impressions, which in other circumstances would have led him into the wilderness as an ascetic, or would have endowed him with the rapt earnestness of a mystic. Scipio was born a hero, and not an impostor. The large enthusiasm of his nature found vent in rude military life, where, if it found much to check the vigour of its growth, met likewise with much which it could assimilate. By presenting to the vulgar minds of the soldiery a picture of rapt devotion and yet of stern command, he gained an influence over them which was quite extraordinary because quite irresistible. In the more immediate relations of generalship, what could resist the energy of that arm which, in its every blow, dealt desolation and death to the enemies of Rome and of the Roman gods? When this religious enthusiasm seized hold not only of the feel-

Scipio.

Scipio.

ings of a single man or his immediate attendants, but which animated an entire army with its assuring influence, where was the Carthaginian who could stand long before its power? where the Hispanian who would not speedily bow before it as before the march of doom?

At the age of seventeen he fought at the Ticinus (in 218 B.C.), and is there reported to have saved his father's life. As a tribune, he fought and survived the fatal battle of Cannæ, was made joint commander of the remains of the army with Appius Claudius at the age of nineteen, and by his youthful heroism brought light to his bewildered countrymen, and induced them to forego the silly project of resigning Italy in despair. He was chosen ædile ere he was twenty-four. He displayed his arrogant temper to the hesitating tribunes on that occasion in these words—"If all the Quirites wish to make me ædile, I am old enough." He lost his father and uncle in Spain in 211 B.C., and ere the year was out, when, in default of a more experienced general, he presented himself to the Roman people to command their army in Spain, he was received first of all with silent wonder, and lastly, gaining confidence by the picture of stern resolution presented to them in this young soldier, they chose him with shouts of acclamation. He arrived in Spain in the summer of 210 B.C. The whole country south of the Iberus was in the hands of the enemy. Scipio at once resolved to strike a deadly blow at the head of the Carthaginian power, by attacking New Carthage. His project was crowned with success. In the conquered city he found a great abundance of arms, corn, and other necessities. He retired to Tarraco, where he remained during the winter. Here, so great was the general enthusiasm of the people by the mildness, the courtesy, and the energy of the young Roman, that the Spanish tribes not only came over to his cause, but wished to make him their king. Next year he attacked Hasdrubal, in the valley of the Guadalquivir, and gained an almost incredible victory. It is said by the Roman writers that no less than 22,000 men were taken prisoners, and 8000 slain. In 207 B.C. Scipio gained, by a decisive victory, nearly the whole of Spain. He sheathed his sword, and trusted to the influence of humanity to win the rude inhabitants. They gathered round him, eager to kiss his garment, and all the native chiefs flocked in to offer their allegiance to omnipotent Rome. With the design of securing the co-operation of some of the native princes of Africa, Scipio crossed over into that country, accompanied by two quinquiremes. There he met his old foe, Hasdrubal, the son of Gisco, who had crossed over from Spain upon a similar errand. The Carthaginian, aided by the charms of a fair daughter, seems on this occasion to have outwitted the Roman commander. Scyphax, king of Numidia, received Sophonisba in marriage, and thus cemented the Carthaginian interest to his own. On his return to Spain, Scipio chastised severely the town of Illiturgi for having led on a revolt among his soldiers. He was seized with a severe illness. During the progress of his disease, 8000 of his own men broke out into open revolt. He suddenly rallied, and by his wonted dexterity at once allayed the fury of the soldiery. Scipio, whose presence was now no longer needed, returned to Rome in 206 B.C., leaving the pro-consuls masters of the army and of Spain. He had hardly returned to Rome when he became a candidate for the consulship, and had the honour to be chosen, though considerably under the legal age. It now became apparent that if Hannibal was to be removed at all from Italy, it should be performed by a diversion against the Carthaginians on their own soil. No man was capable of effecting this save the youthful hero who had first asserted the prowess of the Roman arms in Spain. This Scipio clearly foresaw; but the older senators, and especially Q. Fabius Maximus, who was prompted by a meagre jealousy,

sought stealthily to thwart. After their various wiles had been burst through, this splendid youth, with his passion for Greek art and Greek literature, showed his suspicious rivals that he knew as well how to train an army as how to conduct it in the field. Commissioners of inquiry had been summoned from Rome to the head-quarters of the army in Sicily, but the enthusiasm of the volunteers and the skill of the commander astounded these officials, and they went back only to tell the senate that they had commanded Scipio to march against Carthage. Sailing from Lilybæum in 204 B.C., he landed near Utica with a force variously estimated at 12,200 and at 35,000 men. Masinissa, whose friendship he had made in Spain, now stood him in good stead. With the assistance of this prince, Scipio almost annihilated the joint forces of Hasdrubal and Scyphax. (See MASINISSA.) These disasters induced the Carthaginians to recall Hannibal and Mago from Italy. An armistice was accordingly struck, and the Roman army lay impatient before the walls of Carthage. The presence of their renowned general gave confidence to the Carthaginians, but Hannibal knew too well the army and the general he had to contend with, to be rash in his projects. Both generals, in truth, were anxious for a solid peace, but a solid peace on advantageous terms was what Scipio was quite unwilling to grant, and short of which the pride of Hannibal would not deign to stoop. The bloody battle of Naraga, near Zama, fought on the 19th of October 202 B.C., settled the contest in favour of the Romans, and Scipio returned to Rome in triumph 201 B.C. The populace manifested extraordinary enthusiasm, and sought to gratify it by quite extraordinary means. They bestowed upon him the surname of *Africanus*, and wished to make him consul and dictator for life. They wished to erect his statue in the comitia. They would set it up in the rostra and the curia, and even went so far as to wish his enthronement in the Capitol. Scipio prudently declined those invidious honours; and to shun the suspicion of the senate, he withdrew into dignified retirement. Coming once more before the public, he was chosen censor and consul the second time. In 190 B.C. the censors re-elected him *princeps senatus*, and during the same year he chose to accompany his brother Lucius to Greece, to serve under him as *legatus*. Returning to Rome in 189 B.C., on the conclusion of the war with Antiochus, the mean jealousy of the senate gave him fresh cause for alarm. The glory of the victory of Zama had now grown dim, the pride of the great general probably did not abate, and the Roman senate, with their paltry suspicions, could not brook the infringement of a jot of their dignity. They opened a prosecution against Scipio's brother, Lucius, but really directed against Africanus himself. This being successful, the enemies of the Scipios were emboldened to charge the great African. At his trial he descanted much on his signal services to the commonwealth, but did not deign to notice the charges brought against him by his foes. Night came, and the great culprit still continued to speak. The trial was adjourned till next day, and Africanus, on being summoned to appear, proudly reminded his judges and the people of Rome that this day was the anniversary of the battle of Zama. He adjured them in the same haughty terms to follow him to the Capitol, and return thanks to the immortal gods for the safety of Rome, and to pray them to grant in time coming other citizens like Scipio Africanus. The crowded assembly listened with breathless attention: he smote a chord which vibrated through every Roman heart: their veneration for Scipio returned; and he was followed to the Capitol with shouts which shook the stones of Rome. The haughty soldier quitted Rome never to return. He withdrew to Liternum, where he passed the remainder of his days in the peaceful cultivation of his estate. The year of his death is variously given by Polybius and Rutilius as 183 B.C., the same year as his great rival, Hannibal. By Livy and Cicero

Scipio.

Scipio. it is ascribed to 185 B.C., and by Valerius of Antium to 187 B.C. In compliance with his own command, his bones were buried at Linternum, where his tomb was shown in the time of Livy. Thus died one of the greatest men and most distinguished generals which Rome had known; and beside the pedestal occupied by Hannibal in the Temple of Fame stands the statue of his conqueror, Scipio Africanus.

SCIPIO ÆMILIANUS AFRICANUS MINOR, *Publius Cornelius*, was the son of Æmilius Paulus, conqueror of Macedonia, and was adopted by Scipio, son of the elder Africanus, whose mother was a sister of L. Æmilius Paulus. He was born in 185 B.C., and while still a youth he accompanied his father to Greece, and fought under him at the battle of Pydna, B.C. 168. It was in Greece, most probably, he became acquainted with the historian Polybius, who, on coming to Rome, directed his literary studies, and introduced him to the art and the literature of Greece. Polybius accompanied him in all his campaigns, and disclosed to him during the leisure hours of his military duties, the treasures of Grecian thought and the wealth of Grecian learning. Nor did Scipio the younger neglect the literature or the manners of Rome, while he eagerly pursued those of her great eastern rival. He was a friend of the poets Lucilius and Terence; and his affection for the younger Laelius was as remarkable as that of Africanus for the elder Laelius, and has been immortalized by Cicero in his *Laelius sive de Amicitia*. Like the elder Scipio, he cultivated Greek letters, and understood the elegancies of Greek taste, without setting aside the stern Roman virtues, or emasculating his mind by the warm blandishments of a more refined civilization. The younger Scipio began his public career in 151 B.C., by coming forward when it was quite the fashion to stand back, and offering himself to serve in dreaded Spain in whatever capacity the consuls might choose to employ him. He was appointed military tribune, under the consulship of Lucullus, and gave signal proofs of his personal courage during the adventures of this Spanish campaign. He slew in single strife a Spanish giant of great strength, and was the first to mount the walls at the storming of Intercatia. His courage and his integrity reminded the barbarians of him whose name he bore, and he awakened an enthusiasm in the breasts of the rude savages, equalled only by that paid to his grandfather Africanus.

On the breaking out of the third Punic War in 149 B.C., Scipio was called to Africa, which he had already visited, under Lucullus, for a supply of elephants. Here he repaired the blunders of the consul Manilius, gained the confidence of Masinissa, and what he probably valued more than any of the more noisy demonstrations, the "stern" Cato said of him, in the words of Homer (Od. x., 495), "He alone has wisdom, the rest are empty shadows." On Scipio's withdrawal from Africa, when Piso took the command, he was followed to Rome by the wishes of the soldiery, that he might become their commander. To this dignity he was raised sooner perhaps than he expected. In 147 B.C. he was chosen consul, though not yet of the legal age, and was assigned Africa, the most difficult province of Rome, to govern. The details of the third Punic War will be found in the article ROMAN HISTORY, where will be found recorded the bloody capture of the splendid African city. The Carthaginians defended their city till the spring of 146 B.C., when they could no longer withstand the stern energy of the Roman legions. They advanced with thundering tramp, and at every street, and at every house of Carthage, they found the bloodiest work to do. The sight moved the Roman general to tears, and he is said to have given scope to his feelings in the almost prophetic words of Homer, recorded in the well-known lines of the Iliad (vi. 448)—

"Εσσεταί ἡμας, ὅτ' ἂν ποτ' ἐλώλη' Ἰλίου ἱερή,
Καὶ Πρίamos καὶ λαὸς ἑνὸς μάλιν Πριάμοιο.

The victor returned to Rome, where he was welcomed with a splendid triumph, and he now won the surname of *Africanus*, which he had only before received by inheritance from the conqueror of Hannibal. In no long time the ungrateful Romans had him brought to his trial before the tribune of the plebs, on the charge of *majestas*, or of contemning the sovereignty of the people. Scipio was acquitted, and the speech delivered by him on this occasion was long considered a masterpiece. He strove to check the Roman appetite for foreign conquest, and showed a high contempt for the pomp and luxury indulged in by his contemporaries. He was chosen consul in 134 B.C., and was assigned the province of Spain, which had long been considered invincible by any but a Scipio. After spending some time in remodelling the discipline of the army, he laid siege to Numantia, which displayed a most heroic resistance. (See NUMANTIA.) The taking of this town gained for him the surname of *Numantinus*. During his absence in Spain, his brother-in-law, Tiberius Gracchus, was suddenly put to death. Scipio did not, however, sympathise with his reforms, and is said to have exclaimed, on hearing of his death, in the words of Homer (Od. i., 47), "So perish all who do the like again." Scipio did not disguise his sentiments even on his return to Rome, and "down with the tyrant," was soon heard from the fickle mob who not long before had hailed him as the liberator of Rome. This flame was fanned by C. Papirius Carbo, the tribune, who could not tolerate the shadow of his presence, with his thirst for Greek letters and for Greek philosophy, and what was still more offensive, by his fondness for public display. Scipio was in truth a sort of Roman Tory, strongly addicted to letters, which he cultivated with great success, much given to military display, which bordered on parade, and earnestly opposed to nearly all popular measures. He paid too dear a price for his peculiarities. Returning home from the senate-house, he retired to his study, to compose a speech in his own defence against the following day. Next morning the cry went through Rome that Scipio Africanus Numantinus was dead, B.C. 129. The general opinion was that he was murdered, but by whose hand never was known. Popular suspicion generally rested on the tribune, Papirius Carbo; and he is expressly alluded to as the murderer by Cicero.

The few fragments of the speeches of Scipio the younger have been collected by Meyer in *Orat. Roman. Fragm.* pp. 176–193. His character has been drawn in very pleasing colours by Cicero, in his *Republica*. His life and death have been noticed with ability by Nitzsch, Scheu, Gerlach, and Zimmerman.

A good account of the Scipio family is given in the *Real-Encyclopädie der classischen Alterthumswissenschaft*. The Scipios, as was usual among Roman families of distinction, possessed a burial-place used for family purposes. This tomb was discovered in 1780, near the Porta Capena, and adds a very interesting detail to the collection of discoveries relating to the republican period of Rome. A full account of the tomb is given by Visconti in his *Monumenti degli Scipioni*, and the inscriptions are given by Orelli.

SLAVONIA. See SLAVONIA.

SCONE, a village of Scotland, in the county and 2 miles N.E. of Perth, on the left bank of the Tay. It is neatly built, and inhabited chiefly by weavers. Scone palace, the seat of the Earl of Mansfield, is a modern castellated building, on the site of the ancient royal palace, where the Scottish monarchs were crowned. The celebrated stone, on which the ceremony used to be performed, is now in Westminster Abbey, and forms part of the coronation chair. Of the old abbey of Scone only a single aisle now remains. Pop. of village, 1439; of parish, 2381.

SCOPAS, a distinguished sculptor of the later Attic school, was a native of Paros, where he was born during

Scalavonia
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Scopas.

Score.

the first half of the fourth century B.C. Pliny places him with Polycleitus, Phradmon, Myron, Pythagoras, and Perelios, 420 B.C., but this cannot possibly be accurate. (See Sillig. *Cat. Art.*) He was probably somewhat older than Praxiteles, with whom he left the fruits of his handiwork on the Mausoleum at Halicarnassus. The period during which he flourished must have been from 395 B.C. to 350 B.C. Nothing is known with certainty regarding the life of the artist, except what one can gather from the fragmentary remains of his works still extant. He was not only a sculptor, he was likewise an architect and statuary. His chief performances are the Niobe group, the Budrum marbles, and various statues chiefly of the gods of Greece. The architectural works of Scopas are very justly celebrated. He built the temple of Athena Alea, at Tegea, in Arcadia, which was accounted the most magnificent building in the Peloponnesus. Scopas likewise decorated the building with the products of his chisel, of which the most celebrated designs were the chase of the Calydonian boar and the battle of Telephus with Achilles. (Pansanias, viii. 45.) This artist was likewise supposed to be the architect of the temple of Artemis, but the critical investigations of Sillig have thrown much doubt on this hypothesis. There is more certainty as to the part taken by Scopas in the decoration of the famed sepulchre of the king of Caria at Halicarnassus, or the modern *Budrum*. The eastern front seems to have been executed by this artist, and the other portions by different workmen. (See MAUSOLEUM.) He executed statues from the mythology of Aprodite, of Dionysius, of Apollo, and of Artemis. But the most esteemed work ascribed to Scopas is the celebrated group of the destruction of the sons and daughters of Niobe. It is a disputed point whether we owe this glorious production of Greek art to the genius of Scopas or of Praxiteles. Winckelmann ascribed it to Scopas, and perhaps the most celebrated description of it is by the late German philosopher, Schelling. Besides the statues to other divinities, Scopas is said to have executed a famous group of Achilles conducted to the island of Leuce by the divinities of the sea. Pliny, on whose authority this work is cited, esteemed it the best of all the productions of Scopas. Very few facts can be ascertained entirely beyond dispute regarding this artist's labours.

SCORE, or PARTITION, in *Music*. Either of these terms means that written or printed arrangement of different parts for voices or instruments, or for both, by which the structure of any piece of music, consisting of a number of such parts, is brought successively under the eye, measure after measure, so as to enable the student of composition to study the work, or the conductor of an orchestra to accompany the whole suitably on the pianoforte or organ, or instantly to perceive and correct errors in the performance, especially during rehearsals. In a score or partition, all the staves required in any given page for the different parts should be marked with their proper clefs, &c., and, on the left margin, with the names of the different voices or instruments, and then braced together at the left side, while at every bar of the measure a straight line is drawn down the page, from the top of the highest staff to the bottom of the lowest. For the sake of perspicuity, in every partition the same number of staves ought to be used from beginning to end on every page, even where many bars of rests occur in this or that part; and also the clefs, &c., ought to be marked on every page, as well as the names of the different voices or instruments. The general neglect of these simple precautions renders many partitions extremely confused and perplexing to their readers. In the article *MUSIC*, we have used the word *partition* in preference to the word *score*, for various reasons; and especially as we had already the word *partition* used in the sixteenth century by an English writer of

eminent musical authority, in the very sense in which we employ it. Thomas Morley, in his *Plaine and easie Introduction to Practicall Musicke*, edition of 1597, page 34, has stamped the word *partition* as an English musical term. He says, "and to the ende that you may the more easily understand the contriving of the parts, and their proportion one to another, I have set it downe in *partition*." (G. F. G.)

SCORESBY, WILLIAM, D.D., an eminent explorer of the Arctic regions, the third child of William and L. Mary Scoresby, was born at Cropton, near Pickering, in the county of York, on the 5th of October 1789. He was a delicate, bashful child; was early impressed with a sacred regard to truth, and of the importance of religious duties, qualities which remained with him during life. In 1802 he was for several months sent to school under the care of Mr Stock, in the neighbourhood of Blackwall, where he was instructed in the elements of English grammar, writing, and arithmetic; but the effect of intense application was too much for a delicate constitution. His studies commenced at five in the morning, and continued until the same hour in the evening, with the usual intervals for meals; but besides these lessons, he wrote various exercises at home, and attended occasional lectures of his master on some branches of science in the evenings. There, too, he obtained his first lessons in theoretic navigation.

His inclination for a seaman's life led him, in 1800, to conceal himself in his father's ship, setting out on a Greenland voyage, until the pilot-boat had left the vessel. He was therefore equipped as an apprentice, and adopted the life of a seaman, in which he made such proficiency that, when sixteen years of age, he was advanced to the office of chief mate of the ship. During the intervals of his different Greenland voyages, he studied assiduously, at the school of Mr Routh in Whitby, algebra, geometry, and the application of mathematics to navigation and marine surveying. In these branches he soon found the explanations of his masters (from their want of practical application) neither quite satisfactory nor always intelligible, and his full attainment of these branches was the result of his private studies. He stated that he might have attained some proficiency in Latin from his able master had he had taste for more than the mere elements of that language.

In the winter of 1806 he repaired to Edinburgh, and attended some of the classes in the university; but his profession again recalled him to Whitby in March 1807.

On returning from the Greenland voyage in 1807, he volunteered his services to assist in bringing the Danish fleet to Britain, and for this purpose he sailed from Leith to Copenhagen. He was thus employed three months; for this the government remuneration was the trifling sum of L.11, 19s. 2d., including bounty, wages, and travelling expenses! His own account of this incident in his life is thus stated:—"Thus ended an adventurous and trying voyage—a voyage in which I voluntarily submitted to every service and privation of the commonest sailor, though from being furnished with introductory letters from naval officers of some consideration, I might probably have fared better had I made use of them; but I wished to take my chance in the ordinary way, that I might have better opportunity, by personal experience, of learning the discipline of the navy, and the duties expected from a seaman in that service." In that same year he was introduced to Sir Joseph Banks, of whom he soon became a frequent correspondent.

In 1809 Scoresby made his first assay as harpooner in his father's ship, while still acting as chief mate. On his return he again became a student in the University of Edinburgh, and attended the course of natural history of Professor Jameson, with whom he became intimately

Scoresby.

Scoresby. acquainted; and he furnished valuable papers to the Wernerian society on the Greenland ice, the meteorology of those regions, and on the Greenland whale.

On the 5th of October 1810, his twenty-first birthday, Mr Scoresby was appointed to the command of the *Resolution*, Greenlandman, and sailed in her on the following March. His success in this voyage was remarkable, for he captured 30 whales, which yielded 220 tons of oil, the largest quantity that had then been brought to Whitby by a single vessel. The influence of his religious education, and his mature reflections on this important subject now became conspicuous. He did all in his power to promote religious feeling among his crew, called them regularly on Sunday to Divine service, and abstained from pursuing the whale on that day.

On the 25th of September 1811, Mr Scoresby married Miss Mary Eliza Lockwood. Their first child, William, was born in April 1812. In this year he resigned the command of the *Resolution*, and was appointed to the *Esk* of Whitby.

In 1813 he made his first series of experiments on the temperature of the ocean at considerable depths, of which an interesting account is given in his capital work, *The Arctic Regions*. In this voyage, as on many other occasions, his judgment and courage were conspicuously displayed, and eminently contributed to the safety of the vessel. For several years his voyages were prosperous; but in 1816 he made a disastrous one, in which the vessel was nearly lost. This disaster induced him to think of retiring from his nautical occupation, but the bankruptcy of a friend, to whom he had lent a large part of his earnings, made him give up the idea, and to trust to Providence for his future success. The equanimity with which he bore this disappointment raised him higher in the estimation of his friends than even his scientific attainments, which had obtained the approbation of the learned.

His letters to Sir Joseph Banks in 1817 had described the vast disruption of the Arctic ices which had recently taken place; and this induced Sir Joseph to memorialize the government on the prosecution of Arctic discovery, in consequence of which that series of expeditions to the North commenced, which distinguished the early half of this century. From Scoresby the admiralty obtained much important information as to Arctic navigation. The proposal made to him it was impossible for him to accept, viz., to go out as pilot in one of the ships, when he was perfectly aware that, in the event of success, the merit would be ascribed to the superior officer, and if unsuccessful, the failure would be imputed to him. He therefore declined the offer, while he expressed his willingness to take the command of the smallest vessel the admiralty would entrust to him, and do his best to bring the expedition to a successful termination. The etiquette of the naval service was considered as an objection, although, when Cooke was sent on his first voyage, he had never served in the British navy.

In 1818 Mr Scoresby became his father's partner in the Greenland ship *Fame*, which was fitted out at Liverpool, where the writer of this memoir first became acquainted with him, and admired the extent of his acquirements, his happy mode of communicating information, and his extreme modesty. During the voyage of this year Scoresby repeated his experiments on the temperature at great depths of the ocean, and made a curious set of experiments on the effect of the pressure of a great column of water on different kinds of wood, in which the most buoyant of them became so heavy as to sink in water. During this year his second son, Frederick R. H. Scoresby, was born. Both his sons died before their father.

The year 1819 was occupied in superintending the building of his new ship the *Baffin*, at Liverpool, and in the com-

Scoresby. position of his admirable work, *The Arctic Regions*, which contains much original information on Polar countries and seas, detailed in a lucid and well-written narrative. It was printed in two octavo volumes of about 500 pages each, illustrated by maps, drawings of animals, &c. His account of the *mysticetus* corrected the common error that the whale in *blowing* throws out torrents of water, whereas it is vapour condensed by the cold air that has been mistaken for a column of water; and his figures of that whale were the first accurate representations of that animal. In fact, all former representations of it were caricatures of nature.

In the year of its publication appeared a good analysis of Scoresby's works, drawn up by M.M. Rossily and Rossel, addressed to Baron Portal, the French minister of marine, in which the book is much commended and proposed for translation, as important to the commerce of France. The first chapter of volume I. gives a succinct history of Arctic voyages; the second gives hydrographic descriptions of those regions; the third is a survey of the Greenland seas; the fourth is dedicated to the polar ices and seas frequented by Arctic whale-fishers; the fifth is a most original account of the climate, temperature, and general atmospherology of those regions, the result of twelve consecutive voyages; the sixth treats of the zoology of the Arctic seas, on which it throws much important light. The appendix to this volume contains his meteorological journal for twelve years in those seas. The second volume is wholly dedicated to the whale-fishery, and contains much important information not elsewhere to be found. The French critics pronounce the work to be "a perfect and complete whole."

In 1820 he made his first and a successful voyage to Greenland in the *Baffin*, which was found to answer his expectations as to her construction in every respect.

In the voyage of 1821, the philanthropic engineer, Captain Manby, sailed with him for the purpose of trying the efficacy of a new method of capturing the whale, devised by the former, but it did not answer his hopes. In the end of this year Scoresby had another communication with the admiralty respecting the grant of money to any whaler who should discover a new station for the successful prosecution of this important branch of industry, as the usual stations had been deserted by the whale, and the risk of loss in such adventures was becoming more and more imminent, but his representations were unsuccessful.

In the voyage of 1822, Scoresby not only made a very successful whaling voyage, but visited the long-lost eastern coast of Greenland, which he surveyed and beautifully laid down for about 800 miles, between Gale Hamke's Land in Lat. 75. N. and Lat. 69.10. N. He landed at many points of this coast, entered several of its inlets, gave designations to this hitherto nameless region, and carried home specimens of the rocks and plants found where he landed. In a few places he found traces of Esquimaux habitations, even in high latitudes; but the supposed remains of considerable buildings and towns of the Icelandic settlers on this desolate coast, which have been sometimes mentioned, Scoresby has shown to be illusions produced by the remarkable refractions of the ice-bound confines of this land, which so often simulate the creations of human industry. In this voyage he penetrated to within 566 geographic miles of the North Pole, as detailed in the first and second chapters of his *Journal of a Voyage to the Northern Whale Fishery*, where he found the temperature then so low as within 2° or 3° of zero, whence he concludes against the probability of an open sea around the Pole, as imagined by some; the third chapter details his proceedings when in sight of the east coast of Greenland; the fourth gives the commencement of the survey of that coast, which is continued in the succeeding chapters, that contain also most valuable observations on the wonderful atmospheric refrac-

Scoresby. tions there seen. The instruments employed in this survey were sextants, Kater's Azimuth compass, and chronometers. He took more than 500 bearings from 50 stations, besides 200 or 300 more for correcting the variation and deviations of his compasses. Four-fifths of these were obtained by intersecting bearings, and one-fifth from single bearings and estimated distances. The appendix contains a list of the rocks and plants he collected, the animals he saw, the latitudes and longitudes of the points of the coast, with speculations on the inhabitants, whose habitations he discovered in various parts of that desolate region. He supposed that there are recent indications of arts beyond those of the Esquimaux, indicating a mixed race as existing in that part of Greenland.

During his voyage of 1822 Mr Scoresby lost his wife; and soon after he determined to give up his nautical pursuits, and resolved to prepare himself for the ministry in the Established Church of England. With characteristic determination he proceeded to supply the defects of his early education in classical learning, and with indomitable perseverance he applied to the study of Latin and Greek. At the suggestion of his friend, Archdeacon Wrangham, he boarded for some time in the house of a clergyman, who directed his classical studies, as a preparation for the University of Cambridge. His acquirements in mathematics and in theology were even already of considerable extent, but he neglected not those important branches while he pursued his classical studies. He became a student of Queen's College, where in due time he obtained the degree of A.M., and had subsequently the honour of D.D. conferred on him. He was admitted into ecclesiastical orders, and soon after was appointed clergyman to the Mariners' Church in Liverpool, which was a large ship, fitted up commodiously for a considerable congregation; and his judicious ministry among the seamen was much appreciated.

In 1828 he married Miss Elizabeth Fitzgerald, an amiable lady of a highly respectable Irish family. Besides his clerical duties, Scoresby was occupied with scientific pursuits, especially in magnetism, which he had long very successfully prosecuted; and he made numerous experiments on the mode of imparting intense magnetic power to steel bars by percussion, when they were placed in the position of the magnetic dip. The percussion might be communicated either by a hammer or by an electric shock. In fact, he had, in the voyage of 1822, discovered that by hammering the steel bar in a vertical position, while it rested on a bar of iron, or better on a magnet of soft steel, he could impart most intense magnetism; and thus, in the event of a ship's compass having its magnetism destroyed by lightning, it could be restored without any complex apparatus. In this way he made magnets of immense power. He also investigated the connection between magnetism and galvanic electricity. On this latter subject a joint paper by him and his friend Dr Traill appeared in *The Philosophical Transactions of Edinburgh*, vol. ix.

In 1839 he was appointed to the vicarage of the vast parish of Bradford, in his native county, where he sedulously endeavoured to promote the religious and temporal interests of his parishioners. He was especially sedulous to secure the education of the young, while attending to the improvement of their elders. His conscientious discharge of these duties became too much for his health, and after some time he found it necessary to resign his charge, and to retire to Torquay, in Devonshire, which became his future home. He made a short voyage to North America in 1844.

He lost his second wife in 1847. Soon after this severe blow, his love of science, and the hope of improving navigation by magnetic observations, led him in 1847 to undertake a second voyage to the United States of America,

where he remained till March 1848. He was received with much respect by our Transatlantic brethren, who appreciated his scientific character; and he returned to Europe much pleased with his reception on the other side of the Atlantic.

In 1849, while at Torquay, he met with Miss Georgina Ker, who became his third wife, and added much to his happiness. While residing at Torquay, Scoresby volunteered his gratuitous services as a clergyman to assist the minister of Upton Church, which were thankfully accepted, and much valued by the congregation.

His zeal for the improvement of navigation in iron ships induced him to project a voyage to the southern hemisphere, and his young wife determined to accompany him to Australia. They sailed from Liverpool on 10th February 1853. After remaining in that colony for one month, they returned to Britain on 12th August of that year. During the voyage out and home he made numerous most important observations on the local magnetism of the ship in different positions; and he showed that the best position for the regulating compass was at the main-masthead, as farthest removed from the causes disturbing the magnetic needle; and that by comparing this compass with the usual binnacle compass, the local attraction of the ship could be corrected sufficiently for the purposes of navigation. In the ordinary position of the compass, it is liable to be seriously affected by the local attraction of the ship, in which every upright piece of iron becomes a magnet, with its north pole at its lower end in the northern, and its south pole above in the southern hemisphere.

His papers on magnetism, and the journal of this voyage, were given to General Sabine for publication, who committed the task to Archibald Smith, Esq., who has brought them out under the title of *Journal of a Voyage to Australia, and Round the World, for Magnetical Research*.

For some time after his return, his health appeared unbroken; but his respiration began to be affected rather seriously in the winter of 1856. At that period he went to Edinburgh to deliver some lectures in the Philosophical Institution, on the Polar regions, and was taken seriously ill during one of those lectures. After a partial recovery, he paid a visit to Sir M. Shaw Stewart; but his chest now became seriously affected. He returned home, suffered much from dyspnoea, lingered until the 21st of March 1857, when he expired, after severe suffering, which he bore with Christian fortitude and resignation.

The merits of this remarkable man are well known to the scientific world; and his career as a Christian pastor was marked by an earnestness and energy that demand the warmest approbation. Many of his philosophical observations have been published in different parts of Europe, and obtained for their author the high honour of his enrolment among the corresponding members of the French National Institute. His truly amiable disposition endeared him to numerous friends, who honoured him when living, and regretted the loss that society sustained by his decease. (T. S. T.)

SCOT, REGINALD, a very judicious writer in the sixteenth century, was the younger son of Sir John Scot of Scotshall, near Smeeth, in Kent. He studied at Hart Hall in the University of Oxford, after which he retired to Smeeth, where he lived a studious life, and died in 1599. He published the *Perfect Platform of a Hop-Garden*; and a book entitled the *Discovery of Witchcraft*, 1584, in which he showed that all the relations concerning magicians and witches are chimerical. This admirable work was not only censured by King James I. in his *Demonology*, but by several eminent divines, among whom we may mention Meric Casaubon, and Glanvil, author of the *Scepsis Scientifica*. All the copies of this obnoxious book that could be found were committed to the flames.

HISTORY OF SCOTLAND.

Scotland.

SECT. I.—*Roman Period.*

A. D. 85 to 446.

It will not be expected that in such a sketch of the history of Scotland as is alone suited to this work, we should enter into the great controversy concerning the origin of the Scottish people, a subject upon which much needless acrimony, and many unprofitable volumes, have been thrown away.¹ It will be more suitable to mark the progress of the great events in our national history, and to pass over its minor features; to fix the attention upon results rather than to perplex it with details; to establish a series of points by which an intelligent reader may guide his memory and direct his studies; and occasionally to note those authors from whose pages he may fill up the picture.

Julius Cæsar. Before Christ, 55.

It is well known, that our first authentic knowledge of Britain comes from Julius Cæsar. Fifty-five years before the Christian era, this extraordinary man invaded the island from Gaul; but his operations were attended with little success, his stay was brief, and it is certain that he knew nothing of Scotland. It was not till nearly a century and a half after Cæsar's descent, and during the reign of the emperor Vespasian, that Julius Agricola, at the head of a Roman army, penetrated into the northern parts of Britain. The details of his various campaigns, the resistance which he encountered, and the vestiges of his progress which yet remain, have furnished matter of laborious investigation to our antiquaries. Among their conflicting accounts, it seems certain that he first pushed his conquests as far as the Friths of Forth and Clyde; that in succeeding campaigns he penetrated northwards; and that in his last great expedition, during which his army was accompanied by a numerous fleet, which sailed along the coast, he was opposed by a barbarian chief named Galgacus. A sanguinary battle was fought between this leader and Agricola, the exact site of which has been keenly disputed. There seems to be little doubt, however, that previously to its occurrence the Roman general had passed the Frith of Tay, and that although victorious over the fierce and undisciplined multitudes which opposed him, he experienced a check which compelled him to desist from any further aggression. Two great events marked the last years of the government of Agricola. He explored the northern coasts of Scotland by his fleet; and to him the Roman world, in all probability, owed its first certain knowledge that Britain was an island. He endeavoured, in the second place, to secure his conquests from future attack by a chain of forts connecting the Friths of Forth and Clyde. Having completed these defences, he was recalled by the jealousy of Domitian, and left Britain in the year 85.

Agricola leaves Britain.

A. D. 85.

Hadrian.

A. D. 121 to 161.

From this time till the reign of Hadrian, a period of thirty-six years, we hear little of the Romans, either in southern or northern Britain. Early in the second century, (A. D. 121), this emperor in person made an expedition into Scotland;

and about twenty years later, Lollius Urbicus, the Roman governor under the emperor Antoninus, distinguished himself by the courage and ability which he displayed against the turbulent and warlike tribes which inhabited the northern parts of the island. Two facts, however, are admitted by the Roman writers, which demonstrate how uncertain was the tenure by which these masters of the world held their northern possessions in Britain. The emperor Hadrian, apparently distrusting the sufficiency of the line of forts already formed by Agricola, constructed a wall or fortified rampart from the Tyne to the Solway. It has been supposed by some antiquaries, that the emperor entirely abandoned to the barbarians the wide country between this new defence and the more ancient *Vallum* which united the Friths of Forth and Clyde; but the discovery of a succession of coins along the line of this last rampart, belonging to the intermediate emperors, appears to indicate the contrary.² From the adoption of this measure it is however evident, that the courage and successes of the barbarians had given much annoyance to the Romans; and this is corroborated by the second fact to which we allude, namely, that between the period of Hadrian's death and the succession of Antoninus Pius, (A. D. 138), the wall between the Forth and Clyde had been so completely destroyed, that Lollius Urbicus entirely reconstructed it. This fact is proved by inscriptions, which the reader may consult in Horsley's *Britannia Romana*.³ During the remaining years of his government, this able officer devoted himself to opening up the country by roads; to the construction of various camps and fortalices, of which the site has been traced with much industry and success by the latest writer on the subject; and to the introduction of those useful arts which were best calculated to raise and humanize the character of the northern barbarians. His administration in Britain appears to have terminated with the death of his master, Antoninus Pius, A. D. 161.

From this period till the beginning of the third century, all is dark in Britain. But in the year 207, the emperor Severus received intelligence that the Caledonians had invaded the Roman provinces; and with a vigour and alacrity which, considering the distance of the seat of war, and the barren prize to be contested, is not easily explained, he hastened in person to reduce the insurgent Caledonians. This expedition, making every allowance for the exaggeration with which the exploits of an emperor were usually recorded, must have been an extraordinary one. In the comparatively civilized country which extended between the walls of Hadrian and Antoninus, he could meet with little opposition; but when he left this last line of defence, and conducted his army into the wild regions beyond the Frith of Forth, ultimately penetrating into Moray, we must suppose him to have encountered very formidable obstacles. The savage and uncleared state of the country, the extent of the forests, the unhealthy and

¹ The reader is referred to Innes's Critical Essay on the ancient Inhabitants of Scotland, as the best work yet written on this subject. Its arrangement is defective; but its good sense, and the authenticity of the documents upon which its deductions are founded, are highly praiseworthy. Pinkerton's Dissertation on the Scythians or Goths, Dr. Jamieson's Dissertation on the Origin of the Scottish Language, and the first volume of the laborious work of Chalmers, entitled Caledonia, may be consulted with the greatest advantage. In their pages, the critical student who may desire to pursue the subject, will find ample references to all the noted works upon this question.

² Chalmers's Caledonia, p. 116.

³ Horsley's Britannia, Rom. l. i. c. 10; Innes's Critical Essay, vol. i. p. 12. The remains of the wall are popularly called Grim's Dyke. Grym in Welsh and Cornish, signifies strong, and is used perhaps metaphorically, as Chalmers conjectures, for a "strength or a rampart." Caledonia, vol. i. p. 129.

⁴ We may here refer the critical reader to Chalmers's dissertation on the actions of Lollius Urbicus, contained in the first volume of his Caledonia.

Scotland. interminable marshes, the mountainous ranges which presented such formidable obstacles to the march of a regular army, the rivers, of which the fords were unknown, and the want of subsistence for his troops, except what he carried along with him, must have combined to throw infinite difficulties in his way. The classical writers who have described his campaign inform us, in general terms, that he was obliged to fell the forests, to drain the marshes, to open up the country by roads, and to construct bridges; and they affirm that the Roman emperor did not retrace his steps till he had proceeded so far north, that the soldiers remarked the extraordinary length of the days and shortness of the nights, in comparison with those of Italy.¹ There seems good reason to believe that the spot where the Roman eagles terminated their flight in this memorable expedition, was the promontory separating the Cromarty and the Moray Friths. Here, according to Chalmers, the Caledonians sought for peace, surrendered their arms, and relinquished a portion of their country.² The critical student must pardon the vagueness of these expressions, as the historians of the time do not enable us to be more definite.

Severus retired to York in a feeble state of health; but it was not to repose upon his laurels, for scarcely had he reached that station when news arrived that the Caledonians were again in arms. Irritated by disappointment and disease, he determined instantly to renew the war; intrusted the leading of the army to his son Caracalla; and issued orders to spare neither age nor sex. But death happily arrested these inhuman projects. The emperor expired at York, and the son does not appear, on any good evidence, to have executed the orders of the father.

Previously to his celebrated northern campaign, Severus is said to have reconstructed the rampart originally built by Hadrian between the Tyne and the Solway; a circumstance from which there arises a strong presumption that the Caledonians had encroached upon the Roman provinces, and regained much of the intermediate country between the walls of Hadrian and Antoninus.

From this period, (A.D. 211), which marks the commencement of the third, to nearly the middle of the fifth century, (446), the Romans appear to have abandoned all thoughts of extending their conquests. The vast fabric of their empire was now, as is well known, in a state of melancholy feebleness and decay; attacked on every side by those fierce tribes who were destined to destroy it; and unable to retain provinces far nearer and more important than those in Britain. For some time, however, an effort was made to defend the northern Romanized Britons from the repeated incursions of the Caledonians. In the commencement of the fourth century, (A.D. 306), Constantius revisited Britain for this purpose; in the year 368, after a sanguinary and destructive invasion of the barbarians, a temporary tranquillity was restored by the arms of Theodosius; in 398, Stilicho, alarmed by new excesses and increasing weakness in the northern provinces, sent such effectual aid as enabled the Roman governors once more to repel the enemy; and, lastly, in the year 422, the emperor Honorius, having in vain endeavoured to rouse the provincial inhabitants to a vigorous effort in

their own defence, sent a legion to their assistance, by whose efforts the fortifications of the two walls were repaired, and the barbarians once more driven back into their more northern seats. But this was the last relief which could be wrung by her miserable children from a parent who was herself expiring; and it secured for them but a brief period of tranquillity. Imperial Rome, with a tardy and ostentatious justice, conferred freedom on the southern Britons; and restoring a country which she was no longer able to hold, informed them that henceforth they must trust to their own efforts for the defence of their independence. Having given this parting advice to men who appear to have been little able to follow it, the Romans abandoned Britain for ever.

SECT. II.—The Pictish Period.

In the brief sketch which has been given of the Roman A.D. 446 dominion in north Britain, which extended from the year to 843. 85 to 446, a period of little more than three centuries and a half, we have seen that the Romanized Britons were constantly exposed to the invasions of their more northern neighbours, who threatened at last to wrest from them the whole of the country, which had been fortified by Roman skill and mainly defended by Roman soldiers. The question now arises, who were these fierce and indomitable tribes? And to this inquiry, in which antiquaries have spilt almost as much ink as the Romans did blood, the research of a laborious writer enables us to give a satisfactory answer. It appears from the investigation of Chalmers that "at the epoch of Agricola's invasion, the ample extent of north Britain was inhabited by one-and-twenty tribes, who were connected by such slight ties as scarcely to enjoy a social state. These were the *Ottadini*, who appear to have occupied the whole extent of coast from the southern Tyne to the Frith of Forth;³ the *Gadeni*, whose seats lay in the interior country, from the Tyne on the south to the Frith on the north; the *Selgovæ*, whose western boundary was the Dee, and their southern limit the Solway Frith; the *Novantes*, who inhabited the midland and western parts of Galloway; and the *Damnii*, who possessed the shires of Ayr, Renfrew, and Stirling, with a portion of Dunbarton and Perth. Such were the five tribes," says this author, "which occupied, during the first century, that ample region extending from the Tyne and the Solway on the south, to the Forth and the Clyde on the north, varying their limits with the fluctuations of war, conquest, or internal dissensions, during the succession of many ages."⁴ Beyond the Forth we find the *Horestii*, the *Venricones*, the *Taixali*, the *Vacomagi*, the *Albani*, the *Attacotti*, the *Caledonii*, the *Cantæ*, the *Logi*, the *Carnabii*, the *Catini*, the *Mertæ*, the *Carnonacæ*, the *Creones*, and the *Epidii*. The names of these twenty-one original tribes, which are taken from Chalmers, are by him transcribed from the account of Ptolemy, checked by the ancient treatise and map of Richard of Cirencester.⁵ Of the manners of this ancient people, it is impossible, in the absence of all authentic documents, to speak with certainty. From the general account given by Cæsar, they were little removed in the scale of social life or of civil government

¹ Caledonia, vol. i. p. 186, 187.

² The son of Severus is indeed affirmed to have fought on the banks of the Carron with the heroes of Ossian; but much has yet to be proved before we venture to transplant these shadowy contests into the field of history.

³ Including the half of Northumberland, the eastern portion of Roxburghshire, all Berwickshire, and East Lothian.

⁴ Caledonia, vol. i. p. 62.

⁵ It ought however to be stated, that some grave doubts hang over the genuineness of this early writer. Dr. Stukeley's account of him is vague, and the story told by Professor Bertram regarding his discovery of the manuscript and the map is still more suspicious. I have abstained from giving from Chalmers the exact limits of the possessions held by the last sixteen tribes, who inhabited the whole extent of country beyond the Forth to the extremity of Caithness. The research and erudition which he has displayed is entitled to all praise; but it is difficult to believe that the boundaries of these remote, fierce, and wandering aborigines should be ascertainable with as much precision after the lapse of eighteen centuries as the *marches* of Middlesex or Yorkshire. Two points, however, and these of leading importance, Chalmers conceives that he has established: the first, that Britain, from its extreme southern to its most remote northern point, was peopled from Gaul; and the second, that the aborigines over the whole island were a Celtic race.

Scotland. from the rudest savages. They led a pastoral life, living on the milk of their flocks, or the produce of the chase; they were polygamous and idolatrous; their religion, which was Druidical, was stained with human sacrifices; and their rude form of civil government was intimately connected with their religion. They were armed with slight shields, short spears, and daggers; and sometimes fought in small cars, which were drawn by little spirited horses. They rather burrowed in huts than lived in houses, went naked from choice, were brave to excess, capable of enduring all sorts of privation and fatigue, and had such loose ideas of property, that Dio does not hesitate to call them robbers. This character, with the exception of their Druidical form of worship, exhibits little more than the general features of every savage people; and there seems no reason to believe that the lapse of three centuries created any great change in those fierce and indomitable tribes which, inhabiting the more northern parts of the island from the Forth to Caithness, and latterly wresting from the Romans the provinces which they had subdued, were never brought under the yoke, or humanized by the arts of that great people.

A.D. 446. The Picts. At the period of the Roman abdication, we find that north Britain was inhabited by the descendants of the Caledonian clans which we have enumerated, who, under the name of Picts or Picti, became for four centuries the predominating nation in Scotland. Among these we must be careful to distinguish the five Romanized tribes who possessed Valentia, or the country between the walls of Agricola and Antoninus, not as a race of different descent, but of improved civilization, while their fiercer brethren beyond the Forth bore fresh upon them all the stamp of barbarian life. The name of Picti is conjectured to be derived from Peithi, a British word which characterises *those that are without*, or the people of the open country.¹

Thirty-eight Pictish kings. It would be a vain, and in a sketch of this nature, an idle labour, to enter upon the obscure and sanguinary annals of the Pictish period; an era upon which, to use a quaint expression of Chalmers, archæology is loquacious, and history silent. From an ancient manuscript, first printed by Innes,² and which had belonged to Lord Burleigh, this author has given us a list of their kings, from Drest, who succeeded in the middle of the fifth century, (A.D. 451), to a prince named Bred, who died about the middle of the ninth century, (A.D. 843). During the four centuries which elapsed between the accession of the first and the last of these monarchs, thirty-eight Pictish kings are enumerated. Of their authentic history there is scarcely a vestige; but the blank has been filled up by the fables of Boyce, which unhappily were afterwards embalmed in the elegant Latinity of Buchanan.

From Drest to Bred. Some points in this period, however, have been ascertained, and they are well worthy of notice. We have already seen, that on the entire abdication of Britain by the Romans, the five tribes which inhabited Valentia were declared independent. They were no longer provincial subjects of Rome, but a free, though an effeminate people. The constant attacks of the Picts rendered it necessary for them to unite in their own defence; and from this union arose a new kingdom, denominated by ancient authors sometimes the *Regnum Cumbrense*, or more frequently the kingdom of Strathclyd. It appears to have included the present Liddesdale, Teviotdale, Dumfries-shire, Galloway, Ayrshire, Renfrew, Strathclyde, the midland and western parts of Stirlingshire, with the largest portion of Dunbartonshire.³ "The metropolis of this kingdom," says Chalmers, "was Alclyd, a city which they still retained when the pen dropt from the hand of the venerable Bede, in 734, and which is situated on the north bank of the Clyde, at the influx of the Leven. The

descriptive name of Alclyd, which signifies the rocky height on the Clyde, was applied to the bifurcated rock, on the summit of which these associated Britons had a strong hill fort, which formed a secure residence for their reguli or kings. To this fortress the Scoto-Irish subsequently applied the name of *Dun-Briton*, signifying the fortress of the Britons, an appellation which, by an easy transition, has in modern times been converted into Dunbarton.⁴ Among the little kings who reigned over Strathclyd, there are none whose names or exploits are worthy of preservation, with the single exception of the semi-poetic Arthur. It is sad that the severer hand of history should strip this glorious "Childe" of his many-coloured robes, and reduce him to the cold reality of a Cumbrian Pendragon. At the commencement of the sixth century, Arthur, the chief military leader or Pendragon of the Cumbrian Britons, expelled his sovereign, Huail or Hoel, from Strathclyde, and commenced a reign of which it is impossible to separate the facts from the fictions with which they have become incorporated.

But the Pictish period is not only distinguished by the rise of a new kingdom, it is marked by the arrival in Scotland of a new people, the Saxons, a race of Gothic origin, who invaded and finally effected a settlement in Lothian. This remarkable event, so important in its remote consequences upon our national history, took place in the middle of the fifth century (A.D. 449). It was not difficult for the Saxons, a people who certainly were far their superiors in courage and in arms, to subdue the feebler race of the Otadini. They do not at first appear to have attempted to push their conquests to the northward of the Forth, but contented themselves with the occupation of a portion of the province of Valentia. After the lapse of a century, however, Ida, one of the boldest and most adventurous of the sons of Woden, landed at Flamborough, and brought an important accession to the strength and numbers of his countrymen. It was by this great chief that the Saxon kingdom of Northumbria was founded; nor was he arrested in his victorious career, till he had extended his dominions from the Humber to the Forth. Ida was succeeded in the Northumbrian kingdom by Aella, and Aella by Ethelred, under whose reigns occurred no event of importance; but Edwin his successor, who came to the throne in the beginning of the seventh century, appears to have added essentially to the extent of the Saxon conquests, and to have impressed not only the southern Britons, but his fiercer and more northern neighbours the Picts, with the terror of his arms. There appears little doubt that Edinburgh or Edwinsburgh, the present capital of Scotland, owes its foundation to this energetic Saxon chief.⁵

Hitherto, in speaking of the northern inhabitants beyond the Forth, we have designated them by the single appellation of the Picts. We must now mark the arrival of a different people, although probably sprung from the same ancient stock.

At the commencement of the fourth century, we find that the ruling or dominant people in Ireland were the Scots, a Celtic race; and although there is no sufficient evidence that they had formed any permanent settlement in Britain previously to the abdication of the island by the Romans, it is certain that in the year 360 they invaded the Roman provinces in that kingdom, and were repelled by Theodosius. In the beginning of the sixth century, three Irish chiefs, Loarn, Fergus, and Angus, sons of Erc, king of Dalriada, by which we are to understand the province of Ulster, led a colony into the ancient province of the British Epidii, and effected a settlement upon the promontory of Kentire.⁶ As far as any light is afforded by the Irish annals, in this occupation of Kentire the Scoto-Irish met with but feeble opposi-

Scotland.
Origin of
Dunbarton.

King
Arthur.

The
Saxons in
Scotland.
A.D. 449

A.D. 547.

Northumbria founded
by Aella.

Edwinsburgh or
Edinburgh

The Scots.

As Scots
settle in
Kentire.

¹ Chalmers's Caledonia, vol. i. p. 203.

² Caledonia, vol. i. pp. 237, 238.

³ Caledonia, vol. i. p. 238.

⁴ Innes's Critical Essay, vol. ii. Appendix.

⁵ Caledonia, vol. i. p. 254.

⁶ Ibid. 274.

Scotland. tion; and a long period of obscurity succeeds, in which little more is distinguishable, except the fact that a series of Scoto-Irish kings, or reguli, are found in Scotland, from the commencement of the fifth century, (503), when Fergus held the throne, till the accession of Kenneth, the son of Alpin, who reigned from the year 836 to 843, under whom the ascendancy of the Scoto-Irish or Scotch, appears to have been established. Upon this portion of our history we are tempted to transcribe the following observations of Chalmers.

A.D.
503-843.

"In the records of time, there scarcely occurs a period of history so perplexed and obscure, as the annals of the Scoto-Irish kings and their tribes. The original cause of this obscurity is the want of contemporaneous writing. An ample field was thus left open for the contests of national emulation. Ignorance and ingenuity, sophistry and system, have all contributed to make what was dark still more obscure. The series and genealogy of the kings have been involved in peculiar perplexity by the contests of the Irish and Scottish antiquaries, for pre-eminence in antiquity, as well as in fame. And Cimmerian darkness has overspread the annals of a people too restless for the repose of study; too rude for the elaboration of writing."¹ After such an acknowledgment, it would be idle labour to follow this indefatigable inquirer into the twilight-history of these times; but this period is distinguished by one great event which shines brightly amidst the surrounding gloom, namely, the conversion of northern Britain to Christianity.

Conversion
to Christi-
anity.

Columba.
A.D. 521.

Conversion
of the
Northern
Picts.

A.D. 568.

Already the Romanized Britons of the South had received the true faith, and the Scoto-Irish appear to have been converted to Christianity by St. Patrick, previously to their establishment in Kentire. St. Ninian, himself a Briton, though educated as a monk at Rome, had, in the commencement of the fourth century, founded a monastery in Galloway; and in the sixth century, St. Kentigern signalized himself by his pious labours among the Britons of Strathclyde; but the conversion of the northern Picts was reserved for St. Columba. This great and good man was born in Ireland, in the year 521. His descent was royal, and his education was at first carefully conducted under the best masters which his native island, long before this converted to Christianity, could supply. Of these the most noted was St. Ciaran, the apostle of the Scoto-Irish of Kentire; and from him, in all probability, Columba imbibed his first desire to introduce the gospel into the desolate and barbarous dominions of the northern Picts. It was in the year 568, that embarking with twelve of his friends, in a boat of wicker work which was covered with hides, he set out upon his benevolent mission, and landed in the Island of Hy, or Iona, which was situated near the confines of the Scottish and Pictish territories. The difficulties which he had to encounter on his first arrival, were of the most formidable kind. He found a people so barbarous that his life was attempted; the king, when the holy man first approached his residence, ordered its gates to be shut against him; the priests, who were druids, and possessed much influence, employed all their eloquence to counteract his efforts; and the nature of the country, woody, mountainous, and infested with wild beasts, rendered travelling most dangerous and painful.² It is also said that at first the saint required an interpreter to make himself intelligible, although after a short residence he appears to have found little difficulty in conversing with the barbarians. But none of these obstacles was sufficient to baffle the zeal and courage of Columba; and so blest were his labours, so rapid the effects produced by the example of his virtues, that in a few years the greater portion of the Pictish dominions was converted to the Christian faith; churches were erected, monasteries established, in various places, and Columba,

Scotland. as primate, became an object of the utmost love and veneration among the barbarous tribes, and fierce and warlike princes whom he had called from darkness into light. At that time his monastery was perhaps the chief seminary of learning in Europe. It was from this nursery, that not only all the monasteries, and above three hundred churches which he himself had established, were supplied with learned pastors, but which also gave divines to many of the religious establishments among the neighbouring nations.³ Columba died in the year 597, in the seventy-seventh year of his age; a man not less distinguished by his zeal and labour in the dissemination of the gospel, than by the simplicity of his manners, the sweetness of his temper, and the holiness of his life.

A.D. 567.
Death of
Columba.

We have already observed, that it would be foreign to the object of this historical sketch, to involve our readers in the dark and wholly uninteresting annals of the Pictish kings. But one remarkable event must not escape our notice, we mean the disappearance of the Pictish people after the middle of the ninth century. There seems every reason to believe, that the story of the total extermination of the Picts by the sword of the victorious Kenneth Macalpin, is a fable invented at a later period, and certainly supported by nothing approaching to contemporary evidence. A more rational and intelligible account ascribes this event, not to the destruction, but to what may more correctly be denominated the absorption of the Picts by the predominating nation of the Scots. Both were probably a people of the same race, speaking a similar language, and little different in their manners and civil government. Both were animated by the emulation of outstripping each other in power and extent of territory; and this led to protracted struggles, in which the Picts maintained their independence with difficulty, and the Scots, gradually enlarging their dominions, acquired a predominating influence. Such being the relative condition of the two nations, an event took place which united in one person the claim to the Pictish and the Scottish throne.⁴

Achais or Eocha, king of the Scots, who died in the year 826, had married Urgusia, a Pictish princess, the sister of Constantine and Ungus, successively kings of the Picts. His grandson was Kenneth Macalpin, a prince of great hardihood and ambition, who succeeded to his paternal throne in 836. On the death of Uven, the Pictish monarch, in 839, Kenneth asserted his claim to the Pictish throne, in right of his grandmother, Urgusia. The feeble state of the nation, and the incapacity of the true heir, combined to favour his ambitious designs; and after a struggle of three years, he succeeded in uniting the two crowns in his own person.⁵ The observations of Chalmers upon this event, and the important consequences which it drew after it, are well worthy of notice. "During such confusions," says this author, "amidst a rude people, whose forms of government were little fixed, and whose laws were less regarded, the loss of a battle, or the death of a king, was an adequate cause of an important revolution. Of all these events, Kenneth dexterously took advantage; and finding a feeble competitor, he easily stepped into the vacant throne. In his person a new dynasty began. The king was changed, but the government remained the same. The Picts and Scots, who were a congenial people, from a common origin, and spoke cognate tongues, the British and Gaelic, readily coalesced; yet has it been asserted by ignorance, and believed by credulity, that Kenneth made so bad a use of the power which he had adroitly acquired, as to destroy the whole Pictish people in the wantonness of his cruelty. To enforce the belief in an action which is in itself unknown, and so inconsistent with the interest of a provident sovereign, requires

¹ Caledonia, vol. i. p. 276.

⁶ Smith's Life of St. Columba, pp. 18, 19.

² Smith's Life of St. Columba, pp. 6 to 17 inclusive.

⁴ Caledonia, vol. i. pp. 299-302.

⁵ Caledonia, vol. i. p. 304.

Scotland. stronger proofs than the assertions of uninformed history, or the report of vulgar tradition. The Picts continued throughout the succeeding period (from 843 to 1097) to be mentioned by contemporary authors, though they were governed by a new race, and were united with a predominant people.²¹

SECT. III.—*The Scottish Period.*

A.D. 843–1097. The union of the two nations of the Picts and the Scots, under one powerful prince, forms the commencement of the third great division of Scottish history, which extends from the middle of the ninth century (843) to the expiration of the eleventh (1097), a period of two centuries and a half.

Extent of the Pictish and Scottish kingdoms. For ages before the time of this union, the Pictish dominions were confined by the Forth on the south, Drumalban on the west, and the German Ocean on the east and north; while at the period of its occurrence the Scots possessed the whole western coast, from the Clyde to Loch Torridon, with the extensive kingdom of Argyre, which stretched its arms from the Clyde on the south to Loch Eir and Loch Maree on the north, and reached from the sea on the west to Drumalban² on the east. These extensive dominions were now united; the name of Scotia, as marking the whole kingdom, gained ground over that of Pictavia; and from the tenth century (934), when the Saxon Chronicle first mentions *Scotland* as invaded by Athelstan, this distinctive appellation for the kingdom of North Britain gradually gained ground till it excluded every other.

It has been observed by Sir Walter Scott, "that the descendants of Kenneth Macalpine pass us in gloomy and obscure pageantry, like those of Banquo in the theatre;" and it might have been added, that the impression left upon the mind by the perusal of their various reigns is as shadowy and unsubstantial. To fatigue and perplex the reader, by a detail of historical passages, which led to no great results, is not the purpose of this sketch, but to mark the features which prominently distinguish the period. Nor were these either few or unimportant.

Invasions by the Danes. 1. The first event which demands our notice, is the commencement of those invasions by the Danes, which for several centuries continued to be the greatest scourge of Scotland. It was under the reign of Constantine, the second monarch in succession from Kenneth, that these fierce pirate leaders, known under the name of *Vikinghr*, or seakings, first made their appearance in North Britain. Having established a settlement in Ireland, they soon became acquainted with the commodious havens of the Scottish

A.D. 866. Anlaf and Ivar. coasts; and after a partial visit in 866, a more formidable armament sailed from Dublin, under Anlaf and Ivar, in 870. During this invasion, they took Alclud, or Dunbarton, ravaged the whole extent of North Britain, and returned glutted with slaughter and booty to Ireland. These sea-wolves having once tasted blood, were not slow to return. Thrice under the same reign were their vessels seen on the coasts of the devoted country, in 871, 875, and 876; and at last, in 881, the Scottish monarch met his death on the banks of the Forth, in an ineffectual attempt to defend his people, and repel their ravages. Reappearing under the reign of Donald, who succeeded to the throne in 893, they were defeated on the banks of the Tay, in the vicinity of Scone, and again, in 904, repulsed by the same prince, who lost his life, after he had slain their leader. This, however, did not prevent their return in 907, and afterwards, in 918, under the reign of Constantine the Third, who, with the assistance of the northern Saxons, encoun-

tered and repulsed them at Tinmore; a check which appears for a considerable period to have given repose to the kingdom.

In 961, under the reign of Indalf, who had succeeded to the throne in 953, the Vikinghr made a descent in the bay of Cullen, in Banffshire; and this monarch with difficulty defeated them in a desperate action, in which he lost his life. In 970, Kenneth the Third, who is represented as a monarch of extraordinary vigour and ambition, succeeded to the throne, and under his reign the Danes reappeared with a numerous fleet in the Tay; but after a sanguinary struggle, in which they at first succeeded, were ultimately defeated by the bravery of the Scots, commanded by Kenneth in person. This contest, which appears to have been attended with an enormous loss on both sides, took place at Luncarty, where many tumuli still remain, to mark the field of battle.³

After this the country enjoyed a quiet of nine years; but in 1003, the Norsemen, who had now for some time permanently settled themselves in Orkney, again made their appearance in great strength upon the coast of Moray. They seized and fortified the promontory known by the name of the Burgh-head of Moray, where they found a commodious harbour, and from which, in 1010, they led an army to plunder that fertile region. But they were met and defeated with great slaughter by Malcolm the Second, in the battle of Mortlach, where the king, in gratitude for his victory, endowed a religious house, which became the seat of the earliest Scottish bishopric.

These repeated repulses checked and disheartened the pirate kings; but they disdained to relinquish the contest. Their last efforts appear to have been made on the coast of Angus and Buchan, where they were repulsed in successive conflicts, fought at Aberlemno, Panbride, and Slaines Castle. At length a convention, or pacific treaty, was entered into between Malcolm, and Sweno, king of Denmark, in the year 1014, which was followed by the evacuation of the Burgh-head of Moray, and the final departure of the Danes. Thus, after a severe struggle, which at various intervals, and with various success, appears to have continued for nearly a century and a half (866 to 1014), the energy of the Scots ultimately triumphed over the efforts of the Norsemen; and while the Danish rovers established themselves in some of the finest countries in Europe, and in England alternately fixed themselves as permanent settlers, or extorted an odious tribute as the price of their absence, Sweno, though one of their most powerful princes, found himself at last compelled to desist from the contest.

2. The second event of importance which marked this period, was the enlargement of the Scottish provinces of Malcolm the First, by the pacific acquisition of Cumberland from Edmund the Saxon king of England. Against this young prince, the Danes, who had established themselves in the northern part of his dominions, declared war, and calling the Norwegians to their assistance, threatened to subdue the whole country. Edmund opposed them with great courage and success, reduced Northumberland, then a Danish province, and next turned his arms against Cumbria, or Cumberland. After wasting this little country, then inhabited by the Britons, under their king or chief leader, Dunmail, the English prince, aware perhaps of the difficulty of retaining his new acquisition, delivered it up to Malcolm the First, under the condition that he would become his associate (*medwertha*) in war, or, as the terms are explained by Matthew of Westminster, "that he would de-

¹ Chalmers's *Caledonia*, vol. i. p. 333.

² Drumalban, the ridge of mountains which separates the rivers running into the sea on the west coast of Inverness-shire and Argyll from those which run into the sea of Norway. Macpherson's *Geographical Illustrations*.

³ Chalmers's *Caledonia*, vol. i. p. 394, 395.

Scotland. fend the northern parts of England from the invasions of his enemies, whether they came by sea or by land."¹ It is to be remembered, that this transaction was entered into between two independent princes, the one of Saxon, the other of Celtic race, more than a century before the feudal usages or tenures were introduced into England by the Normans; an observation which might have been deemed unnecessary, had not some ingenious writers affected to detect in the stipulations of Malcolm the acknowledgment of feudal dependence. In this manner did Cumbria, in the middle of the tenth century, become a portion of the Scottish dominions.²

3. This treaty was followed by the reigns of Indulf, Duf, and Culen, a dark and sanguinary period, occupied by domestic war and civil commotion; but under Kenneth the Third, who came to the throne in 970, occurred another event of no little moment in the history of the country. This was the conquest of the ancient British kingdom of Strathclyd by the arms of that monarch. We have seen this independent state arise, in the middle of the fifth century, from a union of the Romanized British tribes, who, on the desertion of the island by the Romans, were drawn together by the ties of common danger and mutual defence. From this time, (446), they had, under various reverses and multiplied attacks, enjoyed a precarious independence for upwards of five centuries; nor did they permit themselves to be incorporated in the Scottish monarchy without a determined struggle. The arms and the energy of Kenneth, however, were successful; and one of those gleams of romantic light, which sometimes soften the gloomy annals of these ages, fell on the ruins of Strathclyd. Dunwallon, the last of its kings, after exhibiting the utmost courage and resolution in defence of his people, assumed the religious habit, travelled to Rome, and died a monk.³

The last prominent feature which marks this period, was the further enlargement of the Scottish dominions, by the acquisition of Lothian, hitherto a part of England. It took place in 1016, under the reign of Malcolm the Second, the son of Kenneth the Third, to whose conquest of Strathclyd we have just alluded. It was this same Malcolm whose courage we have seen victorious over the Danes at Mortlach, and to whose convention with Sweno Scotland owed its freedom from the ravages of the pirate kings. In the beginning of the eleventh century, (1018), this warlike prince engaged in hostilities with Ughtred, earl of Northumberland. Their forces met at Carham, near Werk, on the southern bank of the Tweed, and a sanguinary battle was fought, which effectually checked the Scottish prince. Ughtred, however, having been assassinated, was succeeded by his brother Eadulph, a feeble ruler, who, from a dread of a second invasion, was induced to purchase the friendship of Malcolm, by the cession of the whole of Lothian.⁴

Such are the great features which distinguish the early history of Scotland, from the middle of the ninth to the commencement of the eleventh century, (843 to 1018), and upon which it is both wiser and easier to fix the mind than to crowd and burden it with lists of barbarous and forgotten kings. We see a people, still rude, ignorant, and, except for the sweetening influences of Christianity, little removed from savage life; but we find them able not only to vindicate their freedom against those incessant and cruel invasions, which broke, and for a time subdued the neighbouring country of England, but animated by an ambition which, under successive princes, largely extended their dominions, by the successive acquisitions of Cumberland, Strathclyd, and Lothian. Nor is the remaining portion of

the Scottish period, from 1018 to 1097, unmarked by some great events. In 1031, under the reign of Malcolm the Second, Canute, the Danish king of England, invaded Scotland. This prince, the most powerful monarch of his time, as he possessed not only England, but Denmark and Norway, led an army against Malcolm. The cause of the war Malcolm is involved in much obscurity. It was however connected with some claim or dispute regarding Cumberland, and it terminated in Malcolm retaining the possession of that province, and performing the conditions upon which it had been transferred to him.⁵

In the historical romance of Boyce, and the classical pages of Buchanan, Malcolm the Second figures as the first and one of the greatest of Scottish legislators. It was referred for the learning and acuteness of Lord Hailes to detect his apocryphal laws as the forgery of a much later age.

Malcolm the Second, whose severe and vigorous reign had been marked by many sanguinary domestic feuds, not necessary to be detailed, was succeeded in 1033 by his grandson Duncan, the "gracious Duncan" of Shakspeare, whose imperishable drama is founded upon a fictitious narrative, which Holinshed copied from Boyce. Let us for a moment, in a spirit rather of homage than of criticism, disentangle the dross of fact from the ore of fiction. Lady Macbeth was the Lady Gruoch, and had regal blood in her veins. She was the grand-daughter of Kenneth the Fourth. Her husband, Macbeth, was the son of Finlegh Maormor, or the supreme ruler of Ross. The real wrongs of the Lady Gruoch, the root of her implacable revenge, were even more deep than those of her mighty counterpart. She had seen her grandfather Kenneth dethroned by Malcolm, her brother assassinated, and her husband burned, griefs amply sufficient to turn her milk to gall. Macbeth, on the other hand, had wept a father slain also by Malcolm; and thus revenge and ambition were equally roused in both their bosoms. The purpose which had been arrested by the superior vigour and courage of Malcolm, was executed on his more feeble grandson. Duncan, in 1039, was assassinated at Bothgowanan, near Elgin;⁶ and Macbeth seized the sanguinary sceptre, which he held with a vigorous grasp for fifteen years, until he was defeated and slain by Macduff, in 1054.

On his death, a contest for the throne arose between Lulach, the son of the Lady Gruoch, and great-grandson of Kenneth the Fourth, and Malcolm Ceanmore, great-grandson of Malcolm the Second; and this struggle terminated in 1057, by the defeat of Lulach, and the accession of his rival, Malcolm, who was contemporary with Edward the Confessor.

The accession of Malcolm Ceanmore to the Scottish throne was soon afterwards followed by an event, which, although taking place in the sister country, produced the most important effects upon the history of Scotland. This was the invasion and conquest of England by the Normans, and the establishment of an entirely new dynasty in that country. The first consequence of this change was favourable to Malcolm, as it led to his marriage with a Saxon princess, whose character had a marked and favourable influence upon the rudeness of her husband and his people. This lady was Margaret, who was the sister of Edgar Ætheling. It is important to trace her lineage. Canute, the Danish king of England, had banished Edwin and Edward, the children of Edmund Ironside, the last of the pure Saxon dynasty, for Edward the Confessor was half a Norman. They found a retreat in Hungary, where Edwin died; but from this country Edward, in 1057, was recalled by Edward the Confessor.

¹ Matthew of Westminster, p. 367. Brady's Compleat History of England, p. 120.

² Chalmers's Caledonia, vol. i. p. 389, 393.

³ Ibid. vol. i. p. 402.

⁴ Ibid. vol. i. p. 402.

⁵ Ibid. vol. i. p. 405.

⁶ Chalmers's Caledonia, vol. i. p. 389.

Simeon of Durham, apud Twysden, vol. i. p. 81.

Scotland. sor. This prince had three children, a son, Edgar, commonly called Edgar Ætheling, the heir of the Saxon line, and two daughters, Margaret and Christian. On the conquest of England, the nobles of Northumberland, who were principally of Danish origin, led by two chiefs, named Maerleswegen and Gospatric, becoming disgusted at the Norman tyranny, fled to the court of Malcolm, taking with them Edgar and his two sisters. Edgar was weak, almost to imbecility; and in the event of his dying, or being found incapable of filling the throne, his claims as heir of the Saxon line descended to his sister. She was beautiful, accomplished, and pious; and a union which perhaps, at a distance, had been suggested to Malcolm by ambition, on a nearer view was perfected by love.

Invasion of England. The marriage of the Scottish monarch was soon followed by an invasion of England, in which Malcolm mercilessly ravaged the bishopric of Durham. The manner in which this predatory inroad was conducted marks the ferocity of the times. Malcolm and his subjects were Christians; yet even the churches were destroyed and burnt, while the unhappy persons who had fled to them for sanctuary were massacred, or consumed in the flames. During the occurrence of these savage scenes in England, Gospatric, one of the most powerful of the Northumbrian barons, whose assistance William the Conqueror had secured, swept through Malcolm's territory of Cumberland, and laid waste the country in a miserable manner, upon which the Scottish prince returned home, leading captive, says an English historian, such a multitude of young men and maidens, "that for many years they were to be found in every Scottish village, nay, even in every Scottish hovel."¹

A.D. 1069. There seems to be little doubt that this expedition of Malcolm was intimately connected with the determined stand made against William the Conqueror by the Northumbrian earls who had carried Edgar Ætheling into Scotland. Combining in 1069 with their brethren, the Danes, who brought a powerful fleet to their assistance, they advanced as far as York, where they put the Norman garrison to the sword; and here it is probable they expected to be joined by Malcolm, but being disappointed in their hope, they made peace with William, who had the address to dissolve the confederacy. Malcolm alone continued faithful to the cause of the Saxon prince; and, though deserted by his confederates, yet by invading England fulfilled his agreement.

William the Conqueror retaliates. This inroad led to a dreadful retaliation on the part of William. "To punish the revolt," we use the words of Lord Hailes, "and to oppose a wilderness to the invasions of the Danes, he laid entirely waste the fertile country which lies between the Humber and the Tees." "At this time," says William of Malmesbury, "there were destroyed such splendid towns, such lofty castles, such beautiful pastures, that had a stranger viewed the scene he might have been moved to compassion, and had one inhabitant been left alive, he would not have recollected the country." Of this fine district the inhabitants seem to have been almost wholly exterminated. Many who escaped the sword died of famine, many sold themselves for slaves, while those of higher quality, Norman as well as Saxon, sought an asylum in Scotland, and found at the court of Malcolm a favourable reception.

Invasion of Scotland in 1072. William having secured peace at home, prepared an armament against Scotland, and in 1072 he invaded that country, both by sea and by land. Malcolm wisely met superior power by an offer of submission. He sought and obtained peace, gave hostages, and performed homage. So far all is certain; but a question arises, for what was this homage performed? The answer may be given in the words of one

of the most able inquirers upon the subject: "According to the general and most probable opinion, this homage was done by Malcolm for the lands which he held in England."²

We have already met with Gospatric, the powerful Northumbrian earl who fled from the Conqueror to the court of Malcolm, bringing with him the heir of the Saxon line, with his sisters. Proving treacherous to Malcolm, Gospatric obtained from William the government of Northumberland; but on his return from his successful expedition against Malcolm, the Norman conqueror, from jealousy or disgust, degraded his Northumbrian ally, who once more fled to the Scottish king. Malcolm, on his part, not only forgave him, but presented him with the lands and castle of Dunbar, and the castle of Cockburnspath. He who held these estates, lying on the borders between the two countries, might be said to have the keys of Scotland at his girdle; and the circumstance is worthy of remembrance, not only as marking the origin of a potent family, destined to act a leading part in the future history of the country, but as indicating the policy of Malcolm, who, conscious of the inferiority of his own Celtic race, manifested a wise anxiety to prevail on strangers, whether Normans, Danes, or Saxons, to settle in his dominions.

The remaining portion of the reign of this energetic A.D. prince (1079-1093), is chiefly distinguished by a struggle 1079-1093. with William Rufus, who, upon the death of the Conqueror, had succeeded to the English throne. This prince appears to have withheld from Malcolm part of the English possessions to which he claimed a right; and with the view of compelling a surrender of them, the Scottish king invaded England, and penetrated as far as Chester, on the Were. Rufus led against him a superior force; and Malcolm, aware of his approach, prudently declined a contest, and by a timely retreat, secured his plunder and his captives.

This appears to have taken place in May 1091; and in Rufus invades Scotland, A.D. 1091. the autumn of the same year, the Norman prince, having equipped a fleet, and levied a numerous land force, led his army in person against Scotland. He continued his march to the shores of the Forth; but here his progress was stayed, in consequence of his receiving intelligence that his fleet had been destroyed by a tempest. There were no vessels to transport his troops across the Forth. The Scots, with a policy which they early learned, and repeatedly practised, had driven away their cattle, and cleared the country of its provisions; and at this crisis, when his soldiers were perishing from famine, Malcolm led his army against the English, crossed the Forth, and advanced into Lothian; a territory originally, as we have seen, acquired from the Angles, and therefore esteemed a part of England, although now subject to the Scottish king. Here having chosen a strong position, he encamped, and avoiding a battle, harassed the enemy, proposing to cut off his supplies, and expel him by famine. While both parties were thus situated, Edgar Ætheling, now with Rufus, and Robert, the king's brother, exerted themselves to conciliate a peace. The English monarch, notwithstanding his fiery temper, knew how to bend his fury to his interest; and Malcolm, perceiving that he could obtain his purpose by treaty, wisely preferred this to the risk of a battle. It is important to mark the conditions of the agreement. William Rufus, we find, consented to restore to Malcolm twelve manors, which the Scottish prince had held under the Conqueror, and to make an annual payment to him of twelve marks of gold.³ Malcolm, on his part, consented to do homage to William, and to hold his lands under the same tenure of feudal service and obedience to him, as he had formerly paid to his father the Conqueror.

Here pausing for a moment upon a subject which has

¹ Simeon of Durham, 201. Translated by Lord Hailes, vol. i. p. 1.
³ Simeon Dunelm., apud Twysden, vol. i. p. 216.

² Hailes's Annals, vol. i. p. 13.

Scotland.
Question
of homage.

given rise to some discordant opinions, and which, now that the bitterness of national rivalry is at an end, may, we trust, be calmly considered, we would remark that, taking the testimony of English historians as our guide, all as yet seems clear, as to the much debated subject of homage. Simeon of Durham expressly declares that Malcolm agreed to obey William Rufus on the same conditions as those on which he had obeyed William the Conqueror. Under the Conqueror it is certain that Malcolm held twelve manors in England. These Rufus had seized; but he now restored them, and Malcolm renewed his obligation of homage. On a former occasion when, as we have seen, the Scottish king, in 1072, paid his homage to the Conqueror in person, the ground upon which he paid it is equally clear. Previously to the battle of Hastings, the Scottish monarchs had obtained from the Saxon kings some possessions in England. This was before the introduction of the strict feudal tenures, which came in with the Normans; but there is no doubt that these possessions were held under the condition of aiding the Saxon princes in repelling the incursions of the Danes.¹ When William the Conqueror established himself in England, Malcolm, as we have seen, considered him as a usurper of the rights of his brother-in-law, Edgar Ætheling; and, on this ground, as well as perhaps from an indisposition to embrace a system which must have been new to him, he had at first refused to pay his homage for the lands he held in England. Circumstances, however, made him change this resolution. The prevailing power of William, the acquiescence of the English under his government, and the inactivity and imbecility of Edgar Ætheling, his brother-in-law, induced him to desist from a conflict in which he ceased to have an interest. A more intimate acquaintance with the feudal tenures introduced into England taught him that, in the acknowledgment of superiority for the lands which he held in that country, there was no sacrifice of dignity as an independent monarch, and as all idea of restoring Edgar was abandoned, he paid his homage to the conqueror.²

New disputes between
Malcolm
and Rufus,
A.D. 1092.

The point of homage seemed thus prudently settled; but the proud and fiery temper, which appears to have been an infirmity of both princes, soon led to a new contest between Malcolm and Rufus. A jealousy of the incursions of the Scots had formerly led the Conqueror to build two strong castles, the one at Durham, the other at Newcastle. To these his successor now added a third at Carlisle; a barrier which, however necessary, might possibly be considered as encroaching on the freedom of the lands which Malcolm held in Cumberland. A dispute arose, and a personal interview between the two kings having been considered the best mode of settling their differences, Malcolm repaired to Gloucester, where Rufus met him and proposed that he should do homage in presence of his English barons. This the Scottish monarch refused; although he was ready, he said, to perform his homage on the frontiers of both kingdoms, as had been the ancient usage. The reply was angrily received, and the two kings having parted with expressions of defiance, Malcolm assembled an army, and advancing with a speed whetted by the indignity with which he had been treated, burst into Northumberland, which he wasted with fire and sword. Sweeping onwards to Alnwick, he was about to possess himself of the castle, when the Scottish army was attacked by Robert de Mowbray. In the battle which ensued Malcolm was slain, and Edward, his eldest son, shared the fate of his father.

Death of
Malcolm,
A.D. 1093.

We have already observed that the mild and gentle dispo-

sition of his queen, St. Margaret, had an admirable influence over the fierce and impetuous character of this prince. Of her life we have an interesting account from the pen of Turgot her confessor; and we cannot resist borrowing a few touches from this early specimen of biography. When the king set out on his last expedition against England, Margaret was suffering from a fatal and lingering complaint. She only lived to hear of the death of her husband and her son. Her last moments are thus described by that faithful minister, who related what he saw: "During a short interval of ease, the queen devoutly received the communion. Soon after, her anguish of body returned with redoubled violence; she stretched herself upon her couch and calmly waited for the moment of her dissolution; cold, and in the agonies of death, she ceased not to put up her supplications to heaven. These were some of her words: 'Have mercy upon me, O God; according to the multitude of thy tender mercies blot out mine iniquities; make me to hear joy and gladness, that so the bones which thou hast broken may rejoice.' At that moment," continues Turgot, "her son, Edgar, returning from the army, approached her couch. 'How fares it,' said she, 'with the king and my Edward?' The youth stood silent. 'I know all; I know all. By this holy cross, by your filial affection, I adjure you to tell me the truth.' He answered, 'your husband and your son are both slain.' Lifting up her eyes and her hands to heaven she then said, 'Praise and blessing be to thee, Almighty God, that thou hast been pleased to make me endure so bitter anguish in the hour of my departure, thereby, as I trust, to purify me in some measure, from the corruption of my sins; and thou, Lord Jesus Christ, who, through the will of the Father, hast enlivened the world by thy death, oh deliver me.' While pronouncing the words 'deliver me,' she expired."³

"In reviewing the reign of Malcolm the Third," says Lord Hailes, "we may discern a character of steady persevering courage. From his early youth to his last invasion of England, his conduct was uniform. He maintained his throne with the same spirit by which he won it. Though he was the ruler of a nation uncivilised, and destitute of foreign resources, and had such antagonists as the Conqueror and William Rufus to encounter, yet, for twenty-seven years, he supported this unequal contest, sometimes with success, never without honour. That he should have so well asserted the independency of Scotland is astonishing, when the weakness of his own kingdom, and the strength and abilities of his enemies are fairly estimated."⁴

Malcolm's eldest son had fallen, as we have seen, with his father. His remaining sons, Ethelred, Edmund, Edgar, Alexander, and David, were all under age; and his brother Donald, who, on the usurpation of the throne by Macbeth, had taken refuge in the Hebrides, appears to have remained in that distant retreat during the whole reign of the late king. These islands were then independent of the Scottish crown. They were inhabited by a warlike race, whose chiefs yielded to the Norwegian king a fluctuating subjection; and many of these leaders having joined him, Donald, with a powerful fleet, invaded Scotland and seized the crown; but it was for a very brief season. Duncan, a son of Malcolm, but illegitimate as is generally believed, had, in 1072, been delivered to William Rufus as a hostage for his father's fidelity. He had received his education at the Norman court, and having been knighted by the English monarch, was retained in his service. With permission of William, he now invaded Scotland, and assisted by a hand

Scotland.
Death of
St. Margaret.

Character
of Malcolm.

Donald
seizes the
crown,
A.D. 1093

¹ Caledonia, vol. i. p. 394.

² In this account of the expedition of William Rufus into Scotland, and in the remarks on the disputed point of the homage, we have been induced to treat the subject a little more in detail, availing ourselves of some manuscript notes of the late David Macpherson, a writer of great research and judgment. This seemed the more necessary, as the subject of Rufus's invasion of Scotland, and Malcolm's stipulated homage, has been considered by high authority as one involved in extreme obscurity.

³ Hailes's Annals, vol. i. pp. 40, 41, 4to edit. We have availed ourselves of Lord Hailes's translation of the passage from Turgot describing the queen's death.

⁴ Ibid. vol. i. pp. 25, 26, 4to edit.

Scotland. of English and Norman adventurers expelled Donald Bane. He, in his turn, after a reign of little more than a year, was assassinated, and Donald once more ascended the throne, from which, in 1097, he was again expelled by William Rufus, who dispatched Edgar Ætheling with a powerful army into Scotland. By this prince the aged usurper was defeated, and Edgar, the son of Malcolm and Margaret, the nephew of Edgar Ætheling, ascended the throne. This event took place in the close of the eleventh century; and, with the captivity and death of Donald Bane, who is the last of the race of Scoto-Irish kings, the Scottish period expires.

Edgar.
A.D. 1097.

And here, after having passed over a portion of our history which extends from the middle of the ninth to the end of the eleventh century, let us pause to say a few words on the condition of the church, the state of the laws, and the manners of the people. To every critical student of this period one thing appears certain. Throughout its whole extent, we find the predominant people a Celtic race. The laws were Celtic, the government Celtic, the usages and manners Celtic, the church Celtic, the language Celtic. "If," says Chalmers, "Malcolm Canmore, a Celtic prince, who did not arrogate the character of a lawgiver, had been disposed to effect a considerable change in this Celtic system, he would have found his inclination limited by his impotence. The Scottish kings, during those times, seem not to have possessed legislative power. Whenever they acted as legislators, they appear to have had some coadjutors; either some maormors, a term by which we are to understand the chief civil ruler of a district, or some bishops." We shall see, when we pursue our inquiry into a later period, that the children and grandchildren of this Celtic monarch, when they attempted to introduce new maxims of government, were opposed in Galloway and in Moray by frequent insurrections.

State of
the Church.

Looking now first to that most important and interesting point, the state of the church, we have already seen that, at the commencement of the Pictish period in 446, Christianity had been introduced into North Britain. Of the exact constitution, discipline, and orders in the early Scottish church, from the conversion of the Scots to the commencement of the Scoto-Pictish period (843), much has been written; and it is well known that the advocates of episcopacy and the supporters of presbyterianism have each endeavoured to deduce, from an examination of these remote ages, irrefragable arguments for their peculiar opinions. Into this discussion it belongs not to our plan to enter. We deal with general results, and dare not embark in controversy; but we may be permitted to observe, from the authentic monuments which still remain in our own times, and it seems difficult to avoid the conclusion, that the primitive and most ancient form of church government in Scotland was episcopal. At the memorable epoch of the union of the Picts and the Scots, we find a bishopric of Lindisferne extending far into Lothian. In Lothian itself, the religious houses of Melrose, Coldingham, Tynningham, Pepperham, and Abercorn, had been long established. In Galloway, the bishopric of Whithorn, which we have seen founded by St. Ninian, had fallen soon after the commencement of the ninth century. Looking beyond the Friths, we find that, at the same period, various religious cells had been settled by the disciples of Columba; and that not long afterwards, Kenneth Macalpin, anxious to testify his respect for the relics of this apostle of the Scots, removed his relics from Iona to Dunkeld, where he built a church, which became not only the seat of a bishop, (849), but, till supplanted by St. Andrews, the seat of the primate of the Scottish church. There is an ancient legend quoted by Spottiswood from the register of St. Andrews, which, if any credit is to be attached to it, gives the honour of founding the see of St. Andrews to Hungus king of the

Picts, who died in 833. This prince, it appears, had invaded Northumberland, and upon his return was overtaken by Athelstan, king of the West Saxons, at the head of a powerful army. "Having given order for battle against the next day," says the historian, "Hungus betook himself to prayer, spending most part of the night in that exercise. A little time before day, falling into a slumber, it seemed to him that the apostle St. Andrew stood by him and assured him of the victory, which vision being related to the army, did much encourage them. The history addeth that, in the joining of the battle, there appeared in the air a cross in the form of the letter X, which so terrified the enemies as presently they gave back, king Athelstan himself being killed. Hungus, to express his thankfulness for the victory, gave to the church of Regulus, now called St. Andrews, divers rich gifts, as chalices, basons, the image of Christ in gold, and of his twelve apostles in silver. He gave likewise a case of beaten gold for preserving the relics of St. Andrew, and restored to the spirituality the tithe of all corn, cattle, and herbage within the realm, exempting them from answering before any temporal judge; farther, he did appoint the cross of St. Andrew to be the badge and cognizance of the Picts, both in their wars and otherwise, which, as long as that kingdom stood, was observed, and is by the Scots as yet retained."¹

This extract we have given rather as a curious example of the earliest tradition as to the national emblem of the cross of St. Andrew, than from any high opinion of the authenticity of king Hungus's devotion. The following list of the Scottish bishoprics, according to the date of their foundation, is taken from Keith's Catalogue. It is to be observed, however, that in some of its dates we must regard it rather as an approximation to the truth, as far as it can be ascertained from authentic sources, than as fixing the exact years of the erection.

	A.D.		A.D.
1. See of the Isles.....	447	7. See of Ross.....	1128
2. See of Galloway.....	450	8. See of Brechin.....	1150
3. See of Glasgow.....	560	9. See of Caithness.....	1150
4. See of Dunkeld.....	729	10. See of Dunblane....	1160
5. See of St. Andrews..	892	11. See of Moray.....	1162
6. Mortlach, afterwards Aberdeen.....	1010	12. See of Argyle.....	1200

Of these episcopal sees, the reader will observe, that only the bishoprics of the Isles, Galloway, Glasgow, Dunkeld, St. Andrews, and Mortlach, afterwards Aberdeen, belong to the period of which we now treat, from 843 to 1097; although the remaining sees are added, to afford to the reader some idea of their comparative antiquity. "The united kingdom of the Picts and Scots," says Chalmers, "was formed under the regimen of parishes, though neither the times nor the circumstances of this formation can be clearly ascertained amid the gloom which hangs over the Scotian church during the Scottish period. We may easily suppose that those ecclesiastical districts were gradually established subsequent to the great epoch of 843. They were pretty generally settled during the Scottish period, though they were inconveniently large. They were established by private persons, rather than by public authority. But that parishes existed during the reign of Malcolm Canmore, is certain from unquestionable records. Thus, in the charter of David the First to the monastery of Dunfermline, this monarch uses these words: *Preterea pater meus (his father was Malcolm the Third,) et mater mea dederunt ecclesiæ Sanctæ Trinitatis parochiam totam de Fotheriff.*" It seems equally certain," he continues, "that when churches were erected, parishes laid out, and parochial duties statedly performed, ecclesiastical dues must have been incident-

Scotland.
State of
the Church.
A.D. 843-
1097.

¹ Spottiswood's History of the Church of Scotland, p. 23.

² Chalmers's Caledonia, vol. i. p. 432.

Scotland

Tithes.
Ecclesiastical
councils.

The Culdees.

Laws, manners, and
language.

Tanistry.

ally paid. In the charters of Alexander the First, and of David, tithes are mentioned as if they were familiarly known, and had been long established. It is clear that tithes were paid to the clergy during the reign of Malcolm Canmore, and probable that such ecclesiastical dues were payable as early as the commencement of the tenth century (910,) when Constantine the king, and Kellach the bishop, solemnly vowed to observe the faith, discipline, and rights of the churches.¹ During the reign of Malcolm Canmore, according to the high authority of Innes,² several national councils were held in Scotland for the establishment of ecclesiastical discipline, and the reformation of the rude and fierce manners of the people. Some extracts from the canons passed in these councils are inserted by Turgot, the confessor of Malcolm's pious consort St. Margaret, in the interesting life which he has given us of this princess.³

During this obscure period, we meet with frequent mention of an order of religious men named Culdees, who first appear in the beginning of the ninth century. They seem to have been a kind of secular presbyters or monks, the Gaelic term Culdec meaning a recluse or hermit. With the exception of the form of the tonsure and the rule of observing Easter, they professed the same rites and ceremonies as the rest of the church. It has been erroneously pretended that the Culdees rejected bishops. So far was this from being the case, that we have repeated instances of the colleges of these Celtic monks having been instituted and ordained by the bishops themselves, while they, wherever they had a college about the see, possessed a vote in the election of the bishop.⁴ Of this distinct order, we find that there existed in North Britain, during the Scottish period, religious houses at Abernethy, Dunkeld, St. Andrews, Dunblane, Brechin, Mortlach, Aberdeen, Monymusk, Lochleven, Portmoak, Dunfermline, Scone, and Kirkcaldy.⁵

It remains to say a few words on the laws, manners, and language of the Scottish period. To affect to speak with certainty upon the laws which regulated the government, restrained the crimes, or directed the succession of a fierce and barbarous people who have left no written muniments, would betray presumption and ignorance. As far as can be conjectured, we find the crown neither strictly hereditary nor strictly elective, but directed in its descent by what has been termed the law of *Tanistry*; an institution by which the person in the family of the reigning prince who was judged best qualified, whether son, brother, or even more remote relative, was chosen under the name of Tanist, to lead the army during the life of the king, and to succeed to him after his death. Chalmers has asserted, that, at this era, the tenure of land throughout the country determined with the life of the possessor; an opinion requiring some modification, as it indicates a state of barbarism even greater than is discovered by the few glimpses of light which sometimes shoot athwart this twilight of our history. By a custom which the Scots evidently brought with them from Ireland, denominated in Irish *gabhail-cine*, meaning literally family settlement, it appears, that the fathers of families divided their lands among their sons, sometimes in equal, sometimes in unequal portions, and strictly excluded females from any share in this appropriation. As to their legislative code, there seems to be little doubt that the nearest

approach we can make to the laws or usages of Celtic Scotland, must be by the study of such fragments as remain to us of the brehon laws of Ireland. "This brehon law," says Cox, "was no written law, it was only the will of the brehon or lord; and it is observable that their brehons or judges, like their physicians, bards, harpers, poets, and historians, had their offices by descent and inheritance. These hereditary judges or doctors," continues he, "were but very sad tools. The brehon, when he administered justice, used to sit on a turf or heap of stones, or on the top of a hillock, without a covering, without clerks, or indeed any formality of a court of judicature." This state of law, observes the author of *Caledonia*, may be traced among the Scoto-Irish in Scotland till recent times. Every baron had his mote-hill, whence justice was distributed to his vassals by his baron bailie.⁶ There seems to be little doubt that Malcolm, from his marriage with a Saxon princess, and his frequent intercourse with the Saxon and Norman people, was an admirer of their superior civilization, and anxious to introduce their usages among his own ruder subjects. But that he succeeded to any material degree is extremely problematical; and the notion that he introduced the complicated system of the feudal law into Scotland, has been long ago exploded.

In a rapid sketch of this nature, little room can be given to any detailed description of the manners of the people during the Scottish period. The natural state of the Celtic tribes in Scotland was similar to that which we find existing among them in Ireland, namely, a state of constant war; and to those who consider how slow is the progress of improvement, and how strong the principle of imitation and tradition among a savage people, it will be no subject of wonder that we find little change produced by the lapse of centuries upon the manners of the ancient British, whether we look to Wales, Ireland, or North Britain. Their marriages, their mode of burial, their dress, their war cries, were similar. Armorial bearings, during this whole period, were unknown; seals, and coined money they had none; and it has been remarked by Chalmers, that the Gaelic people of Scotland borrowed their very terms for the several denominations of money from the Scoto-Saxon inhabitants. Thus, the Gaelic feorling, farthing, is from the Saxon feorthing; the Gaelic peighin, a penny, is from the Saxon penig.

In those rude ages of which we now write, stones of memorial were frequently employed, and many of them still remain; yet as they are found without inscriptions, and only occasionally ornamented by rude hieroglyphics, the memory of the events which they describe has perished, and the field is left open to antiquarian conjecture. Inaugural stones also were used by them, upon which not only the Irish and Scottish kings were placed on their accession to the crown; but the chiefs of septs or petty *reguli*, were accustomed on the same to take the oaths to their vassals, when they succeeded to the power of the former chief. To the same class of inaugural stones belongs, as is well known, the famous coronation stone of Scotland. Tradition reports this singular relic to have been brought from Ireland by Kenneth; it was undoubtedly carried off from Scone by Edward the First, who inserted it into a chair, which he placed before the shrine of Edward the Confessor in Westminster Abbey. It is almost impossible to speak with any precision of the state

¹ Innes, p. 785. Chronicle. Codex Colbertinus. See also Innes, 603.

² Idem. p. 588.

³ And here having spoken of St. Margaret, we cannot refrain, in these brief remarks on the early state of the Scottish church, from alluding to a beautiful picture preserved by this same worthy Bishop Turgot, in which he describes the love of Malcolm for St. Margaret, and the influence which the mild piety of the Saxon princess acquired over the fiery temper of her Celtic husband. "Malcolm," says he, (we use Lord Hailes's translation), "respected the religion of his spouse, was fearful of offending her, and listened to her admonitions. Whatever she loved or disliked, so did he. Although he could not read, he frequently turned over her prayer-books, and kissed her favourite volumes. He had them adorned with gold and precious stones, and presented them to her in token of his devotion. She instructed him to pass the night in prayer, with groans and tears. I must acknowledge, that I often admired the works of the divine mercy, when I saw a king so religious, and such signs of deep compunction in a layman."—Hailes, vol. i. p. 15.

⁴ Goodal's Introduction to the History and Antiquities of Scotland, p. 117.

⁵ Caledonia, vol. i. p. 308.

⁶ Chalmers, vol. i. p. 434.

Scotland. of society in this remote period, yet a few incidental gleams
 of light are reflected from the lives of the early saints.
 Manners. Thus, in Adomnan's life of Columba, which was written
 only eighty years after the saint's death, we find frequent mention of houses of wattle, similar probably to those
 which the Constable Richard de Moreville, in a charter of
 the twelfth century, denominates *clauis niscatae*.¹ Even the
 abbey of Iona was built of the same rude materials. The
 clothing of the monks seems to have been often composed
 of the skins of beasts, though latterly they had woollen stuffs
 and linen; the first probably manufactured by themselves,
 the linen imported from the continent. Venison, fish, milk,
 flesh, and wild fowl, were the common food of the people.
 "The monks of Iona," says Chalmers, "who lived by their
 labour, cultivated their fields, and laid up corn in their gar-
 ners." But it is to be recollected that the monks were every
 where, for ages, the improvers themselves, and the instruc-
 tors of others in the useful arts. Even Iona had its orchards
 in the rugged times of the ninth century, till the *vikinghr*,
 or pirate kings, ravaged and ruined all. Looking to their
 shipping, we find that their little vessels were constructed
 by covering a keel of wood and a frame of wicker work
 with the skins of cattle and of deer. These were denomi-
 nated *currachs*. Afterwards they were enlarged and made
 capable of containing a respectable crew. It was in a ves-
 sel of this description, a wicker boat covered with hides, that
 Columba, accompanied by twelve of his friends, embarked
 from Ireland, in the year 563, and landed in Iona. With
 these few remarks, we close the Scottish period of our na-
 tional history.

SECT. IV.—Scoto-Saxon Period.

A.D. 1097– We have already seen, that the death of Malcolm Can-
 1306. more at Alnwick gave rise to a temporary usurpation of
 the throne by Donald his brother, that he was expelled
 by Duncan, an illegitimate son of Malcolm, who had been
 educated at the court of William Rufus; and this Duncan
 having been assassinated, Edgar Atheling led an English
 army into Scotland, and placed Edgar, the son of Malcolm
 Canmore, on the throne.

Alexander I. Edgar's reign was brief, pacific, and of little interest; but his
 A.D. 1106. successor, Alexander the First, the eldest surviving son of
 Malcolm, was a prince of a powerful and vigorous character.
 From his accession to the throne, in the commencement of
 the twelfth century, (1106), to the death of Alexander the
 Third (1285), in the close of the thirteenth, a period little
 short of two centuries, the nation was progressive and pros-
 perous in a degree unequalled during the whole course of
 its future history. Under a succession of six monarchs,
 Alexander the First, David the First, Malcolm the Fourth,
 William the Lion, Alexander the Second, and Alexander
 the Third, it maintained its independence against foreign
 aggression, and not only preserved the integrity, but extend-
 ed the boundaries of its dominions. Its commerce, its ma-
 nufactures, its agriculture, and all the arts which improve
 and humanize an ignorant and fierce people, were encour-
 aged; and throughout this long period, in the personal cha-
 racters of each of these successive princes, though varying
 in their shades, there was that ingredient of energy and
 boldness which communicated itself to their people, and
 maintained the nation at the standard to which each ruler
 in his turn had raised it.

A.D. 1106– Let us for a moment pursue our system, and like a tra-
 1285. veller gazing from a mountain height, and noting the land-
 marks of a new country, endeavour to detect the leading
 and influential events in this division of our national his-
 tory. In the character of Alexander the First, every
 thing seems to have been in excess; but happily the qua-

lities which were so overcharged, were most of them of Scotland.
 the better sort. He is traditionally remembered by the
 epithet of the *fierce*; and though humble and courteous
 to his clergy, whom he deemed entitled to this homage as
 God's servants, not his, he was, to use the words of an an-
 cient and authentic writer, "terrible beyond measure to
 his subjects." The leading event of his reign was the
 struggle which he maintained for the independence of the
 Scottish church against the pretended rights claimed, first
 by the see of York, and afterwards by that of Canterbury.
 On the election of Turgot, a monk of Durham, to the bishop-
 ric of St. Andrews (1109,) the archbishop of York insist-
 ing on his having the right of consecrating him. To this
 the Scottish king declared he would never agree; and a
 compromise having taken place, by which the point was left
 undecided, Alexander, on the death of Turgot, altered his
 ground, and chose for his successor Eadmer, a monk of
 Canterbury. The same right of consecration, and founded
 on the same ground of the alleged dependence of the Scot-
 tish church upon the primacy of England, was now ad-
 vanced by Canterbury; but it was still more haughtily and pe-
 remptorily refused by Alexander. A compromise again
 took place. Eadmer accepted the ring from the king, and
 took the pastoral staff from the altar, as if receiving it from
 the Lord; but finding his authority weakened, and the coun-
 tenance of the monarch withdrawn from him, he intimated
 his resolution of repairing to Canterbury for advice. This
 Alexander violently opposed, declaring that as long as he
 lived, the bishop of St. Andrews should never be subject to
 that see. Nor did he fail here, as in all his other enter-
 prises, to keep his word; Eadmer remained an elected but
 unconsecrated bishop. At length weary of the contest, and
 trammelled in his usefulness, he desired permission to resign,
 restored the ring to the king, replaced the pastoral staff on
 the high altar, and returned to Canterbury. Robert, prior
 of Scone, was elected to fill the vacant see, and the king's
 determined efforts to maintain the independence of the
 Scottish church were crowned with success. It had con-
 tinued for fourteen years, and Alexander survived its ter-
 mination only a single year. He died in 1124, leaving no
 children by his wife Sybilla, a natural daughter of Henry I.
 the First, and was succeeded by his brother, David the
 First.

Edgar, the brother of this prince, had, on his death-bed,
 bequeathed to him that portion of Cumberland which was
 possessed by the Scottish kings. The legacy had two good
 effects. It called the young prince early to the cares and
 labours of administration; and it removed him from Scot-
 land to a country where he became acquainted with a
 more advanced civilization and with better regulated govern-
 ment. These advantages were not thrown away upon
 David. His natural dispositions were excellent; his love of
 justice, his capacity for labour, his sense of the national ho-
 nour and independence, his affection to every class of his
 people, his tenderness to his children, his piety to God,
 were all so conspicuous in his character, that Buchanan, an
 author who cannot be suspected of adulation, pronounces
 him the perfect exemplar of a good king; and the progress
 made by the country during the twenty-nine years of his
 reign goes far to justify the assertion.

His reign was contemporary with that of Henry the First War with
 and of Stephen in England, and it opened with many diffi-
 culties. The question of the independence of the church
 was again started; and before it could be brought to a
 termination, the forcible seizure of the English crown by
 Stephen, who deposed Matilda, the daughter of Henry the
 First, involved him in a war with that usurper. During
 the life of Henry the First, David and Stephen had sworn

¹ Liber de Melrose, vol. i. p. 95.

Scotland. to maintain the right of Matilda; and the Scottish monarch, in obedience to his oath, invading England, compelled the barons of the northern portion of that kingdom to swear fealty to this princess. His efforts however were more honourable than successful; and after a war which lasted three years, David was ultimately defeated in the great battle of the Standard, fought on Cutton Moor, in the neighbourhood of Northallerton. Peace was now concluded, and the terms to which Stephen consented, indicate that, although defeated, the Scottish king was but little humbled.

Battle of
the Stand-
ard.
A.D.1138.

The earldom of Northumberland, with the exception of the two castles of Newcastle and Bamborough, was ceded to Prince Henry, David's eldest son. As an equivalent for these fortresses, lands were granted to him in the south of England; the barons of Northumberland were to hold their estates of Henry the Prince of Scotland, reserving their fealty to Stephen; and in return, David and all his people became bound to maintain an inviolable peace with England.

Character
of David I.

The remaining years of the reign of this wise monarch were pacific and prosperous. The war had convinced him that the English were far superior to his people in arms and discipline; it had been undertaken in fulfilment of his oath to Henry, not from any love of conquest, and having satisfied his conscience, he devoted his life to the arts of good government. "During the course of his sage administration," says Lord Hailes, "public buildings were erected, towns established, agriculture, manufactures, and commerce promoted. The barbarities of his people in their invasions of England, had affected him with the deepest anguish, and believing that religion was the only agent which could humanize and improve the savage multitudes whom he had led, but could not restrain, he endowed the church with new privileges, enriched it with extensive grants of land, founded various bishoprics, built many monasteries, and exhibited in his own person so fine an example of royal greatness, chastened and purified by Christian humility and devotion, that it could not fail to have the best effects upon his people."

Death of
Prince
Henry.
A.D.1152.

Towards the close of his reign, it was his misfortune to lose his eldest son, Prince Henry, just as he had reached manhood, and exhibited many of the excellent qualities of his father. The blow sunk deep into his heart; but David's first care had been for his people, and he roused himself to provide for the pacific succession of his grandson, Malcolm, a child in his twelfth year. By his orders, this boy, the son of Prince Henry, was carried in a progress through his dominions, to receive the homage of the barons and the people, and was solemnly proclaimed heir to the crown. Having performed this wise but mournful duty, the aged king within a year followed his son to the grave. It is a remarkable and beautiful circumstance, that he was found dead in an attitude of devotion. "His death had been so tranquil," says Aldred, who knew him well, "that you would not have believed he was dead. He was found with his hands clasped devoutly upon his breast in the very posture in which he seems to have been raising them to heaven."

Death of
David I.
A.D.1153.

Malcolm
IV.

The reign of Malcolm the Fourth, which lasted only twelve years, offers little for our observation. It began with those evils which so invariably attend a minority; war without, and insecurity within the kingdom. Somerled the thane of Argyle, strengthened by the naval powers of the Isles, invaded Scotland, and for some years continued to harass the country by repeated attacks, which at length terminated in an amicable agreement. The transactions of Malcolm with Henry the Second of England impress us with an unfavourable notion of this young prince. It had been a promise of the English monarch made to David the First, in 1149, that if he succeeded to the crown of England, he

would cede to Scotland for ever the territory between the Tyne and the Tweed. Instead of insisting on this, Malcolm, overreached by the superior sagacity of Henry, or betrayed by the treachery of his councillors, abandoned to England his whole possessions in the northern counties, and received in return the honor of Huntingdon; a measure which created universal discontent in the nation. These feelings of disgust were imprudently increased by an expedition of the young prince into France, where he joined the army of Henry, claimed from him the distinction of knighthood, and outraged the feelings of national jealousy, by forgetting his station as an independent prince, and fighting under the banner of the English monarch. A deputation from the Scots was sent into France to remonstrate against this conduct, nor did they hesitate in bold language to reproach their king for the desertion of his duty. Galloway rose into rebellion; the inhabitants of Moray about the same time threw off their allegiance; and Somerled the thane of Argyle invaded the country with a formidable fleet. Although the obstinacy of the king had brought these disasters upon himself, his energy and decision met and overcame them. He hurried from France, conciliated his nobles, invaded and subdued Galloway, repulsed Somerled, and after suppressing the rebellion in Moray, adopted the extraordinary measure of dispossessing its ancient inhabitants, compelling them to settle in more distant parts of his dominions, and planting new colonies in their room. These energetic measures were his last, for he died immediately after, at an early age, and was succeeded by his brother William the Second, son of Henry, prince of Scotland, and grandson of David the First.

The administration of this prince presents us with the longest reign in the range of Scottish history, extending from 1165 to 1214, nearly half a century. In this protracted division, the most important event was, the disgraceful surrender of the national independence to Henry the Second in 1174, and its recovery by William in 1189. Both transactions require our serious notice. It was the weakness of William to be guided by impulse. Smitten with admiration for the warlike qualities of Henry the Second, and uninstructed by the misfortunes of his predecessor Malcolm, he first courted this prince, and being disappointed in his object of procuring from his justice the restitution of Northumberland, he imprudently defied him. War ensued; and the king of the Scots having advanced with his army to Alnwick, was surprised, made prisoner, and shut up in the castle of Falaise in Normandy. His impatience under captivity, and the longing of the barons and clergy for their king, led to a pusillanimous treaty, which will ever remain a blot upon the national honour. With consent of his barons and clergy, given at Valogne on the 8th of December 1174, William agreed to become the liegeman of Henry for Scotland, and all his other territories; to deliver up to the English monarch the castles of Roxburgh, Berwick, Jedburgh, Edinburgh, and Stirling; to give his brother David and some of his chief barons as hostages, and to receive in return his liberty. In this treaty, it is remarkable, that while little care was shown as to the independence of the people, a prudent, and, as it has been well denominated, a memorable clause was introduced, which left entire the independence of the Scottish church; and this clause, the bishops and clergy took the first opportunity of asserting before the Papal legate in a council held at Northampton (1176).

On his return to his dominions, William appears to have devoted himself with much energy and success to the cares of government. His dominions were weakened and distracted by repeated insurrections in Ross and in Galloway. In these wild and remote districts, the native chiefs claimed almost a royal sway; and the people, ferocious in their habits, and jealous of all intercourse with England, were ready, upon the slightest provocation or encouragement, to

Scotland.
Malcolm
IV.
A.D.1153-
1165.

William
the Lion.
A.D.1165-
1214.

Returns to
Scotland.

Scotland. rise in rebellion. A pretender to the crown also appeared in Galloway, in the person of Donald, the grandson of Duncan, commonly called the bastard king of Scotland. This adventurer having seized Ross, and wasted Moray, William led an army against him; nor was it till after a desperate struggle that Donald fell near Inverness, and by his death restored tranquillity to the country.

The Scottish Church declared independent. A.D. 1188. We have already seen how firmly the Scottish church had renounced the idea of any dependence upon the metropolitan sees of York or Canterbury; we have adverted to that careful reservation of their rights at the moment when the king and the nobles bartered away what was not theirs to give, the national independence. In this resolute conduct the clergy were supported by the king; and in 1188, Clement the Third pronounced a solemn decree, by which he declared the "church of Scotland to be the daughter of Rome, and immediately subject to her; and that to the Pope alone, or his legate de latere, should belong the power of pronouncing any sentence of excommunication against that kingdom."

The kingdom recovers its independence. This important declaration was soon followed by another event still more memorable, in which the kingdom recovered its independence. On the death of Henry the Second, Richard Cœur de Lion, his successor, then intent upon collecting money for his expedition to the Holy Land, invited the king of Scotland to his court, and upon William's engagement to pay to him the sum of ten thousand merks, agreed to restore his kingdom to its independence, reserving the homage formerly due by the Scottish kings for the lands which they held in England. The instrument by which this transaction was completed, declares, that Richard had delivered up to William king of Scots, his castles of Roxburgh and Berwick, had granted to him an acquittance of all obligations which had been extorted from him by Henry the Second, in consequence of his captivity, and had ordained the boundaries of the two kingdoms to be re-established as they existed at the date of William's imprisonment. The Scottish king was at the same time put in possession of all his fees in the earldom of Huntingdon; and all the charters of homage done to Henry the Second by the Scottish barons were delivered up, and declared to be cancelled for ever. We are to ascribe it to the wise regulations of this treaty, and the fidelity with which they were observed on both sides by its authors and their successors, that for a century after its date, there occurred no national quarrel or hostilities between the two countries. The remaining portion of the reign of William demands little notice. During the latter years of it, the succession of John to his brother Richard the First threatened to dissolve the pacific relations between the two countries; but war was happily averted, and the Scottish monarch reserved his energies for the pacification of his own realm, disturbed by a rebellion in the northern counties. In 1214, the king died at Stirling, after a reign of forty-eight years, the longest, as already stated, in Scottish history. His name of William the Lion was probably owing to the circumstance, that, before his time, none of the Scottish kings had assumed a coat armorial. The Lion rampant first appears upon his shield.

Alexander II. A.D. 1214. William was succeeded by his son Alexander, a youth of seventeen, to whom the Scottish barons had sworn homage in 1201, and who was one of the wisest of our kings, whether we regard the justice of his administration, the seasonable severity with which he subdued all internal commotions in his kingdom, the firmness exhibited in his maintenance of the rights of the church, or the wisdom, forbearance, and vigour which marked his policy towards England. His reign was one of constant action, and full of incident. It commenced with his joining the English barons who resisted the tyranny of John. This conduct drew down upon him and his kingdom a sentence of excommunication (1216); but the papal terrors appear to have been little dreaded at this time; and in 1218, Honorius not only abrogated the

sentence pronounced by his legate, but confirmed the liberties of the Scottish church.

On the accession of Henry the Third to the English throne, Alexander, who was occupied with quelling the repeated insurrections in the northern parts of his dominions, showed every disposition to cultivate amity with England; and his marriage to the princess Joanna, sister of Henry, had a favourable effect in strengthening the ties between the two monarchs.

One of the striking features which mark the reign of this monarch, is the gradual increase that is to be observed in the power of the nobles, and the corresponding decrease in the authority of the crown; but if this had injurious effects upon the general prosperity of the kingdom, and distracted it by internal private feuds, it encouraged a feeling of independence, and fostered that warlike spirit, which proved the best safeguards against the encroachments of their more powerful neighbours. This was strikingly shown on the occurrence of a rupture between England and Scotland in 1244. Some time before this, Alexander had claimed from Henry, in right of inheritance, the counties of Northumberland, Cumberland, and Westmoreland; and although the English king did not grant him his full demand, he admitted its justice, by transferring to him an equivalent in certain lands, which he accepted in full of all claims. For these lands the Scottish king did homage; and both monarchs remained on friendly terms for some years, when jealousies suddenly arose, and Henry, alleging that homage had been unjustly withheld, led an army against Scotland. Under these threatening circumstances, the Scottish king, although he had recently experienced the resistance of his nobles to his personal requests, found himself strongly supported by the same barons against the meditated attack of England. They raised in a short time an army of a hundred thousand foot, and a thousand horse, and this demonstration of the national strength had happily the effect of restoring peace without bloodshed. It is worthy of notice, that when a papal legate visited Scotland under this reign, and held a provincial council in the capital, the king manifested the same jealousy of such a proceeding as had been exhibited by his predecessors. He seemed afraid lest the admission of a papal messenger, whose message regarded England alone, should be deemed derogatory to the independence of the Scottish church; and although, at the request of the nobility of both countries, he consented to his coming into the kingdom, he declined a personal meeting, and stipulated that this permission should not be drawn into a precedent.

Having engaged in a maritime expedition against Angus of Argyre, one of those petty island chiefs, whose dubious allegiance, in those remote times, oscillated between Norway and Scotland, Alexander had conducted his fleet as far as the Sound of Mull, when he was seized with a fever, and died in a small island there named Kerraray, in the 35th year of his reign. He was succeeded by his son, Alexander the Third, a boy in his eighth year; and the kingdom, which had enjoyed under his father's wise and vigorous administration, an uncommon degree of prosperity, became immediately exposed to the many evils of a minority. Two parties divided the nobility; the one led by Walter Comyn, earl of Menteith, the other by Durward the high Justiciar; and Henry the Third secretly wrote to the Pope, requesting him to interdict the coronation of the young king. Scotland, he said, was a fee of England, Alexander his vassal, and his permission as superior had not been obtained. The Pope appears to have rejected his demand with promptitude, as derogatory to the rights of a sovereign Prince; and the ceremony of the coronation was performed at the abbey of Scone, the coronation-oath being read first in Latin, and afterwards in Norman-French.

Alexander soon afterwards, in fulfilment of a former treaty,

Scotland. Alexander II. marries the Princess Joanna of England.

Increase in the power of the nobles. War with England. A.D. 1244.

Death of Alexander II. A.D. 1249. Accession of Alexander III.

Scotland. espoused Margaret, the youthful daughter of Henry, at York, and exhibited a spirit and intelligence superior to his years, in refusing to pay homage for his kingdom of Scotland. "I came," said he to the artful monarch who made the proposal; "I came into England on a joyful and pacific errand, not to answer to an arduous question, which belongs to the states of my kingdom." He at the same time made no objection to take the oath of fealty for the lands which he held in England.

Intrigues of Henry III. with Scotland. Defeated in this attempt to overreach a minor sovereign, Henry commenced a series of intrigues with the Scottish nobles, with the object of obtaining an entire control over the affairs of the sister kingdom; and the country was divided and distracted by two factions, the one acting under English influence, and the other more honestly contending for the freedom of their prince and the independent administration of the government. These scenes of civil faction and foreign interference continued till the monarch, having arrived at manhood, and developing a character of much energy and judgment, took the reins into his own hand, and compelled his nobility to respect the laws and support his measures.

Haco, king of Norway, defeated at Largs. A.D. 1263. Scarcely had this happy change occurred, when the kingdom, which had already suffered from the vicinity of the fleets of Norway, was threatened with invasion by Haco, one of its most warlike princes. The dispute which led to this menace originated in a circumstance already noticed; the precarious homage paid by the petty piratical chiefs of the Western Isles, who, as circumstances pressed on the one side or the other, acknowledged a feudal dependence on Scotland or on Norway. To support them in their independence on Alexander, Haco made a descent on the western coast of Scotland with a mighty fleet, but sustained a signal defeat at Largs, and on his return with the shattered remains of his ships, sickened and died at Orkney. The results of this victory were highly favourable to Scotland. It fixed the chiefs of the Western Isles in their allegiance, secured to Alexander the homage of the king of Man, and convinced Norway that Scotland was not to be so easily subdued or overawed as its piratical princes had anticipated.

Death of Alexander III. A.D. 125. The remainder of this reign was prosperous, as far as the circumstances of the kingdom are considered, but unfortunate for the monarch, who found himself suddenly deprived by death of all his children. His eldest son, Alexander, died soon after his marriage, and his only daughter Margaret, the wife of Eric, king of Norway, was cut off in childhood, leaving an infant daughter, Margaret, commonly called the Maiden of Norway, the heiress of the Scottish throne. These calamities induced the king, who was a widower, to make a second marriage. Having selected Ioleta de Concy, daughter of the Count de Dreux, the nuptials were celebrated at Jedburgh; and the nation, under a wise monarch still in the prime of life, flourishing at home and at peace abroad, looked forward to a long season of prosperity, when all its hopes were overcast in a moment. Alexander, when riding in a dark night, on the brink of a dangerous rocky ledge near Kinghorn, was precipitated from the top to the bottom, and killed on the spot.

Death of the Maiden of Norway. The death of the king was deeply lamented, and not without cause, for he left the kingdom in most difficult circumstances, exposed to the ambition and attack of Edward the First, one of the ablest princes who had ever reigned in England, and its happiness at home dependant upon the precarious life of an infant. To fill the cup of Scotland's calamity, this child, Margaret, the Maiden of Norway, when on her passage from that country to take possession of her throne, sickened and died in Orkney; and on her death arose that celebrated competition for the Scottish crown, which threatened to plunge the kingdom into all the miseries of civil war.

Scotland. The moment was favourable to the designs of Edward the First, who determined to make himself master of Scotland. While in that country the various competitors collected their forces and prepared to support their claims, the English monarch having given orders for assembling the strength of his kingdom by a certain day, invited the nobility and clergy of Scotland to meet him at Norham, for the purpose of deliberating upon the succession to the crown. It has been made a subject of dispute, whether Edward was invited by the Scottish people to be umpire in the contest for the crown, or whether he proposed himself as judge, and the subject is involved in some obscurity. It is by no means improbable, that English intrigue and a regard to their own interest, had induced some of the competitors, if not to invite, at least most readily to accept the mediation of the English monarch; but it is equally true, and the point is of far greater importance, that there is no evidence to prove that there was any invitation of this kind, either by the people of Scotland, or even by a majority of its nobles and clergy. Be this as it may, Edward the competitors for the crown, with a large proportion of the nobility and clergy of Scotland, accepted the mediation of Edward, and met this monarch at Norham, (May A.D. 1291 1291).

Claims of Bruce and Balliol. Of these claimants for the crown the two principal were John Balliol and Robert Bruce. It was quite apparent that the question lay between them, the rights of the other competitors being evidently inferior to theirs. The title of these two chiefs arose out of the circumstance, that on the death of all descendants of Alexander the Third, the crown reverted to the descendants of David, earl of Huntingdon, brother of king William the Lion. This David left three daughters, Margaret, the eldest, who married Alan, lord of Galloway; Isabella, the second, who married Robert Bruce, father to the competitor Robert Bruce, lord of Annandale; and Ada, the third daughter, who married John de Hastings. It was evident, therefore, that the question lay between Balliol and Bruce. Balliol pleaded that he was entitled to the crown as the descendant of the eldest daughter, being great-grandson to David, earl of Huntingdon. Bruce admitted that he sprung from the second daughter, but contended that, being grandson of the earl of Huntingdon, and therefore a degree nearer, his claim was superior.

Conduct of Edward I. Edward's scheme against the independence of Scotland was now ripe for execution; and announcing his determination to give a just decision, he, to the dismay of many present, required the Scottish barons to swear fealty to him as their Lord Paramount. It was in this character alone, he said, that he was entitled to give, and as such alone that he would pronounce, a judgment. The scene which now ensued was a humiliating one. The right of Edward was admitted; and Bruce, Balliol, the remaining competitors, the barons and the clergy, set their hands to an instrument, in which they acknowledged that the English king was feudal superior of Scotland. There can be little doubt that they knew this claim of Edward to be untenable upon any ground of truth or justice, but they saw it ready to be enforced by a determined prince at the head of the whole strength of his dominions, and they did not dare to resist it. Edward, accordingly, having received their oaths of homage, proceeded to investigate the contending claims, and awarded the crown to John Balliol.

He invades Scotland. It was probably part of the plan of the English monarch to quarrel with his vassal king. It is at least certain, that he availed himself of the earliest appearance of spirit and resistance in this unfortunate prince to summon him, in terms of reproach and indignity, to his court in England, and at last goaded him and his people into what he termed rebellion. In the war which ensued, Edward found it an easy matter to overrun a kingdom unprepared to resist so formidable an enemy. The town of Berwick was carried by storm;

A.D. 1285.
Designs of
Edward I.

facts as um-
pire.
A.D. 1291

Claims of
Bruce and
Balliol.

Conduct of
Edward I.

He invades
Scotland.

Scotland. Dunbar, the key of the borders, surrendered; Balliol was taken prisoner and sent to the Tower; while the English prince concluded what he deemed the conquest of Scotland, by removing from Scone to Westminster the sacred stone upon which the long line of its kings had been crowned and anointed. But at this sad moment Scotland, which in vain looked for a deliverer amongst its feudal nobles, found one in a man of far inferior rank.

Rise of Wallace. William Wallace was the son of Sir Malcolm Wallace, who held the estate of Ellerslie, near Paisley. Having been outlawed by the English for an alleged murder, committed on one by whom he had been grievously injured, he fled into the fastnesses of his country, and assembling round him a small band of followers, who were weary of their servitude, commenced that kind of predatory warfare, which led from one success to another, till he saw himself at the head of a formidable force. With this he boldly descended into the low country, and after having defeated the English in the sanguinary battle of Stirling, was soon after chosen Governor of Scotland. This title he only accepted as acting in the name of John Balliol, whom he had always acknowledged as his hereditary king. Into the exploits and career of this great man it is impossible, within our limits, to enter; but making every allowance for the passionate admiration of his countrymen, and regarding him as reflected in the cold glass of history, rather than invested with the brilliant hues of romance, there will still be found all that constitutes a heroic character, if the accomplishment of the greatest results with the most confined means, an entire devotion to his country, a contempt of power for its own sake, unextinguishable hatred of oppression, and a personal courage which nothing could shake for a moment, were ever entitled to such an epithet.

Battle of Falkirk.
A.D. 1298. It was however impossible for Wallace, with all his great qualities, to reconcile the Scottish nobles to his envied elevation, or to compose the feuds and jealousies which divided and weakened their efforts. Edward, who had been absent in Flanders when his officers were defeated at Stirling, hurried back to England, and once more invading Scotland at the head of an immense army, encountered and defeated Wallace in the battle of Falkirk. The result of this victory was the temporary subjugation of a country, whose allegiance expired the moment its invaders retired. Wallace voluntarily resigned the office of Governor, Robert Bruce and John Comyn were chosen Guardians, and for five years the war was continued with various success; but Edward, who in this interval had thrice invaded the kingdom, by these unceasing efforts and superior numerical strength, at last subdued the spirit, and appeared to have completed the conquest of this devoted people. The Guardians submitted and were pardoned; sentence of outlawry was pronounced against Simon Fraser and the few followers of Wallace who still held out; and at last this great chief himself was betrayed into the hands of the conqueror, and executed at London. It was at this crisis, which seemed to seal for ever the fate and liberty of the Scottish people, that a deliverer arose in the person of Robert Bruce.

Wallace executed.

Reign of Robert Bruce.

the crown possessed by his grandfather; but, had he urged Scotland his claim, it might have been at the risk of the forfeiture of these possessions, which made him one of the most powerful barons in Scotland; and, although, in his early career, we can detect occasional outbreaks of the patriotic feeling, he preserved his allegiance to Edward the First, and appears to have been treated with confidence by that monarch.

The injuries inflicted on the country seem at last to have aroused both Bruce and Comyn, and they formed a secret agreement to rise against the English. But Comyn's heart failed him. He betrayed the purpose to Edward, and meeting Bruce, who had been made aware of his treachery, in the church of the Grey friars at Dumfries, that proud baron reviled him as an informer, and stabbed him to the heart on the steps of the high altar. He was instantly proclaimed a traitor by Edward, excommunicated as a sacrilegious murderer by the Pope, a price set upon his head; and from the first and most influential noble in the kingdom, he felt that he must either assert his right to the crown, and trust to his sword for its defence, or be content to sink into the condition of an outlaw and a fugitive. His decision was instantly taken. He rode with his little band to Scone, and was there solemnly crowned; but being aware of the advance of an English army, he hastily concentrated his forces, and after ravaging Galloway, marched against Perth, then in possession of Edward.

But the early portion of Bruce's career was disastrous; and those military talents, which afterwards conducted him through a course of unexampled victory, were nursed amidst incessant defeat and hardship. He was put to flight at Methven, his small army dispersed, and he himself driven an almost solitary wanderer through Lennox and Kintyre, to seek an asylum in Rachrin, a little island on the northern coast of Ireland. Here he remained during the winter, unaware of the execution of his faithful followers, who had fallen into the hands of Edward; of the imprisonment of his queen and daughter, and the extraordinary severity with which the English monarch seemed determined to rivet the fetters upon his native country.

In the spring he passed over from Rachrin to Arran, accompanied by his brother Edward Bruce, Sir James Douglas, and about three hundred men. His own castle of Turnberry, on the coast of Carrick, was then occupied by Lord Percy, an officer of Edward. Bruce attacked it, put the English garrison to the sword, and, after a variety of minor enterprises, in which, although often repulsed, he and his followers gained experience and confidence, he ventured, although at the head of only six hundred spearmen, to meet the earl of Pembroke, with three thousand cavalry, at Loudon Hill, (May 1307). The result of this conflict, owing to the admirable dispositions of Bruce, was the entire defeat of the English; and from this point, the crisis of his fortune, to the hour when the liberty of his country was for ever secured on the field of Bannockburn, the career of this extraordinary man presented an almost continued series of success.

It was perhaps fortunate for Scotland that he was opposed, not by Edward the First, who had died when on his march to Scotland, (1307), but by his son, Edward the Second, a prince of far inferior talent; yet the military resources of England were so formidable, and the barons who wielded them such experienced leaders, that Bruce, who had to struggle against domestic enemies, as well as foreign invasion, may well be praised for the admirable judgment with which he wielded the strength of his little kingdom. It was his policy to avoid a general battle, and to starve and distress the formidable armies which England repeatedly sent against him, by wasting the country, retiring slowly before his enemies into the woods and fastnesses, and when they were compelled by famine or the season to retreat, by hanging on their rear, and cutting them off in detail. Convinced that, from the

Reign of Bruce.
A.D. 1306.

Murder of Comyn.

Bruce proclaims himself king.
A.D. 1306.

He is at first unfortunate.

Bruce defeats the English at Loudon Hill.
A.D. 1307

Bruce's wise policy

SECTION V.

A. D. 1306 TO 1436.

Nothing could be more extraordinary, or apparently more unpropitious to the cause of freedom, than the circumstances which led to this great result. Robert Bruce, earl of Carrick, and grandson of the competitor for the crown, had acted a dubious and interested part during the years that Wallace, and the few patriotic barons who adhered to him, made their stand for the independence of their country. He inherited, with vast landed estates, the right to

Scotland.
Robert
Bruce.
Scottish
infantry.

poverty of Scotland, it was in vain to attempt to rival the mounted chivalry of England, he turned his whole attention to the formation and discipline of his infantry. They were armed with a spear eighteen feet in length, a sword and battle-axe at their girdle, a short cut-and-thrust dagger, a steel bonnet, and a back and breast-piece buckled over a tough leather jerkin. They were trained to form sometimes in squares, sometimes in circles, more or less deep, according to the nature of the ground and of the service. Such was the main army of Bruce, his pikemen; but after he had restored peace and security to his kingdom, and began in his turn to act upon the offensive, he often employed the only kind of cavalry which Scotland could raise, the border pricklers, who, lightly armed, mounted on hardy little horses, and carrying as their provisions a bag of meal slung at their saddle-bow, darted upon the richest districts of England, or stripped them of their wealth, and scoured like a whirlwind across the border, ere the force of the country could be raised in its defence.

Battle of
Bannock-
burn.
A.D. 1314.

To pursue the details of his obstinate contest with England, is impossible. It was during the first years a war of defence, in which Bruce struggled for existence. This secured, it became aggressive; but his efforts were confined to the recovery of his dominions out of the hands of those Scottish barons who had embraced the service of the enemy, or his castles from the English governors to whom they had been entrusted. At last, when Edward the Second, at the head of an army a hundred thousand strong, composed of the flower of his kingdom, and led by his most experienced officers, had penetrated into the country, Bruce found himself driven from his favourite maxim, and compelled to hazard a battle. On the field of Bannockburn, near Stirling, thirty thousand Scottish foot, and five hundred horse, led by the king in person, and under him commanded by Douglas, Randolph, and the Steward of Scotland, encountered and entirely defeated the formidable array of England. Edward fled from the field to Dunbar, and the broken remains of his army, in dispersed bodies, made their retreat in much disorder into England, (June 24, 1314).

In this memorable victory it may be said, without exaggeration, that a lesson in the history of liberty was taught, not only to Scotland, but to the world; to every people who have felt the misery of servitude, or tasted the sweets of freedom. It proved that a country may be, as Scotland was under Edward the First, brought by oppression and cruelty to the very brink of despair; its cities sacked, its fields laid waste, till famine was the consequence; its best leaders executed or imprisoned, its hearths left desolate, its very offerings of praise proscribed, and its refuge in religion attempted to be cut off; but that, till exterminated, a free-born people cannot be said to be subdued.

Effects of
the victory
at Bannock-
burn.

The immediate effects of this great victory upon the spirit of the respective countries, were not less remarkable. It convinced the Scots, that, with a good heart and skilful leaders, their squares of infantry, with their long pikes, were a match for the English horse, however superior in arms and numbers; it taught the king, that what he had most to dread was the discharge of the English bowmen; and admonished him, that, however complete had been the defeat, however glorious the consequences of the victory, his favourite military maxim, to avoid a general battle, was still his best and safest course. It affords a striking view of the character of this great man, that his success at Bannockburn led neither to presumption, nor, much as he had suffered, and deeply as he had been injured in his tenderest relations, to a cruel retaliation. On the contrary, it was followed up by Bruce with an immediate proposal for

peace; but he would consent to treat only on the footing Scotland. of an independent king, and the offer was rejected.

From 1314 to 1328, an interval of nearly fourteen years, the war was continued with almost uninterrupted success on the part of the Scots; while a series of reverses were endured by England, which are chiefly to be ascribed to the pusillanimous character of the monarch, and the great military ability not only of Bruce, but of the officers whom he had trained, Sir James Douglas, Randolph earl of Moray, the young steward of Scotland, and many others. It may convey some idea of Bruce's incessant occupation in the field, when it is mentioned, that during this interval, England was twelve times invaded, either by the king in person, or by his officers, its border counties were exposed to ravages, and on frequent occasions the fires which marked the Scottish march were seen burning beside the gates of York; nor were the Scottish king's proposals for a peace accepted, till the English districts, which were compelled to purchase safety by the payment of a heavy tribute, threatened in their misery, to throw themselves into the arms of Scotland. The war At last, on the first of March 1328, an English parliament assembled at York. Bruce was acknowledged king of Scotland, Scotland itself recognised as a free and independent kingdom, and peace established, after a sanguinary war of twenty years.

Robert
Bruce.
A.D. 1314.
1328.

This great consummation was not long survived by him. Death of to whom, under God, the result was chiefly due. The Bruce. king, whose constitution had been broken by the fatigues A.D. 1329 and exposure of his early life, began to droop soon after he saw the liberty of his country permanently established; and he died at Cardross on the 7th of June 1329.

The death of Bruce was a severe trial to Scotland. His only son David, who succeeded him, was a boy of six years old; and while the nation was thus exposed to all the evils of a long minority, Edward the Third, one of England's most warlike monarchs, was just commencing his career, which soon developed uncommon talents, and great ambition. Randolph indeed, who was chosen Regent, and the good Sir James Douglas, with other veteran officers, still remained; but Douglas was slain in Spain, whither he had proceeded on his way to Jerusalem with his master's heart; and the earl of Moray only survived the death of Bruce for three years. To add to these calamities, the monarchs who successively filled the Scottish throne, and on whose personal character, in these rude times, much of the success and vigour of the government depended, were little similar to their great predecessor. From the death of Bruce till the reign of James the First, the first prince who in any measure was worthy of a comparison with him, a period of nearly a century elapsed,¹ in which the sceptre passed into the hands of three princes, David the Second, Robert the Second, (the first sovereign of the house of Stewart, being the son of the Steward of Scotland, by Marjory, Bruce's only daughter,) and, lastly, Robert the Third. Contemporary with these Scottish princes were Edward the Third, Richard the Second, Henry the Fourth, and Henry the Fifth, all, with one exception in Richard, wise, warlike, and fortunate monarchs. The odds, therefore, were infinitely against Scotland, a country far inferior in its population and resources to England, and torn by domestic feuds; and yet against reiterated attacks it maintained the contest for its liberty. Unable to descend into minute detail, we take a summary of the larger portion of this calamitous interval of Scottish history, from another work. "A period of sixty-four years elapsed between the death of Robert Bruce and the birth of James the First, during which time, although torn by anarchy and domestic faction, the country maintained a remarkable struggle for its liberty. It

David II.
Regency of
Randolph.

¹ We date not from the birth of James, but his return from captivity in England. It may be proper to mention, that the authorities for this sketch, from Alexander the Third to the reign of Mary, are the same as those followed by Mr. Tytler, in his History of Scotland.

Scotland. was in this period, eight times invaded by a foreign force; it was betrayed and deserted by David the Second, the unworthy son and successor of Bruce; it saw, on many occasions, the most powerful of its nobles enlisted under the banner of its enemies; it had to struggle against the military genius and political talents of Edward the Third, and Henry the Fourth and Fifth; and yet, with limited resources, and divided councils, so tenaciously did the people cling to their liberty, that, though sore oppressed, they were never conquered. Amid almost constant war, and its dreadful accompaniments, famine and the pestilence, they still preserved their freedom, preferring the prospect of living in a country reduced by repeated invasion to a solitude or a desert, or even the last alternative of being totally exterminated, to the most flattering offers of being united to England, when coupled with the condition that they should renounce their national independence.¹ We have above alluded to the degeneracy of David the Second, whose long reign of forty-two years was divided into a minority, the greater part of which was passed in France; a captivity in England, the result of his calamitous defeat in the battle of Durham; and a train of subsequent reverses all occasioned by his headstrong character and devotion to his selfish pleasures. But the darkest stain upon David, was his intrigues with Edward the Third, in which he hesitated not to sacrifice the independence of the country, to swear homage to the English prince for his kingdom of Scotland, and even to propose to his parliament, that the order of succession solemnly settled by his heroic father, should be altered in favour of an English prince. It is needless to say that so degrading a proposal was indignantly repelled, and that the death of the prince who had offered the insult was regarded as a national deliverance.

Robert II. In Robert the Second, who succeeded him as the first of the house of Stewart, and his son, Robert the Third, the nation, though still exposed to the repeated attacks of England, experienced a short breathing time, owing to the death of Edward the Third, and the incapacity of Richard the Second; but neither of these Scottish princes possessed the vigour or the talents requisite to wield the sceptre with success, in the midst of the difficulties by which they were surrounded. The second Robert came to the crown when age had chilled his vigour; and his son and successor, Robert the Third, was of too indolent and gentle a character to hold his part against a fierce feudal nobility, led by his brothers, the Earls of Fife and Buchan, the first a man of great ambition, the second a monster of crime, who gave himself up to every species of lust and rapine, and has been traditionally remembered as "the Wolf of Badenoch."

James I. All this led to great disorder. The king, unwilling to burden himself with the cares of government, devolved the administration upon his son, the duke of Rothesay, a young man of violent passions, though of considerable ability, who had made himself particularly obnoxious to his uncle, the earl of Fife. This led to a fatal collision. Fife, whose authority was increased by his being made duke of Albany, proved too strong for the young prince. His father, the king, was persuaded that the excesses of his son required restraint, and the unhappy youth was hurried to Falkland, and shut up in a dungeon, where he was intrusted to the care of two ruffians, who starved him to death. It was at first reported that he had been cut off by a dysentery; but the horrible tale of his sufferings soon after transpired. "A poor woman in passing through the palace garden, had been attracted by his groans, and had found means to support him by thin cakes which she slid into the grated window of his prison, and it is said by her own milk, conveyed through a reed; but she was detected, and put to death by his keepers; and after fifteen days, the body of the miserable

captive was found in a state too shocking to be described. Scotland. In the extremities of hunger, he had gnawed and torn his own flesh."² Robert, depressed by this calamity, and incapable of exertion, committed the whole cares of the government to the duke of Albany; and the power of that daring man was increased by another event which completely broke the spirit of the king, and was probably the cause of his death. This was the seizure by the English of his eldest son James, then a youth in his fifteenth year, and on his passage to France. The consequences were very fatal to the country. The prince was carried to the Tower; the father did not long survive the captivity of the son; and on his death, which took place in 1406, his brother, the duke of Albany, succeeded to the prize which had long been the object of his ambition, the undisputed regency of the kingdom.

The young king, James the First, was a captive, and Henry the Fourth knew too well the value of the prize to part the Duke with him. For nineteen years he was detained in England; and, during this long interval, Albany became the uncontrolled governor of Scotland. It has been suspected that the intrigues of this able and unprincipled man with the English monarch, had led to the seizure of the young king. That they prolonged the period of his captivity, there can be no doubt.

It was clearly the best policy of the regent to cultivate peace with England, and to conciliate Henry the Fourth, as this prince could at any time put a termination to his authority, by restoring James to his kingdom; and the same desire to retain the power which he had so nefariously usurped, induced Albany to cultivate the friendship, and overlook the crimes and excesses of the great feudal barons. All this led to dreadful confusion in Scotland, which, although freed for a time from the incessant invasions of its more powerful neighbour, was torn by private war, whilst the lives and property of its people were exposed to the attack of every unprincipled feudal baron who sheltered himself under the protection of the regent.

This miserable state of things was at length terminated by the return of James to his dominions; a prince whose character presented a striking contrast to that of his father and grandfather. During the nineteen years in which he had been unjustifiably detained in that country, he enjoyed advantages which almost repaid him for his captivity. Henry the Fourth, a prince who well understood the art of government, had made it his generous care that James should receive an excellent education; and he had the advantage of being instructed in war, by accompanying his victorious successor, Henry the Fifth, to France. On his return to his own dominions, he was in the prime and the vigour of manhood. His character, formed in the school of adversity, was one of great power. He found his kingdom a scene of lawless excess and rapine; a condition to which it had been reduced from the want of a firm hand to restrain oppression and enforce the laws. Since the death of Bruce the power of the aristocracy had been on the increase, while that of the crown had proportionally lost ground, and fallen into contempt. His object, as can be clearly discerned through the history of his brief reign, was to restore the kingly authority, to rescue the commons from oppression and plunder, to give security to property, encouragement to the industry and pacific arts of his people, and to compel his barons to renounce their ideas of individual independence, and become good subjects.

The regency of Albany, his uncle, and of his son Murdoch, who had succeeded him, was naturally and justly regarded by James as little else than a long usurpation. He was mortified that Albany, against whom, as the murderer of his brother, he entertained the deepest resentment, should have escaped his merited punishment; and the royal

¹ Life of James the First, pp. 203, 204, in Lives of Scottish Worthies.

² Lives of Scottish Worthies, vol. ii. p. 242.

Scotland. vengeance fell with a proportionably heavier force upon Murdoch, his son and successor; nor is it possible to deny that James's retribution was cruel and excessive. Murdoch, the duke of Albany, his two sons, the earl of Athole, and Alexander Stewart, with his father-in-law, the earl of Lennox, a venerable nobleman, eighty years of age, were tried, condemned, and executed. James, the duke's youngest son, having escaped, collected a band of freebooters, and after sacking and plundering Dunbarton, took refuge in Ireland; but five of his men fell into the king's hands, and were torn in pieces by wild horses. So horrid a punishment, and the exterminating severity exhibited to all connected with the house of Albany, can admit of no justification; and there is every reason to believe, that the early and miserable death of the monarch, is to be traced to the deep feelings of revenge with which some of his nobles from that moment regarded him. Neither is it possible to believe that the king in this instance carried along with him the feelings of the people. Yet looking at the state of things in Scotland, it is easy to understand his object. It was his intention to exhibit to a nobility, long accustomed to regard the laws with contempt, and the royal authority as a name of empty menace, a memorable example of stern and inflexible justice, to convince them that a great change had already taken place in the executive part of the government; to furnish also a warning to the people, of the punishment which awaited those who imagined that fidelity to the commands of their feudal lord was paramount to the ties which bound them to obey the laws of their country.

Having given this severe and sanguinary lesson, the next efforts of the monarch were addressed to the internal administration of his kingdom. From without he had nothing to dread; he was at peace with England, and his marriage with Jane Beaufort, the niece of Cardinal Beaufort, had, from her near relationship to the English monarch, strengthened the ties between the two countries. France was the ancient ally of Scotland; and the Netherlands profited too much from the Scottish trade not to be anxious to preserve the most friendly relations. The king could therefore direct his undivided attention to his affairs at home. His great principle, and it was one worthy of so wise a prince, seems to have been a determination to govern the country through the medium of his parliament. Of these convocations of the national legislature, which had been rarely held under the regencies of the two Albanys, no less than thirteen occurred during his brief reign, which, dating from his return in 1424, lasted only thirteen years. It is to him that Scotland owes the first clear recognition of the principle of representation by the election of the commissaries for shires; it was by him that one of the greatest improvements was introduced into the administration of justice, by the institution of a court of law known by the name of the **SESSION**. Nor was this all. Previously to his time, the laws and the acts of parliament had been published in Latin, and the great majority of the inferior judges to whom their execution was entrusted, were unable to understand them.

To remedy this grievance, the king commanded the acts of parliament to be drawn up in the spoken language of the country; an improvement so important, that it forms an era in our legislation. Other points of almost equal interest occupied his attention. By his personal presence in the Highlands, and by the military force which he brought along with him, when he visited those remote districts of his dominions, he introduced laws and order where there had formerly been little else than feudal licence and contempt for all authority. Although he cultivated the arts of peace, he did not forget that its surest preservative was an attention to the military strength of his country. *Weapon-shawings*, or military musters, were held periodically; and having witnessed, when resident in England, and in the war of

Henry the Fifth with France, the great superiority of the English over the Scottish archers, he made it his earnest care that his subjects should cultivate this warlike accomplishment. In many of the acts of the various parliaments of this monarch, we can also trace an attention to the encouragement of agriculture, to the interests of foreign trade and domestic manufactures, to the state of his shipping and navy, to the prices of labour, and the melioration of the condition of the labourers of the soil, which clearly demonstrates the high and important objects that occupied the king's mind, although the means he employed were not exactly those which should have suggested themselves to the experience of a more advanced age. Amid these severer duties, James gave an example to his rude barons of the cultivation of intellectual accomplishments. He was himself a poet; and the king's book, or **KING'S QUAIR**, composed during his captivity in England, is still read by many with delight and enthusiasm. He was a reformer of the language of his country; he composed pieces of music, and sang and accompanied himself on various instruments. It is probable, however, that these employments were rather the solace of his tedious confinement in England, than objects of serious pursuit after his return.

Having so zealously devoted himself to the best interests of his kingdom, James had the satisfaction to see his measures attended with success, and all seemed secure and prosperous, when he suddenly became the victim of a dark conspiracy. Under circumstances of extreme ferocity he Feb. 20, was assassinated in the monastery of the Blackfriars at 1436. Perth, by Sir Robert Graham, the earl of Athole, and some accomplices who had been dependants of the house of Albany. The court was then at Perth, and James had taken up his residence in the Dominican monastery beside the town. The king was betrayed by his chamberlain, who facilitated the entrance of the conspirators, by removing or damaging the locks of the royal apartments. When the alarm was given, it is said that a lady who waited on the queen, named Catherine Douglas, thrust her arm into the staple of the door, and thus, before it was broken, heroically afforded a brief interval in which the king contrived to conceal himself in a small vaulted chamber, where for some time he evaded discovery. The conspirators, under the idea that he had escaped, had dispersed themselves through the palace, and the unfortunate monarch might have been safe, if he had not prematurely attempted to leave his concealment. The noise which he made recalled one of the ruffians, who shouted to his companions; and springing down into the vault, they threw themselves upon their defenceless victim and murdered him, after a desperate resistance. Although considerable obscurity hangs over the ramifications of the plot which ended thus fatally to the king, there exists no doubt that it owed its origin to indignation at the fate of Albany, and those deep feelings of feudal revenge which had been long cherished by the friends of that unhappy house; affording a terrible lesson to princes of the reaction which may take place, when justice forgets her calmer mood, and pushes her punishments beyond example into revenge.

The death of James the First was a severe calamity to the country, exposing it for the third time since the death of Bruce to all the evils of a long minority. His eldest son, who succeeded to the throne by the title of James the Second, was a boy only six years old; and although the character of the queen-mother was marked by considerable talent and vigour, these qualities were feeble substitutes for the masculine wisdom, the determined courage, and the unwearied care of the husband whom she had lost. Her first duty was the arrest and punishment of his murderers; and this she executed with speedy and unmitigable severity. But the death of the king once more gave a licence, and offered to the feudal nobles an opportunity of recovering their power of which they were not slow to avail themselves.

James a scholar and a poet.

James assassinated.

James II. a boy of six years old. A.D. 1436.

Punishment of his murderers.

Scotland.
James II.

Graham, the principal murderer of the late monarch, in the midst of the cruel tortures which preceded his death, had avowed that the day was at hand when the Scottish nobles would venerate his memory for having rid them of a tyrant; and these proud and powerful barons, when they remembered the magnitude of James's plans, and the stern and sometimes unjust severity with which he carried them into execution, could not but feel that now was the time to recover the privileges which they had lost, and to provide some strong and permanent barrier against all future encroachments of the crown.

General observations.

This observation is the key to the history of the country, not only during the reign of this monarch, but for the next century. It unfortunately happened, that with the exception of James the Fourth, who on his accession was a youth of seventeen, Scotland was visited by a series of minorities in James the Second, James the Third, James the Fifth, and Mary, which occupied the long interval between 1436 and 1560; and during this period of more than a century, the extraordinary increase in the power of the nobles, the diminished respect for the crown, and its proportionate weakness against attack and encroachment, are too prominent features to escape notice. We see events, the same in character, and merely varied in name and minor incidents, occurring during the whole time: a monarch of greater or of less energy, emerging from his minority, and making an effort to recover the power which he had lost; a band of turbulent and selfish nobles leagued against him, and only detached from their brethren, and persuaded to act with the crown, by an appeal to their interest and their fears. These remarks were strikingly exemplified in the scenes which took place during the minority of James the Second.

Minority of James II.

Immediately after his coronation, a struggle commenced for the possession of the chief power in the government. In a parliament held at Edinburgh, the queen-mother was entrusted with the custody of the young king, while Archibald earl of Douglas and duke of Touraine, was appointed lieutenant-general of the kingdom, a title probably including all the powers of a military governor. In civil matters the chief authority seems to have fallen into the hands of the chancellor Crichton, who had the command of Edinburgh Castle, in which the queen-mother, with the young prince, had taken refuge soon after the murder of her husband. This princess, however, soon found that Crichton turned the possession of the royal person into an engine for his own advancement, and refused to her that frequent intercourse with her son which she had expected, and to which she was entitled.

Having combined therefore with Sir Alexander Livingston, a baron who had been in favour with the late king, she contrived, by stratagem, to possess herself of the person of the young king, whom she shut up in a large wardrobe chest, and carried as her luggage to Leith, from whence she hastened to Stirling Castle, which had been assigned to her as a jointure-house.

Dreadful state of Scotland.

The kingdom was now divided between three factions, that of the queen and Livingston, who possessed the person of the king, Sir Alexander Crichton the chancellor, and thirdly, the earl of Douglas, whose immense estates in Scotland, and his foreign wealth and influence as duke of Touraine, rendered him by far the most formidable baron in the country. From this moment to the period when James, having attained majority, began to act for himself, an interval of thirteen years, the history of the nation presents little else than one uniform scene of civil anarchy and of unpunished crime. "The young monarch beheld his kingdom converted into a stage on which his nobles contended for the chief power; whilst his subjects were cruelly oppressed, and he himself handed about, a passive puppet, from the failing grasp of one declining faction, into the more iron tute-

lage of a more successful party in the state." In this melancholy drama the chief parts were played by Crichton and Livingston, who, deeming it for their interest to crush the overgrown power of the house of Douglas, inveigled the young earl and his brother into the Castle of Edinburgh, brought suddenly against them a charge of treason, and put them to instant death.

It was fortunate for the country, that when thus torn by domestic factions, its foreign relations were of a pacific character, England, France, and the Netherlands, being all animated with the most friendly dispositions, while the young king, as he advanced from boyhood into maturer years, developed a character of prudence, vigour, and intelligence, which appeared destined to restore a better state of things to his kingdom. Having married the daughter of the duke of Gueldres, he assumed the government, and selected as his principal councillor, Kennedy, bishop of St. Andrews, a prelate of great wisdom and integrity, whose rank as head of the church, invested him with an authority to which the people, amid the general corruption, looked with much reverence and affection. It was probably by his advice, that James, whose passions were naturally violent, and who viewed with indignation the arrogance of the earl of Douglas, engaged in a systematic plan for the reduction of his overgrown power. Without attempting at once, and by any arbitrary exertion of strength, to deprive this potent chief of his high offices, a measure which might have been followed by extreme commotion, he gradually withdrew from him his countenance and employment; surrounded himself by able and energetic councillors, whom he promoted to the principal places of trust; and thus weakened the authority of the proud baron, rather by the formidable counterpoise which he raised against it, than by any act of open aggression. This conduct was attended with the best results. The earl of Douglas, finding his consequence decreasing, and his power on the wane, retired for a while from Scotland, and respect for the character of the monarch increased with the feeling of security derived from an improved administration of the government. During the absence of the chief, James had time to reduce the minor barons who were his dependants, to attach his own friends more powerfully to his interest, and to concentrate a strength, which, on Douglas's return from Italy, convinced him that he must consent to play a second part to his prince. The result was what might easily have been anticipated. A collision took place between this haughty potentate and the young sovereign whose commands he had so often defied. Douglas, naturally rash and fearless, had consented, under a safeconduct bearing the royal signature, to visit James in the Castle of Stirling. After the royal feast, the king remonstrated with his guest; disclosed to him the proofs he possessed of his combinations against the government; reproached him for the frequent murders of his subjects committed by his order; and condescended to intreat him to forsake such dangerous courses, assuring him of his pardon and favour. Douglas, instead of embracing the offer, replied to it with haughtiness and insolence; and James, losing all command of himself, and braved to his face, drew his dagger and stabbed him to the heart. Falling at his feet, he was instantly despatched by the nobles, who, hearing the commotion, rushed into the apartment.

This atrocious murder was followed by a struggle between the royal party and the friends and vassals of the unfortunate baron, in which the king was completely successful. Sir James Douglas, who succeeded his brother in the earldom, attempted to brave the monarch, renouncing his allegiance, and throwing himself into the arms of England; but his projects against his country were defeated. He was equally unfortunate in his alliance with the Lord of the Isles, whose naval force he directed against the west of Scot-

Scotland.
James II.

A.D.1449.
James II.
humbles
the house
of Douglas.

A.D.1451.

Murder of
the Earl of
Douglas by
James II.

A.D.1452.
Defeat of
the ninth
Earl of
Douglas by
James II.

Scotland. land; and at length, in a fruitless effort to regain his lost power by invading the Merse along with the earl of Northumberland, he was totally routed by the earl of Angus, and driven a landless fugitive into England.

A.D. 1460. The remainder of this reign was employed by the king in an endeavour to complete the work which he had begun; by strengthening the power of the crown, and giving security to the persons and property of his subjects; by attaching to his party the great and influential body of the clergy, carrying into effect various parliamentary enactments for the defence of the borders against the attacks of England, and cultivating the warlike character of his people. Amid these kingly cares, he unwisely suffered himself to be entangled by the contests between the Yorkists and Lancastrians; and having espoused the party of Henry the Sixth, levied an army, and met his death by the bursting of one of his own guns at the siege of Roxburgh. He was succeeded by his son James the Third, a boy in his eighth year.

James III. The death of a sovereign thus cut off in the prime of his manhood and usefulness, leaving an infant successor, would have been a deep calamity at all times, but it was especially so at this moment. James the Second had with uncommon vigour and judgment reduced the overgrown power of his nobles; but he died before his plans were matured, leaving the nation at war with England, the seeds of civil disunion lurking in his kingdom and ready to spring up, and the more northern parts of the realm held by fierce chiefs, who were disposed, on the slightest provocation, to throw off their allegiance. With these island lords, Edward the Fourth entered into a strict alliance; and the banished Douglasses, now become English subjects, agreed to assist him in a confederacy, the object of which was nothing less than the conquest and partition of Scotland. It was to be expected that the favour shewn by that country to the expatriated monarch Henry the Sixth, should have deeply incensed his rival; but the facility with which he purchased his instruments, and found them in the ranks of the Scottish nobles, who became the vassals of England, is a mortifying fact.

Energy of the queen-mother. From these general remarks it is easy to anticipate the history of this reign, and the scenes which it presented. Into their minuter details it is impossible to enter. For a while the energy of the queen-mother supported the government. On the news of the death of her husband, instead of giving herself up to unavailing grief, she repaired with all speed to the camp before Roxburgh, carrying with her her infant son, now king; him she presented to the nobles, and urged them for him and his father's sake to press forward the siege. She was obeyed, and Roxburgh was taken; but fatal disputes soon succeeded to this success, and it required all the vigour of the queen, with her chief minister, Bishop Kennedy, a man of high character and talent, to struggle against the difficulties which surrounded them. In the northern parts of the kingdom all was unsettled; and the earl of Ross espousing the cause of Edward the Fourth, proclaimed himself king of the Hebrides, while the earl of Angus, on whom, after the fall of the house of Douglas, a large share of their power had devolved, undertook to support the party of Henry the Sixth, contrary to the wishes of the queen and Bishop Kennedy. At this crisis, the young sovereign lost his mother Mary of Gueldres; and, after a few years, Bishop Kennedy followed her to the grave; events which deprived the government of its best, or rather of its only support. Yet amid all these complicated dangers, it is remarkable, that for fifteen years, the interval occupied by the minority of this prince, the affairs of the country were prosperous.

Rise of the house of Boyd. On the death of Bishop Kennedy, the chief power in the government had fallen into the hands of William Lord Boyd, the high Justiciar, a baron hitherto little known, but whose power rose, in a few years, to a height which almost rivalled that of the once formidable Douglasses. He became

governor of the king's person; filled every office with his dependants; married his eldest son, who was created earl of Arran, to the king's sister; and acquired so much influence over the young king, rather, it would seem, by terror than by love, that he appeared completely subservient to his wishes. The decay of this family was as sudden as its rise. A marriage had been negotiated between the king and Margaret princess of Denmark, and scarcely was it concluded, when a faction of the nobles, at the head of whom was the monarch himself, suddenly attacked the Boyds, arraigned them of high treason, seized and confiscated their large estates, and brought to the scaffold their principal leader. A divorce was instituted against the earl of Arran and his wife, the princess Mary, sister to the king; and she was compelled to give her hand to Lord Hamilton, a favourite of the young monarch. It was through this marriage that the family of Hamilton, which now rose into great power upon the ruin of the Boyds, became, in the subsequent reign of Mary, the nearest heirs to the crown.

James had now attained majority, and in assuming the full administration of the government, he found his kingdom more opulent, more secure, and more powerful, than could have been anticipated from the struggles of his minority. The important isles of Orkney and Zetland had been acquired with the daughter of Denmark; the rich town of Berwick, and the border fortress of Roxburgh, had been occupied by the Scots; the earldom of Ross had been annexed to the crown; the independence and liberty of the Scottish Church established by the erection of St. Andrews into an archbishopric; and, lastly, a marriage treaty with England, by which the youngest daughter of Edward the Fourth was betrothed to the king's eldest son, seemed to promise security and peace in this formidable quarter. If such had already been the success of this reign, it seemed not unreasonable to look forward to still greater prosperity in after years; and yet the history of the country, from the moment when the monarch attained his majority, presents a melancholy contrast to this beginning. This reverse we are inclined to ascribe partly to the personal qualities of the king, partly to some changes in the power and dispositions of the great body of the feudal nobles, which are discernible at this period, not in Scotland only, but in all the feudal kingdoms of Europe.

Some of our historians have represented James the Third as a compound of indolence, caprice, and imbecility; but their opinion seems rash and unfounded. His character was different from that of the age in which he lived, and in some respects it was far beyond it. The times were rude, warlike, and unintellectual. The king was fond of repose, and addicted to a seclusion in which he might devote himself to pursuits which bespoke a refined and cultivated mind: a passion for mathematics, and the study of judicial astrology, a taste for architecture, a love for the science and practice of music, and a generous disposition to patronize the professors of literature and philosophy, rather than to surround himself with a crowd of fierce retainers, were the prominent features in the mind of this unfortunate prince; tastes which have been reprobated by contemporary historians, but which, if duly regulated, were rather praiseworthy than the contrary. Unfortunately, however, this due regulation was wanting. James had the weakness, not only to patronize, but to confer feudal rank, and distinctions, hitherto appropriated to the nobles, upon the professors of his favourite studies. Architects, musicians, painters, and astrologers, were admitted to the familiar converse of the sovereign, while the highest nobles found a cold reception or a positive denial of access. Is it any subject of surprise, that a fierce nobility should have been disgusted with such conduct, and that the king's warlike brothers, the earls of Albany and Mar, should have been regarded as the chief support of the state?

Rise of the house of Hamilton. A.D. 1470

James III. attains majority. State of the kingdom.

Character of James III.

Scotland. But in studying the history of this reign, we shall detect other causes of the sanguinary scenes in which it concluded. Not only were the feudal nobility of Scotland induced by the neglect and favouritism of the king to long for a change, but it is worthy of remark, that for some time previous to this period, the feudal nobility of Europe had been in a state of extraordinary commotion and tumult; and events had occurred which diminished in the eyes of the aristocracy and of the people the respect entertained for the throne. The revolution in England under Henry the Fourth, the subsequent history of that kingdom during the contest between the houses of York and Lancaster, the political struggles in France under Louis the Eleventh, the relative condition of the greater nobles in Germany and of the rights of the imperial crown under the emperor Sigismund, the dissensions which divided the Netherlands, and the civil factions which agitated the government in Spain, all combined to render resistance so common, and so lucrative in the eyes of the feudal nobility in Europe, that its frequency can be a subject of little wonder; and if, when we take into account the frequent communication between Scotland and the continent during the period of these commotions, we may easily imagine their effect upon the still ruder and more independent nobility of that country. We have been tempted to throw out these general observations, because the reign of James the Third is in one respect most remarkable. It is the era from which we may date the rise of a republican spirit, and the first propagation of those popular principles, of which the operation can be traced, in a greater or less degree, through the whole course of its subsequent history.

Contest of James III. with his brothers, Albany and Mar. A.D. 1479-1480. To return from such remarks to the events of this reign, we find the king engaged in a contest with his two powerful brothers, Albany and Mar. To the first had been entrusted the wardenship of the east marches, the government of Berwick, and the castle of Dunbar, the principal key of the kingdom; and there seems no doubt that he had abused his high powers to an extent which bordered upon treason. Against Mar was brought a still more atrocious charge. He had plotted, it was said, to cause the king's death by magical arts; and being convicted by the evidence of his wizard accomplices, was imprisoned, and, according to one account, secretly executed. Another story ascribes his death to the consequences of a fever, for which having a vein opened, he in an excess of phrensy tore off his bandages and bled to death. Against Albany the king proceeded with unusual vigour. He attacked him in Dunbar, made himself master of the fortress, and would have seized his person, but the rebellious prince availed himself of the situation of the castle, which was open to the sea, and fled first to England, and afterwards to France.

War with England. A.D. 1480. At this moment, Louis the Eleventh was at war with Edward the Fourth, and he unfortunately possessed such influence over the Scottish king, that he brought about a rupture between James and Edward. It was a step signally impolitic. Albany, the king's brother, returning from France, threw himself into the arms of England; the nobility were full of complaints against the government; the Lord of the Isles embraced the interests of Edward; and after a long interval of peace had softened the national animosity between the kingdoms, it was a miserable sight once more to witness the renewal of hostilities.

This contest led to some extraordinary scenes. Albany having openly avowed his purpose to dethrone his brother, assumed the title of Alexander king of Scotland, and entered into a treaty with Edward, by which he basely consented to sacrifice the independence and dismember some of the finest portions of the kingdom. To effect his designs, he had the address not only to secure the co-operation of the banished earl of Douglas, with the Lord of the Isles and his northern vassals, but he detached from James's service Angus,

Scotland. Gray, Huntly, Lennox, and many others of the leading nobility in Scotland. A conspiracy was formed against the monarch and his favourites; the conjuncture of his assembling his army, preparatory to his invasion of England, was deemed the most favourable moment for the execution of their purpose; and in the camp at Lauder its success was equally sudden and terrible. The nobles, led by Angus, seized Cochrane, James's favourite, who, from a mean station, had been promoted to high rank and enriched with the earldom of Mar; they then broke into the king's tent, made him prisoner, arrested the band of ignoble associates who shared his confidence, and proceeded to inflict summary vengeance on them all. Cochrane was hanged over the bridge of Lauder; Rogers, a musician, Hommel, Leonard, Preston and others, shared his fate; and the unfortunate monarch, having been conveyed to the capital, was shut up in the castle of Edinburgh. The result of this success was what might have been expected. Albany, who all along had acted from motives of personal ambition, having once possessed himself of the king's person, ruled the government at his will.

But usurpation of the supreme power was not the full extent of his treachery. He attached Edward the Fourth to his service by the sacrifice of the national independence. In a secret treaty, the English prince engaged to assist Albany, who hitherto had only assumed the title of lieutenant-general of the kingdom, in placing the crown on his own head; and as the base price of this assistance, the new king and his nobles agreed to withdraw their oaths from king James, and to live under the sole allegiance of the king of England. It may give us some idea of the low estate to which the nobles of Scotland had fallen, when we mention, that not only the earl of Douglas, now banished and living in England, but the earls of Angus, Buchan, Athole, and many others, were willing parties to this wanton sacrifice of their country.

The plot, however, was defeated, and happily a party yet remained among the nobles, who, though their vengeance against Albany had been directed against the king's favourites, were friends to the crown and to the country. They had joined Albany with the object of sacrificing Cochrane and his associates, but had been kept in ignorance of his ultimate intentions; and the moment these became apparent, they united with the king and overwhelmed the opposite faction. And here, in the manner in which Albany was treated, is to be found the cause of all the subsequent misfortunes of the king. His brother deserved punishment, and ought to have met with no pity. He had been guilty of open and repeated treasons, had levied war against his prince; and imprisoned his royal person, leagued himself with his enemies, sold the independence of his country, and assumed the title of king. His guilt and ambition had seduced from their allegiance a large party of the nobles; and if ever there was a time in which a great example was to be made, that time was now come. Yet, instead of this wholesome severity, the duke of Albany was treated with a lenity for which it is impossible to account. On acknowledging his manifold treasons, and laying down his office of lieutenant-general, he not only received a full pardon, but was permitted to retain not only his vast estates, but his wardenship of the marches, and was simply interdicted from coming within six miles of the court, or continuing his illegal combination with Angus, Athole, and Buchan.

Whether we are to ascribe this misplaced mercy to the king's attachment to his brother, or to a suspicion that he was not strong enough to inflict a more exemplary punishment, it is difficult to decide; but the result demonstrated what has been so often taught, the folly of a misplaced lenity. In a few weeks Albany was again in rebellion. At his invitation, an English army invaded Scotland; Dunbar, the most important castle in the kingdom, as the key of the eastern

Scotland, borders, was delivered up by this base person to the enemy, while he himself fled into England, and organized with Edward the Fourth the plan of a more formidable invasion. At this crisis occurred the death of the English monarch, and the seizure of the crown by Richard the Third; events which gave James an interval of rest, in which he acted with unusual firmness and energy. He assembled a parliament at Edinburgh, in which the sentence of forfeiture was pronounced against the duke of Albany and all his adherents; he entered into an intimate alliance with Charles the Eighth of France, and he concluded a truce with Richard the Third, who was too much occupied with his own complicated affairs, to have leisure or inclination to continue the war with Scotland. Thus strengthened, the king found it no difficult matter to resist the last effort of Albany and Douglas, who having once more invaded Scotland at the head of a small force, were completely defeated at Lochmaben; an event followed not long after by the death of Douglas, in the abbey of Lindores, where he had been confined, and of Albany, who was slain in a tournament in France.

Final defeat of Albany. A.D. 1483.

The Scottish nobles delivered from his most powerful enemies, would have been permitted to reign in peace. But he was destined to be unfortunate; and, although his nobles had refused to alter the succession in favour of his ambitious brother, they soon after appear to have entered into intrigues with England for the purpose of placing the crown on the head of his son, the prince of Scotland, who was then a youth in his sixteenth year. Much obscurity hangs over the origin of this conspiracy. Advances seem first to have been made by the faction of the prince to Richard the Third, who, although he was animated by an anxious desire to remain at peace with Scotland, did not scruple to hold out secret encouragement to James's enemies. To what extent such secret negotiations proceeded, it is not easy to discover; but after the death of Richard they were renewed, and his successor, Henry the Seventh, showed as little scruple as his predecessor in encouraging the malcontents.

Causes of the conspiracy against the king.

Five years had now elapsed since the death of Cochrane the king's favourite, and the dreadful scenes exhibited in the camp at Lauder. Since that time a change appears to have taken place in James's character. His devotion to study and retirement had given way to a sense of duty; he had exhibited not only capacity for government, but unwonted resolution in the attack and discomfiture of his enemies; and, although the impolitic lenity with which he had treated Albany was rather a weakness than a virtue, it was believed that he was now convinced of his error, and had resolved that the laws against treason should no longer slumber or be despised. These reflections filled the barons who had been conspirators at Lauder with the greatest alarm. They were well aware that a sentence of treason hung over their heads. They knew themselves guilty of aggravated offences; they had imprisoned the king, usurped the government, and without regular trial or conviction, had put his favourites and councillors to death. As long as the chief power had remained in their own hands, they felt tolerably secure, but circumstances had once more restored the king to his wonted authority; and the dread of the retaliation which might be inflicted, with the certainty that, at all events, their power would be abridged, appears once more to have driven them into rebellion. Such at least seems to be the most probable way of accounting for the rise of that conspiracy in which this unfortunate prince lost his crown and his life. The worst feature in the story is the unworthy part acted in it by his son, afterwards James the Fourth, over whom the malcontent barons gained a fatal influence, and who, seduced by the prospect of a crown, lent himself a tool to the dethronement of his father. When once organized, the

plot proceeded to its maturity, and thence hurried on to its catastrophe with an appalling rapidity.

The two parties of the king and the conspirators first tried their mutual strength in a Parliament. It was proposed by the popular faction that an amicable adjustment of all disputes should take place between themselves and the sovereign, and that such barons as were still obnoxious to a charge of treason, should receive a full pardon. To this the party of the king peremptorily refused their consent. James, aware of the unworthy conduct of his son, the heir apparent, created his second son duke of Ormond, and seemed to point him out as his successor. He at the same time rewarded the principal barons who had espoused his interest, and took decisive measures, by the appointment of vigorous officers, to have the laws against treason severely administered. These steps convinced his opponents that their proceedings had been discovered; and without giving the monarch time to assemble an army, or even take measures for his personal defence, they threw off the mask, broke out into open rebellion, declared that James the Third, by his crimes and oppressions, had forfeited all title to the throne, and proclaimed his son, by the title of James the Fourth.

Even now, had not the king suffered himself to be misled by his paternal feelings, the conflict might have concluded in his favour; for it is evident that a large class of the nobility, and the whole body of the people, were against these nefarious proceedings. So strong was this feeling, that James, who, on the advance of the rebels to the capital, had taken refuge in the northern part of his kingdom, soon found himself at the head of a formidable army, and advanced instantly against the insurgents, whom he found stationed at Blackness, near Linlithgow.

It was now the time for action, the time for a determined execution of those laws which late years had seen so constantly treated with contempt. But whether the affectionate heart of the monarch sickened at the sight of his subjects in mortal array against each other, or some symptoms of disaffection breaking out in his own force rendered him apprehensive of their fidelity, James not only consented to an accommodation, but offered terms to the prince and his associates, which were culpably lenient. He permitted the son who had usurped his kingly name and prerogative, and the subjects who had defied the authority of the crown and the laws, to negotiate with arms in their hands on a footing of equality. On the part of the misguided prince, now no longer a boy, no petition for forgiveness, no expression of penitence was suffered to escape. In the pacification at Blackness, the youth spoke throughout not as a son conscious that he had offended, but as a sovereign transacting a treaty with his equal. The treaty, in truth, was a triumph to the discouraged nobles. The prince and his friends who had encouraged him to resistance, agreed to become obedient subjects on receiving the king's forgiveness, while the monarch not only consented that their lives, honours, and estates, should be preserved, but that the household of the heir apparent should be maintained, and his friends and adherents supported with due dignity. It required little penetration to foresee that the tranquillity which was established on such a foundation could not long subsist. It was a confession of weakness pronounced at a time when firmness at least, if not severity, was the only guide to the permanent settlement of the convulsions which agitated the kingdom.

The consequences which any person of ordinary judgment might have anticipated, were not long of occurring. James retired to his capital, his army was dismissed, the northern barons, whose valour had saved his crown, were permitted to return to their estates, and James, anticipating a continuance of tranquillity, proceeded to reward his friends and re-organize his court, when he received intelligence that his son the prince, with the same fierce barons

Scotland. James III. A.D. 1487 Collision between the two parties.

A.D. 1488. Weakness of James III. His ill-judged lenity to the prince and his associates.

Treaty of Blackness.

Renewed rebellion of the prince and his party.

Scotland. who had so lately sworn allegiance, were again in arms, and in more formidable numbers than before. In this emergency, indeed, the king acted with courage and promptitude; but having disbanded the strongest division of his army, which consisted of his northern barons and their vassals, the force which he mustered was much inferior to that of his opponents. It was therefore determined to await in the capital the arrival of the northern barons; but unfortunately this resolution was abandoned, and the monarch with inferior numbers, attacked the insurgents, who were commanded by the prince his son, at Sauchy Burn, within a

mile of Bannockburn. The consequences proved most calamitous. The royal forces, after an obstinate struggle, gave way to their opponents; and James, flying from the field, was murdered by an unknown hand, at a little hamlet called Miltown, a few miles distant from the field of battle. He perished in the prime of life, and it is said his youthful successor was seized with overwhelming remorse on being informed of the miserable fate of his father. However this may be, he was immediately proclaimed king, and the homage of his barons, the early possession of a sceptre, and the lustre of a court, soon stifled his repentant feelings.

James IV. proclaimed king.

Character of James III.

The character of James the Third has been represented by Boyce, Buchanan, and those writers who have been contented to follow their authority, as a compound of weakness, wilfulness, and crime; a character contradicted by the history of his reign. It must indeed be admitted, that James's indulgent treatment of his rebellious subjects, and of the prince his son, partook of weakness, although there are few father's hearts in which he will not find an advocate; but in other respects the best refutation of the ideal pictures of Buchanan is to be found in the real history of the reign. James's misfortunes are, in truth, to be attributed more to the extraordinary circumstances of the times in which he lived, than to any flagrant vices or defects in the monarch himself. At this period, in almost every kingdom in Europe with which Scotland was connected, the power of the great feudal nobles, and that of the sovereign, had been arrayed in jealous hostility against each other. The time appeared to have arrived when both parties seemed convinced that they were on the confines of a great change; that the power of the throne must either sink under the superior strength of the greater nobles, or the independence and tyranny of these feudal tyrants receive a blow from which it would not be easy for them to recover. In the different countries of Europe indeed, the result was not uniform, but in all the same elements of faction were seen arrayed against each other. Thus, in France, the struggle under Louis the Eleventh had terminated in favour of the crown; yet the lesson to be derived from it was not lost upon the Scottish nobility, who were in constant communication with this country. In Flanders and the states of Holland, they had before them the spectacle of an independent prince deposed and imprisoned by his son; and in Germany the reign of Frederic the Third, who was contemporary with James the Third of Scotland, presented one constant scene of struggle between the emperor and his nobility, in which this capricious potentate was uniformly defeated.

There is yet one other observation to be made upon this remarkable revolution, by which, for the first time in Scottish history, a king was solemnly deposed by a faction of his own subjects. Although the barons who led the successful faction represented themselves as the friends of liberty, driven to a resistance of royal oppression, the middle classes and the body of the people took no share in the struggle. Many individuals belonging to these classes, who were feudal vassals of the great lords, must no doubt have been compelled to serve under them; but as far as they were represented by the commissaries of burghs who sat in Parliament, they appear in this struggle to have joined the

party of the sovereign and the clergy, by whom, during this reign, frequent efforts were made to introduce a more effectual administration of justice, and a greater respect for property and the rights of individuals.

Laws, mingled with alternate threats and exhortations, are to be found upon these subjects in the records of each successive Parliament of this reign; but the offenders continued refractory, and these offenders were the very men, whose offices, if conscientiously administered, ought to have secured the rights of the great body of the people. It was the nobles who were the justiciars, chancellors, chamberlains, sheriffs; and these, it was well known, were often the worst oppressors, partial and venal in their administration of justice, severe in exacting obedience, and opposed to every right which interfered with their own power. Their privileges as feudal nobles came repeatedly into direct collision with their duties as servants of the government, and they made no scruple to sacrifice the last to the preservation of the first; duty to privilege and self-interest. It is from this cause that we discern an honourable distinction between the clergy and the feudal nobles, in the struggle between the crown and the faction by which it was attacked. In this contest, wherever the greater offices in the government were in the hands of the clergy, it will be found that they generally supported the sovereign; when they were entrusted to the nobility they almost uniformly combined against him.

When James the Fourth succeeded to the throne left vacant by the murder of his father, he was in his seventeenth year; but his character at that early age had vigorously developed itself, and although it has sometimes been asserted, there is no reason to believe that the prince had been an unwilling assistant, or a passive tool in the hands of the conspirators. Their first care was to hold at Scone the ceremony of the coronation; their next to conclude a three years' truce with England, then under the government of Henry the Seventh; their third, to assemble a Parliament and provide for their own safety, by the forfeiture of their enemies and the rewards distributed to their friends.

And here it is not unimportant to mark the course which they artfully pursued. If any party in the state were at this time liable to a charge of treason, it was evidently the friends of the young king, and not the barons who had continued faithful to his father; but the difference consisted in this, that the treason of the prince's party had been accompanied with success, whereas the resistance of the friends of his father had been overwhelmed, and himself dethroned and murdered. They who now were in possession of the supreme power, therefore boldly turned the tables, summoned their opponents on a charge of treason, and as the facts were notorious, pronounced sentence against them. They next voted their own acquittal in strong and significant terms; and considering under whose dictation the act was drawn up, it is difficult to read, without a smile, the compliments pronounced upon their treason, when they declare that their sovereign lord, and his *true* barons, who served with him in the field, were innocent of the late battle and pursuit, and had no blame in exciting the disturbances which had terminated so fatally.

The innocence of these barons was however far from being generally admitted; and the Parliament had scarcely risen, when Lennox, Huntly, Marischal, and other powerful chiefs, rose in arms to avenge the death of their king. Lord Forbes, who had joined them, marched through the country, bearing the bloody shirt of the unfortunate prince suspended from a spear; and had it not been for the promptitude with which their opponents met the enterprise, the movements of Lennox, who advanced upon Stirling, might have delivered the country from their domination. But this chief, betrayed by some of his followers, was surprised and completely routed by Lord Drummond at Fal-

Scotland.
James IV.
A.D.1488.

James IV.
succeeds to
the throne.

General observations.

Scotland. lamoss; Dunbarton, Lennox's strongest hold, surrendered, and the defeat added new strength to the young king and his friends.

James IV. A.D. 1489.

Character of James IV.

Twenty years' peace.

Occupations of the king.

James IV. recalls his father's councillors. Andrew Wood of Largo.

A.D. 1489.

Tranquillity being restored, James, as he approached manhood, exhibited signs of considerable ability, and energy in following up his purposes. Amid a love of pleasure, which had never been restrained by early discipline, and often hurried him into foolish and criminal excesses, he did not so far forget himself as to neglect his higher duties. He cultivated amicable relations with England, renewed the league with France, entered into a commercial alliance with Denmark, and in a Parliament held in the capital, directed his earnest endeavours to the establishment of good order, and the administration of equal justice throughout the kingdom. Happily the character of Henry the Seventh, his caution, sagacity, command of temper, and earnest desire for peace, were well calculated to check the ardour and impetuosity of the Scottish prince; and for twenty years, with the exception of a brief effort made by James in favour of Perkin Warbeck, the country enjoyed the blessing of repose.

This interval was wisely occupied by the monarch in reducing the northern portion of his dominions to obedience, and in an attempt, by the frequent convocation of his parliament, to promulgate useful laws, and, which proved a more difficult task, enforce their observance. It was evident, that as the king grew older, he became convinced of the fatal errors of his early years, and upbraided himself for having lent himself to a selfish and unprincipled faction, who, unless he consulted their wishes and gratified their ambition, might be disposed to treat him as they had treated his father. Aware that they were too powerful to be quelled, he prudently adopted a safer course, by gradually recalling to confidence and power the friends and ministers of his father. Among these, one of the ablest was Andrew Wood of Largo. This remarkable man, whose genius for naval adventure was combined with a powerful intellect in civil affairs, rose by degrees to be one of James's most confidential servants, and appears to have been almost exclusively trusted in his financial concerns. We find in him many qualities apparently inconsistent, when judged by modern notions. He was originally nothing more than an enterprising merchant; but at this time all merchant ships were armed, and generally acted on an emergency as ships of war. Wood, therefore, in the course of a life devoted to mercantile and commercial adventure, had become a skilful naval commander; and in the commencement of this reign, when the English privateers infested the narrow seas and attacked the Scottish shipping, had signalled himself by the capture of five vessels, and the subsequent defeat of a second squadron, commanded by Stephen Bull a London merchant. These successes endeared him to the king, who had a passion for naval enterprise, and lost no opportunity of encouraging such a taste in his nobles. The advice of such a councillor as Wood, was of essential service to James. His travels in different countries had enlarged his mind, and made him ready to adopt their improvements in various points in which Scotland was behind her neighbours. He had been an affectionate servant of the late king; and to his advice we are perhaps to trace the coldness and severity with which James now began to treat some of the leaders in the late rebellion. Yet, while the monarch endeavoured to keep their power in check, he showed his prudence in abstaining from such severe measures as might have driven them into open opposition; and combining firmness with gentleness, he contrived to reconcile the opposite factions among his nobles, and to maintain his own authority over them all.

In the midst of these cares, the state of the Highlands

occupied his special attention, and the principles of his policy were certainly wise and salutary. He endeavoured by every means in his power to attach to his interests the principal chiefs of these remote districts; he contrived, through them, to overawe and subdue the petty island princes who affected independence; he carried into their territories, which had been hitherto too exclusively governed by their own capricious and often tyrannical institutions, a more regular and rapid administration of civil and criminal justice, making them obedient to the same laws which regulated his lowland dominions; and lastly, he repeatedly visited the Highlands in person. In 1490, on two different occasions, the king rode from Perth across the "Mount," a term applied to the chain of mountains which extends from the Mearns to the head of Loch Rannoch, accompanied by his chief lords and councillors. In 1493, he twice penetrated into the Highlands, and in the succeeding year thrice visited the isles.

One of these voyages, undertaken in 1494, during the spring months, was conducted with great state. He was accompanied by his chief ministers, his household, and a considerable fleet, many of the vessels composing which were fitted out by the nobles at their own expense. The pomp of the armament was well calculated to impress upon such wild districts an idea of the wealth and military power of the prince; while the rapidity of his progress, the success with which he punished all who braved his power, his generosity to those who sued for mercy, his familiarity with the lower classes of his subjects, and his own gay manners, increased his popularity, and confirmed the ties of allegiance. On arriving in this voyage at Tarbert in Kentire, James repaired the fort originally built there by Bruce, established an emporium for his shipping, transported thither his artillery, and by such wise and energetic precautions, ensured peace to districts which formerly had derided the royal vengeance. The chiefs, aware that the king could carry hostilities at a short warning into the heart of their territories, submitted to a force which it would have been vain to resist. One only, the Lord of the Isles, had the folly to defy the royal vengeance, and soon repented of his temerity. He was summoned to take his trial for treason, pronounced guilty, stripped of his almost regal power, and his lands and possessions forfeited to the crown.

We must now advert for a moment to a singular episode in the history of the country. Perkin Warbeck, whose mysterious story still offers some field for historical scepticism, after his first unsuccessful attempt upon the English crown, took refuge in Scotland in the year 1495. There seems strong ground for suspecting that James, at the request of the duchess of Burgundy, had embraced the interests of this adventurer at a much earlier period than is generally suspected; but whether he really believed him to be the prince whose name he assumed, or whether he was induced to espouse his cause as a means of weakening England, is not easily discoverable. It is certain, however, that in 1494, the Scottish king had projected an invasion of England in favour of the duke of York, and that the plan miscarried by the treachery of Perkin's friends.

On the arrival of the mysterious stranger at his court, James at once received him with royal honours, gave him in marriage a lady connected with the royal family,¹ collected an army, and, attended by Warbeck, invaded Northumberland. But the proceeding was rash and inpolitic; and its author found, within a short time, that the cause of Perkin was unpopular in England, and the war unacceptable to his own subjects. So deep was the national antipathy between the two nations, that the English no sooner saw the claimant of the crown invading their country at the head of a Scottish force, than they suddenly cooled in

¹ Catherine Gordon, the daughter of the Earl of Huntly.

Scotland. their enthusiasm; and the desolating fury with which James IV. conducted hostilities, supported by a body of foreign mercenaries, completed their disgust. It was evident to the king that Henry the Seventh held his crown by a tenure too firm to be shaken by so feeble a hand as Perkin's; and having drawn back his army, he soon after concluded a truce with England, and refusing to deliver him to Henry, took measures for his quiet and amicable retreat from his dominions.

James's wise conduct to his nobility. These negotiations having been concluded, James had leisure to attend to his affairs at home. He was aware that the chief errors of his father's reign were to be traced to his neglect of the great body of his nobility. To reign without their cordial co-operation was impossible, as long as Scotland remained a feudal kingdom; and it was happy for this prince that the course of conduct which his own disposition prompted him to pursue, was the best calculated to render him a favourite with this influential body. Under the reign of his father the nobles had little intercourse with their prince. They lived in gloomy independence at a distance from court, resorted thither only on occasions of state or counsel; and when parliament was ended, or the emergency had passed away, they returned to their castles full of complaints against a system which made them strangers to their sovereign and ciphers in the government.

Increase of the power of the Crown. All this was happily changed under the present monarch. Affable in his manners, a lover of magnificence, and a still greater lover of mirth and pleasure, the prince delighted to see himself encircled by a splendid nobility. He bestowed upon his highest barons those offices in his household which ensured their attendance upon his person; his court became a scene of perpetual amusement, in which his nobles laboured to surpass each other in extravagance and revelry; and while they impoverished themselves, they became more dependent upon the sovereign. In this manner the seclusion of their own castles became irksome to them; as their residence on their estates was less frequent, the ties which bound their vassals to their service were loosened; and the consequences proved in every way favourable to the royal authority.

State of the navy. James now turned his principal attention to his navy. It is well known that at this moment the maritime enterprises of the Portuguese, and the discoveries of Columbus, had created a wonderful sensation throughout Europe. Even the cautious and calculating spirit of Henry the Seventh had caught fire at the triumphs of naval enterprise; and an expedition which sailed from England under the command of John Cabot, a Venetian merchant, and his son Sebastian, was rewarded by the discovery of North America. These successes roused the adventurous spirit of the Scottish king, and as Scotland had hitherto been deficient in any thing approaching to a navy, he became eager to supply the want, and maintain his place with other continental kingdoms. With this view, he paid great attention to his fisheries, and to foreign commerce, the best nurseries of seamen; and those enterprising merchants and hardy mariners who had hitherto speculated solely on their own capital, found themselves encouraged by the king and the government.

The king encourages his fisheries, his navy, and his commerce. In a former parliament, complaints had been made of the want of boats to be employed in the fisheries, and of the wealth lost to the country from the few ships to be found in its sea-ports. It was now provided, that vessels of twenty tons and upwards, should be built in all the principal sea-ports, and that all stout vagrants found in these districts should be impressed, and compelled to learn the trade of mariners. Among his merchants and private traders were many men of ability, whom the king treated with favour. He exhorted them to extend their voyages, to arm their trading ships, to import artillery, and to build ships of force at home. Nor was this all. He studied the subject of his navy, and made himself personally familiar with its details;

he practised gunnery, embarked in little experimental voyages, conversed with his mariners, and visited familiarly at the houses of his merchants and sea officers, by whom his fame was carried to foreign countries. All this was useful. The best foreign artisans being sure of a generous reception, flocked to Scotland from France, Italy, and the Low Countries; and if the king's credulity sometimes encouraged impostors, his enthusiasm also collected round him men of real knowledge and experience.

While we advert to these laudable exertions of the king, the labours of an enlightened prelate for the dissemination of useful learning, ought not to be passed over. Scotland, at this period, possessed only two universities, St. Andrews, founded in the beginning of the fifteenth century, and Glasgow, founded in 1453. To these Elphinstone, bishop of Aberdeen, now added a third. The papal bull was issued in 1494, but the buildings of King's College were not completed till about the year 1500. It supported professors of divinity, of the civil and canon law, of medicine, and of classical literature, in which its first principal, Hector Boece or Boyce, was no contemptible proficient. Soon after this, James married the princess Margaret of England, daughter of Henry the Seventh; a wise and politic alliance, although in the marriage treaty the diplomatic skill and penurious habits of her father seemed to have gained a victory over the Scottish commissioners.

From the public rejoicings that followed his nuptials, the king was called to repress a rebellion in the north, which appears to have been excited by an imprudent alteration in the policy hitherto pursued in these quarters. This had led to a confederation of the Highland chiefs, who determined to reinstate in his insular sovereignty the grandson of the last lord of the Isles; and so deep was the discontent, that it required the utmost efforts of the prince to restore these remote districts to tranquillity. In this he at last succeeded, divided them into new sheriffdoms, repaired and garrisoned the castles in the hands of the crown, and sent Wood and Barton, two of his best officers, with a small squadron to co-operate with Arran, his lieutenant-general, in reducing the insurgent chiefs. Having adopted these measures, which were soon followed by the complete re-establishment of tranquillity, James, at the head of a considerable force, visited the border districts, and, assisted by Lord Dacre, the English warden, compelled the Armstrongs, Jardines, and other powerful septs, to forsake their habits of plunder, and respect the laws. He then proceeded by negotiations to strengthen his pacific relations with France, and the Netherlands; while he prudently resisted the solicitations of Pope Julius the Second, who endeavoured to detach him from his alliance with Louis, and to induce him to join the emperor and the Venetians in their attempt to check the successes of the French in Italy.

Not long after this, occurred the death of Henry the Seventh, an event unfavourable to Scotland. The proud, capricious, and tyrannical character of his son and successor Henry the Eighth, rendered him little qualified to respect or preserve the pacific relations with that country, which had been wisely cultivated by his father; and it soon appeared that the Scottish prince, a spirited monarch, jealous of his own dignity, and little accustomed to dictation, was not disposed to submit to it from his brother-in-law.

Matters proceeded smoothly for some time; but when Henry the Eighth engaged in war with France, the ancient ally of Scotland, James at once warmly espoused the party of Louis, and although against the best interests of his kingdom, suffered himself to be drawn into the quarrel. The history of the war is well known. Julius the Second having, in conjunction with Ferdinand of Spain, gained all he wished, by the league of Cambray, became alarmed at the progress of the French in Italy, and to check their arms, prevailed upon Henry the Eighth, whose imagination had

Scotland.
James IV.

University of Aberdeen.
A.D. 1494.

Marriage of the king.
A.D. 1502.

rebellion.
A.D. 1505, 1506.

A.D. 1509.
Henry VIII.
succeeds to the English throne.

James IV.
and Henry.

Scotland. lately been dazzled by dreams of Edward the Third and Henry the Fifth, to invade France. Louis, on the other hand, negotiated with James the Fourth, and to embarrass the king of England, induced him to declare war against Henry the Eighth. It was a fatal resolution; but the Scottish prince was beloved by his people, and so popular with the great body of his nobles, that his appeal to arms was answered by the muster of one of the most numerous and best equipped armies, and one of the most formidable fleets ever fitted out by the country.

The Scottish fleet dispersed.

The fleet amounted to twenty-three sail, of which thirteen were large ships, the rest small armed craft. Of this armament the destination was Ireland, but its command was entrusted to the earl of Arran, an officer of no experience in naval affairs; and the result was its total dispersion and discomfiture. The land army, on the other hand, which was led by the king in person, amounted to a force little short of a hundred thousand strong, with which James invaded England, and after some slight successes, encamped in a strong position on the hill or rising ground of Floddon, one of the last and lowest eminences which detach themselves from the range of the Cheviots. It was a strong position, impregnable on each flank, and in front defended by the Till, a deep and sluggish stream, which is tributary to the Tweed.

Defeat of the Scottish army at Floddon, 9th Sept. A.D. 1513.

Henry the Eighth, before passing with his army into France, had entrusted the defence of his kingdom to the earl of Surrey, a brave and experienced officer, who lost no time in collecting a force with which, although it did not amount to half the number of the Scots, he did not hesitate to march against the king. But what he wanted in numbers, Surrey supplied by military experience and coolness; while James, blind, obstinate, and attending only to the dictates of his personal courage, threw away his advantages both of numbers and position. The result was one of the most calamitous defeats ever experienced before or since by Scotland. Surrey was permitted by the king to cross the Till in the face of his army. Contrary to the remonstrances of his veteran officers, he would suffer no one to attack him; although the moment was so favourable that, if Angus, Lindsay, and Huntly had been allowed to charge with their men, nothing less than a miracle could have saved the English earl. To the entreaties of Borthwick, the master of his artillery, he was equally obstinate. Had the guns been brought to bear upon the enemy when crossing the bridge of the Till, they must either have been beaten back or thrown into such disorder as would have exposed them to immediate rout; but this too the king would not suffer. With amazing folly he renounced the use of his artillery, that arm of war which, with so great care and expense, he had strengthened or rather created, at the very moment it became serviceable, and might have saved himself and his army. What James's motive was in this, unless the indulgence of some idle chivalrous punctilio, it is impossible to discover; but its consequences were grievous. Surrey completed his arrangements, passed the ford and the bridge, marshalled his army at leisure, and placing his entire line between James and his country, advanced by an easy ascent upon the rear of the Scottish army. Upon this the king set fire to the huts and temporary booths of his encampment, and descended the hill with the object of pre-occupying an eminence on which the village of Branksome is built. His army was divided into five battles, some of which had assumed the form of squares, some of wedges, all being drawn up in a line about a bow-shot distance from each other. The enemy were divided into two battles, each of which had two wings. The English van was led by lord Thomas and lord Edmund Howard, Surrey himself commanded the centre of the host, Sir Edward Stanley and lord Dacre the rear and the reserve. On the side of the Scots, Huntly and Hume led the advance, the king the

centre, and the earls of Lennox and Argyll the rear. The battle commenced at four in the afternoon, and after an obstinate contest, which continued till nightfall, concluded in the total defeat of the Scots. Among the slain was the king himself, who, surrounded by a circle of his nobles, had fought with desperate courage, besides thirteen earls, and fifteen lords and chiefs of clans. The loss of common soldiers was estimated at ten thousand men. Of the gentry it is impossible to say how many were slain. Scarcely a family of note could say that they had not lost one or more relatives, while some had to lament the death of all their sons. Whether we regard this miserable slaughter of the sovereign with the flower of his nobility and country, or look to the long and sickening train of national calamities which it entailed upon the kingdom, it is not too much to pronounce the battle of Floddon the greatest national misfortune ever endured by Scotland.

The character of the unfortunate monarch who thus perished in the prime of life, for James had not completed his forty-second year, was marked by very contradictory qualities. Although devoted to his pleasures, wilful, and impetuous, he was energetic and indefatigable in the administration of justice, a patron of all the useful arts, and laudably zealous for the introduction of law and order into the remotest parts of his dominions. The commerce and the agriculture of the country, the means of increasing the national security, the navy, the fisheries, the manufactures, were all subjects of interest to him; and his genuine kindness of heart, and accessibility to the lowest classes of his subjects, rendered him deservedly beloved. Yet he plunged needlessly into all the miseries of war, and his thirst for individual honour, and an obstinate adherence to his own judgment, led to the sacrifice of his army and his life, and once more exposed the kingdom to the complicated evils of a minority.

The news of defeat always flies rapidly, and the full extent of the national calamity soon became known in the capital, which was seized with the utmost sorrow and terror. The magistrates, with the forces of the borough, had joined the king's army, and many of them shared his fate; but the merchants, to whom their powers had been deputed, acted with much firmness and spirit. They armed the townsmen, published a proclamation, enjoining the women who were seen waiting in the streets to cease their lamentations, and repair to the churches, where they might pray for their lords and husbands, and took all the necessary precautions to defend the city in the event of any immediate attack. Soon afterwards the welcome intelligence arrived that Surrey, having suffered severely in the battle, had disbanded his host, and a breathing interval was allowed. The infant king was crowned at Scone, the castle of Stirling appointed as his residence, the government of it entrusted to lord Borthwick, and the archbishop of Glasgow, with the earls of Huntly and Angus, selected to be the councillors of the queen-mother, till a parliament should assemble. At the same time suspicions seem to have arisen that too much influence in the government ought not to be given to this princess, whose near connection with England might subject her to foreign influence; and a secret message was dispatched to France inviting the duke of Albany, the next heir to the throne, to repair to Scotland and assume the office of regent.

It was necessary, in the mean time, to consider the best schemes for the restoration of tranquillity and the preservation of order under the shock which a defeat so terrible had given to the country; and the prospect which presented itself, on taking a general view of the condition of the kingdom, was discouraging. The dignified clergy, a class of men who were undoubtedly the ablest and the best educated in Scotland, from whose ranks the state had been accustomed to look for its wisest councillors, were divid-

Character of James IV.

Coronation of James V. A.D. 1513.

The Duke of Albany invited from France.

Scotland. ed into factions among themselves occasioned by the vacant benefices. The archbishop of St. Andrews, the prelates of Caithness and the Isles, and other ecclesiastical dignitaries, had fallen in the field of Floddon; and the intrigues of the various claimants for these high prizes distracted the church and the council. There were evils also to be dreaded from the character and youth of the queen-mother. Margaret had been married at fourteen, and was now only twenty-four. Her talents were excellent, as we know from the testimony of such able judges as Surrey, Dacre, and Wolsey; but in some points she too nearly resembled her brother Henry the Eighth. She was hasty in her resentment, headstrong, and often ready to sacrifice her calmer judgment to her passion or her pleasure; and in her thirst for power or personal gratification she sometimes cared as little for the purity of the means by which these objects were accomplished.

Character of the Queen-mother. She is made regent. A.D. 1514. Soon after the death of the late king this princess gave birth to a son, who was named Alexander, and created duke of Ross; and in a parliament, which met after her recovery, she was confirmed in the office of regent, and entrusted with the custody of the young king and his brother.

At this moment the most powerful nobles in Scotland were the earls of Angus, Home, Huntly, and Crawford. Angus wielded the whole strength of the house of Douglas; Home was chamberlain, and commanded the eastern borders; while Huntly and Crawford ruled the northern districts. The earl of Arran, in the mean time, arrived from France along with the Sieur de la Bastie, who had been a favourite of the late king, and brought a message from the duke of Albany. Arran was nearly related to the royal family, and entitled, by his high birth, and the office of Lord High Admiral which he held, to act a leading part in the government; but his talents were of an inferior order, and unable to compete with the trying circumstances in which the country was placed.

The Queen-mother marries the Earl of Angus. Scarcely had the queen recovered from her confinement when she married the earl of Angus, a nobleman of great accomplishments and personal attractions, but, in the words of lord Dacre, "childish, young, and attended by no wise councillors." Had the princess entered into a second marriage after due consultation had been held with the council assigned to her by parliament, and after a decent interval, no one could have blamed her. She was yet in the bloom of her best years, and from her youth, as well as her high rank and the important duties entrusted to her, she required the protection of a husband; but the precipitation with which she hurried into the match with Angus was scarcely decorous, and certainly unwise, nor was it long before she bitterly repented her choice.

The country divided into factions. The first effects of this unfortunate step was to increase the bitterness of the pre-existing feuds amongst the nobles. Home and Angus marshalled themselves and their vassals against each other; Arran, assisted by Lennox and Glencairn, aspired to the regency; Beaton, archbishop of Glasgow, an intriguing prelate, supported the interests of Albany and the French faction; while Huntly, lord Drummond, and the earl Marischal gave their influence to Angus and the queen, who courted Henry the Eighth, and took the name of the English party. At this unfortunate crisis the country received a new blow in the death of Elphinstone, who had been nominated archbishop of St. Andrews. For the vacant primacy there were three competitors; Gawin Douglas, uncle to the earl of Angus, Hepburn, prior of St. Andrews, and Forman, bishop of Moray, respectively nominated by the queen, the chapter, and the pope. These ambitious ecclesiastics scrupled not to muster their armed vassals, and to vindicate their claims by an appeal to the sword, an indecent spectacle, which could not fail to lower the church in the eyes of the people.

It was under this deplorable state of things that Henry the Eighth carried to perfection a base system already be-

gun by his father, that of keeping in pay a number of spies and pensioned supporters. He bribed the Scottish nobles, entertained a constant correspondence with the queen his sister, and even went so far as to propose her flight with the young king and his brother to the English court. It may give us some idea of the loose principles of some of the leading men, that Angus and his uncle, Gawin Douglas, who ranks higher as a poet than a politician, did not hesitate to give their countenance to a plan which amounted to nothing short of treason.

Arrival of the Duke of Albany. A.D. 1515. His character. In the midst of these scenes the duke of Albany arrived from France, and assumed the regency; but unfortunately his determined predilection for the French interests was as unacceptable to many of the wisest and best men in the country, as the queen and Angus's devotion to England. At this moment Scotland required an upright and vigorous governor, animated by a sincere love of his country, and who could hold the balance with judgment between contending parties. But Albany was ignorant of the constitution, of the language, and of the manners of the country. His family also made him an object of suspicion, his father having traitorously attempted to seize the crown. He was the son of a French mother, had married a French woman, and having his chief estates in France, constantly styled the French king his master; nor does it appear that either his talents or his temper were calculated to counterbalance such disadvantages.

Albany assumes the government. On his assumption of the government the effects of all this were soon perceived. The queen refused to give up the custody of the infant monarch; Home, the chamberlain, threw himself into the arms of England; Angus, guided solely by selfishness and the ambition of becoming chief ruler, deserted his wife, the queen. France, instead of assisting her ancient ally to defeat the intrigues of Henry the Eighth, which were carried on by his able minister lord Dacre, first betrayed strong symptoms of a change of policy, and at length refused to renew the alliance with Scotland; and although Albany, amid these difficulties, acted with considerable spirit and ability, it was impossible for him to compose the jarring elements, or restore tranquillity and order to the country.

He returns to France. Dissatisfied and dispirited, he retired for a few years to France, and returned to Scotland only to find the dangers which threatened the kingdom more imminent, and the task of encountering them more difficult. In his absence De la Bastie, the person who enjoyed his chief confidence, and to whom he had entrusted the offices of warden of the marches and deputy governor, was murdered by the Homes in the most savage manner. The Highlands and Isles, long deprived of regular government, were torn by various factions, and exhibited scenes of the wildest excesses. And Angus, whose fendal power was far too great for a subject, had acted in open defiance of the laws, and domineered in the most tyrannical manner over all who dared to oppose his commands. The arrival of Albany compelled this chief to fly from the capital, and the regent exerted himself with the utmost vigour to put down the despotism of the Douglasses. He was forthwith reconciled to the queen, received from her the keys of the castle of Edinburgh, and with return. Albany's A.D. 1521. them the custody of the young king; he assembled a parliament, summoned the Douglasses to answer a charge of treason, and, although thwarted in his administration by the intrigues of lord Dacre and the treachery and venality of the Scottish nobles, he compelled Angus, his principal enemy, to leave the kingdom.

State of the kingdom. It would be difficult, and if easy, uninteresting, to enter into the history of this period, when the country was torn by contending factions, and exposed to all the miseries incident to a feudal minority. Albany's worst enemies were lord Dacre and the Anglo-Scotic party which he kept in his pay. It was his policy to throw distrust and suspicion up-

Scotland. on every measure of the regent and the queen; to represent the regent as avaricious and tyrannical, to accuse him of a design to seize the crown, and to insinuate that the king's life was not safe in his custody. All of these tales are to be found in his correspondence with his master, Henry the Eighth, and there can be little doubt that the greater portion of them were false, and the whole grossly exaggerated. So at least we must judge from the conduct of the Scottish Parliament, which treated a message, soon afterwards sent by Henry the Eighth, and founded upon these idle accusations, with a calm and resolute denial. This monarch, acting upon the impulse of the moment, and thwarted by the politic measures of the Regent, had dispatched a herald, who conveyed a severe reprimand to the queen, and, at the same time, insisted that the Scottish nobles should instantly dismiss Albany. Their reply to this haughty communication was spirited and dignified. They derided the fears expressed for the life of the young king, declaring that Albany was a faithful servant of the country, and had been invited by themselves to assume the regency. "Here it is our pleasure," said they, "that he shall remain, nor shall he be permitted or enjoined to depart at the request of your grace, or any other sovereign prince. And as to the threat of hostilities, (thus they concluded their answer), if, because we assert our own rights, we should happen to be invaded, what may we do but trust that God will espouse our just quarrel, and demean ourselves, as our ancestors have done before us, who, in ancient times, were constrained to fight for the conservation of this realm, and that with good success and honour?"

War with England. A.D. 1522. This answer was followed, on the part of Henry, by an immediate declaration of war. The earl of Shrewsbury, at the head of the force of the northern counties, invaded Scotland on the side of the Merse and Teviotdale; an English fleet ravaged and laid waste the coasts of the Frith of Forth; and Albany the Regent retaliated by breaking into England at the head of a large army. He was driven to this solely by a desire to vindicate the national honour; for he seems to have been conscious of the disadvantages which attended a war with England, and he knew that the majority of the nobles were animated by the same feelings. Under these circumstances he wisely determined to follow Bruce's principles as to war with this country, to avoid any protracted invasion, not to hazard a general battle, and while he showed a determination to maintain the independence of the country, and to resist any foreign dictation, to evince at the same time his readiness to conclude an honourable peace.

The same disposition being evinced by lord Dacre, the minister to whom Henry entrusted the management of Scottish affairs, a truce was concluded; but Albany, on disbanding his army and resuming his civil duties, found himself surrounded with difficulties. Nothing indeed could be more complicated or irksome, than the various contending interests which he had to understand and reconcile. His engagements with France prompted him to continue the war with England; his better judgment admonished him to remain at peace. Amid the universal corruption and selfishness which infected the body of the nobles, many of whom were in the pay of England, he looked in vain for any one to whom he could give confidence, or entrust with the execution of his designs, while the queen-mother, with whom he had hitherto acted, betrayed him, and corresponded with Dacre.

Albany's second visit to France.

He returns to Scotland.

The impossibility of overcoming these intricate evils without a more powerful military force than he could at present bring into the field, induced the Regent once more to pass into France, for the purpose of holding a conference with Francis the First, on the best method of reducing the English faction. A council of regency was appointed, consisting of Huntly, Arran, Argyll, and Gonzolles, a French knight, in whom Albany placed great confidence; and after an absence of some months, during which the war again broke out with great fury, he revisited Scotland, bringing

Scotland. with him a fleet of eighty-seven small vessels, in which he had embarked a fine body of six thousand foreign troops.

James V. War with England. A.D. 1523. With this strong reinforcement he hoped to gain a preponderating influence over the nobility, and to decide the contest with England; but he was miserably disappointed. The presence of foreign troops, always unacceptable to a people jealous of their rights, was particularly so to the Scots, who were poor, and had to support the foreigners at a great expense. This rendered the war unpopular with the great body of the nation; the queen-dowager was devoted to England; and the nobles, although prepared to assemble an army for the defence of the borders, were opposed to any invasion of England upon a great scale, or to a war of continued aggression. As many of these barons, however, were at that moment receiving pensions from France, the payment of which any too decided demonstration might have interrupted, they artfully concealed their repugnance. An army of forty thousand men mustered on the Borough-moor beside Edinburgh, and Albany, taking the command in person, advanced to the borders; but on arriving at Melrose the mask was dropped, the leaders showed symptoms of insubordination, the soldiers catching the infection, murmured against the foreign mercenaries, and discontent gathering strength, at last broke out in an open refusal to advance. No entreaties or threats of the Regent could overcome this resolution; and after a short season, news arrived that the earl of Surrey, having assembled an army, was advancing against them. The intelligence of his speedy approach strengthened the Scottish nobles in their determination not to risk a battle. So completely had the majority of them been corrupted by the money and intrigues of Dacre and the queen-dowager, that Albany did not venture to place them in the front, but formed his advance of the French auxiliaries and his artillery, the single portion of this army which had acted with spirit. To have attempted to fight Surrey with these alone, would have been the extremity of rashness, to have awaited the advance of the English earl with an army which refused to proceed against the enemy, might have rendered defeat inevitable. In these critical circumstances, Albany, who has been unjustly attacked by some ill-informed writers, adopted the only alternative which was safe or honourable. He disbanded the Scottish portion of his army, and he himself retreated with his French auxiliaries and his artillery to Eccles, from which, after a short season, he returned to the capital, and here he assembled the parliament.

Albany retreats.

Its proceedings, as might have been anticipated, were distracted and impeded by mutual accusations and complaints. The Regent could not conceal his animosity toward those leaders who had so recently deserted him almost in the presence of the enemy. The nobles recriminated; they blamed him for squandering the public treasure, and notwithstanding the inclement season of the year, insisted on his dismissing the foreign troops, whose residence had become burdensome. All this was calculated to disgust and mortify the governor; and he requested permission to retire once more to France, for the purpose of holding a conference with Francis the First, and inducing him to grant him further assistance against the designs of England. His request was complied with, on the condition that if he did not return to Scotland within a limited period, the league with France, and his own regency, should be considered as at an end. In the mean season, the custody of the king's person was entrusted to the lords Cassilis, Fleming, Borthwick, and Erskine, while the chief management of affairs was committed to a council, composed of the chancellor, the bishop of Aberdeen, and the earls of Huntly and Argyll. Having made these arrangements, the duke of Albany quitted the kingdom, convinced, in all probability, of the impossibility of reconciling the various factions and interests by which it was torn in pieces. Although he gave hopes that his absence

Albany leaves Scotland. A.D. 1524.

Scotland. should not exceed three months, there is strong reason for believing that when he embarked it was with the resolution, which he fulfilled, of never returning to Scotland.

James V.
A.D. 1524.
Revolution
in the go-
vernment.

On the departure of Albany, it soon became apparent that a secret understanding had for some time been maintained between two of the most powerful factions in the country, and that his leaving the kingdom was the signal for the breaking out of an important revolution. The chief actors were the earl of Arran and the queen-mother, and there is ample evidence that their proceedings were agreeable to England. The young king was now in his thirteenth year, and his mother and Arran, having gained to their interest the peers to whom his person had been entrusted, carried him from Stirling to Edinburgh, proceeded to the Palace of Holyrood, declared in a council that he had assumed the government, and issued proclamations in his name. The peers of Margaret's party then tendered their allegiance, abjured their engagements lately made with Albany, declared his regency at an end, and promised to maintain henceforth the authority of their sovereign.

Angus re-
turns from
France.
His base
conduct.

It was the evident object of the queen and Arran to obtain, by this revolution, the entire command of the government. The measure was remonstrated against, in the strongest manner, by the bishops of St. Andrews and Aberdeen. They represented the utter folly of conferring the supreme power on a boy of twelve years old, and they stated, with truth, that Albany was still the Regent; but Margaret, supported by her brother Henry the Eighth, who hoped, through her, to govern Scotland, proved too strong for these prelates, and for a while her schemes succeeded. It was, however, only for a short season. Jealousies arose between her and Arran, who, from his near relationship to the crown, aspired to the chief power. The queen, whose love for Angus, her husband, had long since turned into hatred, fixed her affections on Henry Stewart, a son of lord Evandale, raised him to the office of treasurer, and could she obtain a divorce, determined to marry him; and Henry the Eighth, who began to find her demands too importunate, and her obedience problematical, recalled the earl of Angus from France, with the design of making him an instrument in his projects for the reduction of Scotland. This baron appears to have increased in experience and talent for intrigue, by his residence in that country, but not in public principle; and his first step was to sell himself to Henry in a secret treaty, by which he engaged to support the English interests in Scotland. In return, he and his brother, Sir George Douglas, hoped, by Henry's aid, to place themselves at the head of the government, and to be restored to the vast estates and power which they had lost.

The arrival of Angus in his native country, was the signal for immediate hostilities between him and the queen-mother, his wife, who had raised Henry Stewart to the office of chancellor, and detested her husband, in proportion to the progress of her avowed and indecent attachment to this favourite. Hitherto she and her supporters, Arran, Lennox, and the master of Kilmaurs, had been supported by pensions from the English court, and in return, had favoured the views of Henry the Eighth; but the principles of this venal association were of course capricious and selfish, and the arrival of Angus, who now wielded the power of the Douglasses, threatened to break it to pieces.

Miserable
state of the
country. The country, indeed, presented a miserable spectacle; a minor sovereign deserted by those who owed him allegiance and support, while his kingdom was left a prey to the rapacity of interested councillors, and exposed to the attacks of a powerful neighbour, whose object was to reduce it to the condition of a dependant province. In such circumstances it is certainly a matter of wonder that it retained its liberty.

Three factions struggled for the pre-eminence, and tore the country in pieces. The first was that of Albany, the late

regent, which was supported by French influence, and conducted by the chancellor Beaton; the second had for its leaders the earl of Arran and the queen-regent, who held the king's person, and possessed the chief executive power; at the head of the third were the earl of Angus and his able brother George Douglas, who were wedded to the interests of the English government. It is impossible, within our limits, and it would be unimportant, to enter into a detail of the continued plots and intrigues which constitute the sickening history of this period. It soon became apparent that the party of the queen-mother was the weakest. Arran, a capricious man, deserted her; her private conduct rendered her disreputable in the eyes of the people; and soon afterwards a coalition between Beaton the chancellor and Angus, carried the whole power of Albany's party to a union with the house of Douglas. Margaret sunk under this, and consented to a negotiation. She resigned the custody of her son to a council of peers nominated by parliament, and, stripped of her power, consented to a reconciliation with Angus, her husband, in whom, along with the chancellor Beaton, the chief power in the government now centered. A feeble effort indeed was made by Arran to destroy the influence of the united factions; but the armed force with which he advanced to Linlithgow was dispersed by the prompt attack of Douglas, and the address of this politic baron soon afterwards prevailed on Arran to join his party.

Angus ob-
tains pos-
session of
the king's
person.

The earl of Angus had now gained a complete triumph over his enemies. He possessed the person of the young king, he was assisted by the talents and experience of the chancellor Beaton, he had witnessed the gradual decay of the faction of Albany and the French monarch, and he had been joined by Arran, who, although personally a weak man, from his high birth and great estates possessed much power. His first step was wise and temperate. A pacification for three years was concluded with England; and it was hoped that this might be followed by a marriage between the young king and Henry's daughter, the princess Mary, a measure which, if guarded so as to preserve the independence of Scotland, might have been attended with the happiest results.

The country, so long distracted by border war and internal anarchy, might now, under a judicious administration, have looked forward to something like tranquillity. Had Angus been reconciled to the queen, his wife; had he been contented with his recovery of greater power than he had lost, and been willing to administer the government with justice and moderation; there was every reason to hope for the maintenance of peace, security, and good order. The French party in Scotland had completely sunk. Dr. Magnus, Henry's English minister, who, during his residence in Scotland, had been an object of great jealousy to the people, was recalled; and lord Dacre, whose money and intrigues for so many years had corrupted the Scottish nobles, and introduced disunion and treachery into all their councils, was removed by death from the scenes of his mischievous activity. All these things were favourable; and the well affected, who sighed for the blessings of peace and good government, anticipated a period of repose.

Decay of
French in-
fluence in
Scotland.

It was a vain expectation, destroyed by the precipitate folly of the queen-mother, and the grasping ambition of the Angus. That powerful baron had hitherto aimed at one great object, which he now deemed himself on the very point of attaining: to accomplish a reconciliation with his wife, the queen-mother, and, possessing her estates, with the custody of the young king's person, to engross the whole power of the government. At this crisis Margaret, so far from becoming less hostile to Angus, gave herself up more inconsiderately than before, to her passion for Henry Stewart, and procuring a divorce from a husband whom she hated, espoused her paramour with a precipitation which disgusted the people.

Marriage
of the
queen-mo-
ther to
Lord Meth-
ven.

Scotland.
James V.
A.D. 1526.
Angus's
intrigues.
The secret
council an-
nulled.

This imprudent step determined Angus to change his ground, and a dread of some counter revolution threw him upon new and more violent courses. By a successful stroke of policy, he procured the passing of an act of Parliament which annulled the authority of the secret council, the only power which stood between him and absolute dominion. At the same moment, the parliament declared that the minority of the young king was at an end, and that having completed his fourteenth year, he was to be considered as an independent sovereign. While the youthful monarch thus nominally assumed the government, that provision which entrusted the keeping of the royal person to certain peers in rotation, remained in force; and as Angus had artfully summoned the parliament at that precise time, when it belonged to himself and the archbishop of Glasgow to assume their periodical guardianship of the king, the consequence of this state manœuvre was to place the whole power of the government in their hands.

The king's
minority
declared at
an end.

Miserable
state of the
country.

A new secret council was nominated, composed solely of the creatures of Angus; the great seal was soon after taken from Beaton, the young king was watched with the utmost jealousy, and compelled to give his consent to every thing proposed to him by his new masters. An act of parliament was passed, granting a remission to the heads and followers of this all-powerful faction for the crimes, robberies, or treasons, committed by them during the last nineteen years; every office of trust or emolument in the kingdom was disposed of to the one or other of its supporters, and the ancient tyranny of the house of Douglas once more attained a degree of strength which rivalled, or rather usurped the royal power. At this unhappy period, as has been observed in another work, "the borders became the scene of tumult and confusion, and the insolence of the numerous vassals of this great family was intolerable; murders, spoliations, and crimes of varied enormity, were committed with impunity. The arm of the law, paralysed by the power of an unprincipled faction, neglected to arrest the guilty; the sources of justice were corrupted; the highest and most sacred ecclesiastical dignities became the prey of daring intruders, or were sold to the highest bidder; and the young king, carried about through the country by Angus, apparently in great state, but merely a puppet in the hands of his masters, sighed in vain over a captivity to which there appeared no prospect of a termination."¹ An attempt indeed was made for his deliverance, first by the laird of Buccleugh, one of the most powerful of the border barons, and afterwards by the earl of Lennox, who deserted the party of the Douglasses, and to whom the young monarch was much attached. But Buccleugh was routed with considerable loss, and Lennox defeated and slain.

Angus
courts
Henry
VIII.
(General re-
marks.

These unsuccessful attempts only strengthened the power of Angus. He entered into a more strict alliance with Henry the Eighth, obtained the friendship and support of Beaton, the archbishop of St. Andrews, and unchecked by any opposition, ruled all things at his will. Nothing indeed could be more miserable than the picture presented by the country; a monarch in captivity, a nobility in thralldom, a people groaning under the most complicated oppressions, yet with their hands tied, and compelled by the miserable system under which they lived to serve their oppressors. It may be asked, what was the secret history of this enormous power, this degraded and implicit obedience? The answer is to be found in the fact, that the Douglasses were masters of the royal person; they could compel the king to affix his signature to any deeds or letters which their tyranny or their caprice might dictate. Angus, the supreme lord of all this misrule, was chancellor, and the great seal at his command; his uncle, Douglas of Kilspindy, was treasurer, and commanded the whole revenues of the country;

the law, with all its terrible feudal processes of treason and forfeiture, could be wielded by them at pleasure. So long as the king remained in their hands, this powerful machinery was all theirs; the moment he escaped, the system broke to pieces, and their power was at an end.

Of all this James, who had now entered his seventeenth year, was perfectly aware; and as every hour of his captivity made the Douglasses more hateful to him, his mind became intently occupied with projects for his escape. Nor was it long ere he effected it. With an address superior to his years, the king had either succeeded in lulling the suspicions of his keepers, or a continuance of unchecked power had made them careless. James was at Falkland. Angus, Douglas his brother, and Archibald his uncle, were absent on their private affairs; only Douglas of Pathhead, the captain of the royal guard, remained. The young monarch called for the park-keeper, and, as had been his wont, proposed to hunt next morning. Therefore, says a graphic old chronicler,² he "caused him to warn all the whole tenants and gentlemen thereabouts who had the speediest dogs, that they would come to Falkland wood on the morn, to meet him at seven hours, for he was determined he would slay a fat buck or two for his pleasure; and to that effect caused warn the cooks and stewards to make his supper ready, that he might go to his bed the sooner, and to have his *desjeune* (breakfast) ready by four o'clock, and commanded James Douglas of Pathhead to pass the sooner to his bed, and caused bring his collation, and drank to James Douglas, saying to him, that he should have good hunting on the morrow, bidding him be early astir. Then the king went to his bed; and James Douglas, seeing the king in his bed, wist that all things had been sure enough, and passed in like manner to his bed. When the watch was set," continues Pitcottie, "and all things in quietness, the king called on a yeoman of the stable, and desired him bring one of his suits of apparel, hose, cloak, coat, and bonnet, and putting them on, stept forth as a yeoman of the stable, and was unperceived of the watches, till he had passed to the stables, and caused saddle a horse for himself, and one led, and took two servants with him, namely, Jocky Hart, a yeoman of the stable, and another secret chamber boy, and leapt on horse, and spurred hastily his journey to Stirling, and won there by the breaking of the day, over the bridge, which he caused to be closed behind him, that none without licence might win that passage. After this he passed to the castle, and was received there by the captain, who was very glad of his coming, and prepared the castle with all things needful. Then he caused shut the gates, and let down the portcullis, and put the king in his bed to sleep, because he had ridden all that night."

Having thus regained his liberty, James's first act was to summon a council, and issue a proclamation, interdicting the Douglasses from all approach within six miles of the court, under pain of treason. Nor did they venture to disobey it. On discovering the flight of the king, Angus, Archibald, and Sir George, had hastily assembled a few followers, thrown themselves on horseback, and were riding to Stirling, when they were met by the herald, who read the act, and commanded them in the king's name to halt. For a moment they hesitated, but it was only for a moment. Their sovereign was free; the weapons which but a day before they had wielded with such irresistible force, were now ready to be employed against themselves. A single step forward, and they were guilty of treason, their property and their lives at the mercy of the crown. All this rose rapidly and fearfully before them; and aware how vain it would be at such a moment to meet the power of their enemies, they retreated to Linlithgow.

The monarch, who now took the government into his own

¹ Tytler's History of Scotland, vol. v p. 201.

² Lindsay of Pitcottie, pp. 218, 219.

Scotland. hands, had not completed his seventeenth year; but he had been nursed in the school of difficulty, and his character had acquired a consistency and vigour far superior to his age. This was the more to his credit, because the Douglasses had neglected his education; and while they gave him no opportunities of cultivating the qualities which might have made him a blessing to his people, permitted him to indulge in that love of pleasure and tendency to dissipation which was incident to his temperament and time of life. Happily his character, although it did not escape the pollution of such a base system, survived it; and, with some great faults, the king possessed at the same time not a few of the highest qualities which became a wise and good prince. Strict and scrupulously just, unwearied in his application to business, earnest in his endeavours to remove the complicated burdens which, under the tyranny of the late oligarchy, had oppressed the people; generous, though somewhat warm in his temper, easy of access, a stranger to pride, and fond, almost to a fault, of mingling familiarly with all classes of his subjects; he soon rendered himself, young as he was, an object of respect to his nobles, and of affection to his people.

The principles which regulated his future government sprung naturally from the circumstances of his early life. The sternest resentment against Angus and the house of Douglas, was combined with a determination to assert and regain the rights of the crown, and to abridge the power of an aristocracy, which had grown intolerable during a long minority. Towards his uncle, Henry the Eighth, it was impossible that his feelings could be any other than those of resentment and suspicion. It was by this prince that there had been introduced into Scotland an organised system of corruption, of which his able and unscrupulous minister, lord Dacre, had been the author. Many Scottish nobles had become the pensioned agents of the English government; paid informers swarmed in the court and through the country. All idea of conquering Scotland by force of arms had been long since abandoned; but a more insidious expedient was adopted, by which the English king, maintaining the Douglasses in their usurped dominion, received in return their homage and fidelity, and administered the government at his pleasure.

James's great objects, which we can trace through the whole remaining period of his reign, were to put an end to this system of foreign dictation; to restore its ancient and constitutional prerogatives to the crown; to bridle the exorbitant power of the great nobles, raising up as a check upon them the large and influential body of his clergy; to encourage the mercantile and commercial classes of his people; and to facilitate the administration of the laws, and insure equal justice to the lowest orders of the community.

For the accomplishment of such ends, it was first necessary to exhibit a wholesome example of retributive justice upon those who had been the greatest delinquents. It was declared treason for any person to hold intercourse with Angus, and every Douglas was commanded to leave the capital on pain of death. Angus himself was commanded to remain beyond the waters of the Spey, and required to deliver his brother Sir George Douglas, and his uncle Archibald, as hostages, for his answering to his summons of treason. Having haughtily disobeyed these orders, a parliament assembled. He was proclaimed a traitor, and his lands nominally divided among those nobles to whom James owed his late success. It was easier, however, to promulgate than to execute such decrees against so powerful a baron; nor was it till after repeated attacks upon Tantallon, some of them led by the king in person, that the arch-offender was reduced, and compelled to seek an asylum in England.

James next directed his attention to the state of the borders; and in an expedition which was long remembered for the vigour, dispatch, and severity of the royal vengeance,

inflicted punishment upon the greatest offenders, among whom was the noted freebooter, Johnnie Armstrong, and reduced the district into a state of tranquillity. Scarcely was this accomplished, when the Orkneys were threatened to be torn from the crown by the rebellion of the earl of Caithness; and the Isles became the scene of a fierce struggle between the earl of Argyll and Alexander of Isla, one of the most powerful chiefs of that remote region. The judgment and energy of the monarch were shewn in the speedy re-establishment of peace in both quarters; and the people, aware that the sceptre was once more in a firm hand, readily and gratefully co-operated with their sovereign in all his labours.

England and France were now at peace, and Henry the Eighth and Francis the First united in a strict alliance, which had for its object to bridle the increasing power of the emperor Charles the Fifth. Under these circumstances, Henry proposed a matrimonial alliance with Scotland, and the design was encouraged by France; while the emperor, jealous of the power which so near a connexion with James might give to his enemies, offered in marriage to the young prince his sister, the queen of Hungary, or his niece, the daughter of Christiern, king of Denmark, with Norway as her dowry.

For the present, however, all these offers were declined, and the monarch appeared wholly engrossed with the prosecution of his various plans for the melioration of his kingdom. Finding himself thwarted by the nobles, he was compelled to adopt decided measures, and to promote the clergy to those offices which had been filled by temporal barons. Argyll was thrown into prison, the earl of Crawford stripped of a large part of his estates; the determination that no Douglas should ever bear sway in Scotland became a more stern and obstinate principle than before; and while the archbishop of Glasgow, the abbot of Holyrood, and the bishop of Dunkeld, were principally consulted in affairs of state, many of the nobles who had hitherto enjoyed the royal confidence saw themselves treated with coldness and distrust.

It was at this time, that the king carried into effect two important measures, the one affecting the commercial interests of his kingdom, the other of still higher moment, as an endeavour to secure to all classes of his subjects an equal and speedy administration of justice. A commercial treaty between Scotland and the Netherlands had been concluded by James the First, for the period of one hundred years. It was now approaching its termination, and an embassy was dispatched to Brussels, which renewed the league for another century. His second measure was the institution of the College of Justice, a court consisting of fourteen judges, one half selected from the spiritual, the other from the temporal estate, of which the idea is commonly believed to have been suggested by the parliament of Paris. The principal design of this new judicature was to put an end to the delay and partiality arising out of the barons' courts; in other words, to remove the means of oppression out of the hands of the aristocracy; but as it was provided, that the king might at his pleasure send three or four members of his council to give their votes, it was evident that the subject was freed from one grievance, only to be exposed to the hazard of another, whenever his rights might happen to come in collision with the crown.

During these transactions, the Douglasses and their adherents were driven upon violent and discreditable courses, in proportion as their prospect of reconciliation to the king became more hopeless and remote. The earl of Bothwell, also a powerful border baron, whose excesses James had severely punished, entered into a traitorous alliance with Henry the Eighth, in which he engaged, if properly supported, to dethrone his sovereign, and to "crown the English king in the town of Edinburgh within a brief time;"

James V. A.D. 1528. James V. assumes the government. His character.

Principles of James's government.

Proceed.

ings against the House of Douglas.

Scotland. James V. A.D. 1528. State of the borders.

Foreign politics. A.D. 1529-1530.

Commercial treaty with the Netherlands. A.D. 1532.

Institution of the College of Justice.

The Douglasses sell themselves to England.

Scotland. while the earl of Angus did not hesitate, in the extremity of his resentment, to sell himself to England; and in an original writing which yet remains, engaged to "make unto Henry the oath of allegiance, to recognise him as supreme lord of Scotland, as his prince and sovereign."¹

War with England. A.D. 1532 Henry VIII. and the Douglasses invaded the country. In consequence of these base engagements, war was once more kindled on the borders, and carried on by the Douglasses and Henry's captains with such desolating fury, that James was compelled to call out the whole body of the fighting men in the country. These he divided into four armies, to each of which in rotation the defence of the marches was entrusted. The measure effectually checked the power of the English, and there was little prospect of Bothwell fulfilling his threat, of crowning Henry in the capital; but peace seemed more distant than ever, and nothing could be more deplorable than the picture presented by the country. The flames of villages and granges, the destruction of the fruits, and the cessation of the labour of the husbandman, the stoppage put to the enterprise of the merchant, the increase among the people of the spirit of national antipathy, the corruption of the nobles by the money of England, the loss among such pensioned adventurers of all affection for the sovereign, and the decay of the healthy feelings of national independence; all these lamentable consequences sprung out of the continuance of the war, and made the king desirous of securing peace, even if it should be at some sacrifice.

Peace with England. This he at length accomplished. James agreed that the Douglasses, by which was meant Angus, his brother George, and his uncle Archibald, should remain unmolested in England, supported by Henry as his subjects, on condition that Edrington castle, the only spot which they held in Scotland, should be surrendered, and reparation made for any expedition which they or the English king might hereafter conduct against Scotland. On these conditions a pacification was concluded, for the period of the lives of Henry and James, and a year after the death of him who first deceased; and soon after its ratification, the young monarch, whose firmness and talent in the management of his government made him an object of respect to the European princes, received the Garter from England, the order of St. Michael from France, and the Golden Fleece from the emperor.²

James was now in his twenty-second year, and his marriage was earnestly desired by the country; but he had hitherto shewn little inclination to gratify the wishes of his people. With all his good qualities, he unhappily inherited from his father an extreme devotedness to pleasure, which had been rather encouraged than restrained by the Douglasses; and his passions getting the better of his prudence and principle, sought their gratification in low intrigues, carried on in disguise, and in pursuit of which he not unfrequently exposed his life to the attacks and revenge of his rivals. It was now full time that he should renounce these disreputable excesses; and having evaded an offer made by the Spanish ambassador, of the hand of the princess Mary of Portugal, and declined a similar proposal of Henry the Eighth, who pointed to his daughter the princess Mary, he dispatched an embassy to France, for the purpose of concluding a matrimonial alliance with that crown.

The Reformation. It now becomes necessary to attend to a great subject, (the rise of the Reformation in Scotland,) the principles of which had been for some time silently making their progress among the people, but which from this period exercised a marked and increasing influence over the history of the government and of the country. It was now nearly six years since Patrick Hamilton, abbot of Ferne, the friend and disciple of Luther and Melancthon, having renounced the errors of the Roman Catholic church, and embraced the doctrines of these leading reformers, had been delated

of heresy, and condemned to the flames. The cruel sentence was carried into effect at St. Andrews in 1528, under the minority of James, and while the supreme power was in the hands of the earl of Angus. On taking the government into his own hand, James, although decidedly inimical to the principles of Angus in all other things, unhappily followed his determination to persecute those whom he esteemed the enemies of the truth. David Straiton and Norman Gourlay, who were disciples of the reformation, were tried for heresy, condemned, and brought to the stake, on the 27th of August 1534; and the intolerant and cruel conduct of the king compelled some who had embraced the same opinions to fly for safety to England.

About this time Henry the Eighth exerted himself to the utmost to prevail upon the Scottish king to imitate his own conduct, and shake off the yoke of Rome. He endeavoured to open his eyes to the tyranny of the pope's usurpations, sent to him the treatise entitled the "Doctrine of a Christian Man," and dispatched Dr. Barlow and Lord William Howard to request a conference with his royal nephew at York; but the remembrance of the injuries he had sustained, resentment for Henry's intrigues with his discontented subjects, and an attachment to the faith of his fathers, indisposed James to listen to these overtures; and when Paul the Third deputed his legate Campeggio to visit Scotland, the embassy found it no difficult matter to confirm the Scottish monarch in his attachment to the Catholic church. At the same time he addressed him by the title of which Henry had proved himself unworthy, Defender of the Faith, and presented to him a cap and sword which had been consecrated by the pope upon the feast of the nativity.

A parliament which assembled about this time, made A parliament. two provisions which deserve attention. The importation of the works of Luther, which had been proscribed by a former act, was again strictly forbidden; any discussion of his opinions, unless for the purpose of proving their falsehood, was prohibited; and all persons who possessed any treatises of the reformer, were enjoined, under the penalty of confiscation and imprisonment, to deliver them up to the ordinary within forty days. The second act, which is well worthy of notice, related to the boroughs, in this dark age the best nurseries of industry and freedom. Hitherto feudal barons had been elected to the offices of magistrates and superintendents over the privileges of these corporations; an unwise practice, by which the provosts, aldermen, or bailies, instead of being industrious citizens, interested in the protection of trade, and the security of property, were little else than idle and factious tyrants, who consumed the substance and invaded the corporate privileges of the burgesses. A law was now made, that no person should be elected to fill any office in the magistracy of the borough, but such as themselves were honest and substantial burgesses, and although not immediately or strictly carried into effect, the enactment evinced the dawning of a better spirit.

War still continued between Francis the First and the emperor, a circumstance which induced the French king to continue an amicable correspondence with England; and being aware that Henry the Eighth was intent upon accomplishing a marriage with Scotland, Francis did not care to disgust this passionate monarch by any very speedy attention to James's desires to unite himself to a French princess. To obviate this, the Scottish king himself took a voyage to France, and landing at Dieppe, proceeded from thence in disguise to the palace of the duke of Vendôme. Here, being received only as a noble stranger, he saw, for the first time, but did not approve of his affianced bride, Marie de Bourbon, the duke's daughter, and transferred his affections to Madeleine, the youngest daughter of the French king, to

¹ MS. British Museum, Calig. B. I. 128.

² Diurnal of Occurrents in Scotland, p. 19

Scotland. whom he was soon after married in the church of Notre Dame. In the circumstances in which Scotland was then placed, the church of Rome was inclined to consider this union as one of great importance; and it has been noted that seven cardinals surrounded the altar. Nor were these anticipations disappointed. James remained for nine months in France, and having returned to his own kingdom, it was soon evident that some great changes were on the eve of taking place.

Rupture between Francis I. and Henry VIII. Francis the First, although still nominally at peace with Henry, had become alienated from him by the violent and dictatorial tone which he assumed. The pope, who considered his own existence as involved in the contest with England, had neglected no method by which he might first terminate the disputes between the emperor and the French king, and then unite them in a coalition against Henry, as the common enemy. We have already noticed the success of the court of Rome in flattering the vanity of James; and it appears that, in 1537, these intrigues were so far successful, that a pacification was concluded between Francis and the emperor. From this moment the cordiality between France and England was completely at an end, while every argument which could have weight in a young and ardent mind was addressed to James, to induce him to join the projected league against Henry.

Mission of Sir Ralph Sadler to Scotland. Nor had the conduct of Henry, during James's absence in France, been calculated to allay those resentful feelings which already existed between them. He had sent into Scotland Sir Ralph Sadler, a crafty and able diplomatist, for the express purpose of completing the system of secret intelligence introduced, as we have seen, with pernicious success by lord Dacre. This minister was instructed to gain an influence over the nobility, to attach the queen-mother to his interest, to sound the inclinations of the body of the people on the subject of peace or war, an adoption of the reformed opinions, or an adherence to the ancient faith. The Douglasses were still maintained with high favour in England. Their power, although nominally extinct, was far from being destroyed; their spies penetrated into every quarter, and had even followed the young king to France, whence they gave information of his most private motions; finally, those feudal covenants, termed bonds of manrent, still bound to their interest many of the most potent of the nobles, whom the vigour of the king's government had disgusted or estranged.

From this description we may gather the state of parties at the return of James to his dominions after his marriage. On the one hand was seen Henry the Eighth, the head of the protestant reformation in England, supported in Scotland not only by the still formidable power and unceasing intrigues of the Douglasses, but by a large proportion of the nobles, and the talents of his sister, the queen-mother. On the other hand stood the king of Scotland, assisted by the united talent, zeal, and wealth of the Roman Catholic clergy, the loyalty of some of the most potent peers, the co-operation of France, the approval of the emperor, the affection of the great body of his people, upon whose minds the doctrines of Luther had not yet made any very general impression, and the cordial support of the papal court. The course of events, into which we cannot enter minutely, but which we shall touch in their principal consequences, illustrated strikingly these opposing interests.

James's second marriage. In the mean time, scarcely had the rejoicings ceased for James's return to his dominions with his youthful queen, when it was apparent that she was sinking under a consumption, which in a short time carried her to the grave. Although depressed by this calamity, the king did not permit it to divert his mind from that system of policy on which he had resolved to act: and an embassy to France,

Scotland. was entrusted to David Beaton, afterwards the celebrated cardinal, who requested for his master the hand of Mary of Guise, the widow of the duke of Longueville, and sister to the cardinal of Lorraine. To this second union, the court of France joyfully assented and the marriage took place at St. Andrews, within a year after the death of the former queen. At this moment the life of the king was twice endangered by conspiracy; and although much obscurity hangs over the subject, both plots were probably connected with the intrigues of the house of Douglas. At the head of the first was the master of Forbes, a brother-in-law of Angus. The chief actor in the second was the lady Glamis, his sister, who, only two days after the execution of Forbes, was accused of an attempt to poison her sovereign, found guilty and condemned to be burned; a dreadful sentence, the execution of which she bore with the hereditary courage of her house.

An event now happened, which drew after it important consequences. James Beaton, archbishop of St Andrews, died, and was succeeded in the primacy by his nephew, cardinal Beaton; a man far his uncle's superior in talent, and still more devotedly attached to the interests of the Roman Catholic church. It was to him, as we have seen, that James had committed the negotiation for his second marriage; and so great appears to have been the influence which he acquired over the royal mind, that the king henceforth selected him as his principal adviser.

Beaton's accession to additional power was marked by a renewed persecution of the reformers; and it is worthy of observation, that most of the converts to the reformed faith belonged to the order of the inferior clergy. Keillor, Forret, Simson, and Beveridge, were arraigned before an ecclesiastical tribunal, and soon afterwards Kennedy and Russell, out of which number three, Kennedy, Forret, and Russell, suffered at the stake with great meekness and courage. There can be little doubt that such inhuman executions operated in favour, rather than against the progress of the reformation.

Another mission of Sadler into Scotland. The coalition between Francis the First and the emperor was now completed under the auspices of the papal court; and Henry the Eighth, aware of the great efforts made to induce James to join the league against him, dispatched Sir Ralph Sadler into Scotland. The object of this able negotiator was to rouse James's jealousy against the increasing power of the clergy, to prevail upon him to throw off his allegiance to the pope, to imitate his example by suppressing the monasteries, and to urge him to maintain the peace with England. To the last request the Scottish king replied, that if Henry's conduct was pacific, nothing should induce him to join any hostile league against him; but he assured Sadler that he found his clergy his most loyal and useful subjects; and although he would be anxious to see a reformation in the general morals of this body, he did not exactly see how that could best be effected by renouncing the authority of his holy father the pope, the terrestrial head of the church, and thus setting an example of rebellion and confusion.

The king's voyage to the north. James had for some time meditated an important enterprise, which he now executed; a voyage to the most northern parts of his dominions conducted by himself, and on a scale such as had not been attempted by any of his predecessors. His fleet consisted of twelve ships, fully armed and provisioned. He was attended by Beaton, and the earls of Huntly, Arran, and Angus; and these barons bringing with them their armed vassals, formed a force which, united to the royal suite and attendants, was equal to a little army. Lindsay, a skilful hydrographer, accompanied the expedition, and his maps and charts, the first rude essays in this science ever attempted in Scotland, are preserved at the present day.¹ The king first coasted Fife, Angus, and

¹ In the Harleian Collection, British Museum.

Scotland. Buchan; he next visited Caithness, crossed the Pentland frith to the Orkneys, doubled Cape Wrath, steered for the Lewis, crossed over to Skye, circumnavigated Mull, swept along the shores of Argyle, and passing Kintyre, inspected Arran and Bute, whence he sailed up the Clyde to Dunbarton, where he concluded his labours.

James V.
A.D. 1540.

The effects of this royal progress were salutary and decisive. The force with which James was accompanied secured a prompt submission to his commands, and inspired these remote districts with a wholesome dread of the royal name. Some of the fiercer and more independent chiefs, who affected a show of resistance, were seized and confined in irons on board the fleet; others, more gently treated, were yet compelled to accompany the monarch as hostages for the pacific behaviour of their followers; and all were convinced that any attempt to brave the power of the crown, must for the present be vain and ruinous.

Conspiracy
against the
king's life.

This exhibition of increasing energy in the king only exposed him the more to the jealousy of those nobles whose power had been nourished by long intervals of license, and who now clearly perceived, that unless they were prepared to resign their rights, a struggle between them and their sovereign could hardly be averted. A proof of this was shown on James's return to court from his northern voyage, when a conspiracy against his life was detected, the third which had occurred within no very long period. Like the rest it is involved in obscurity; but the proof was considered as sufficient, and its author, Sir James Hamilton, commonly called the bastard of Arran, was tried, convicted and executed. It is said that the king was thrown into a state of great despondency and gloom by the discovery of this plot; that it opened his eyes to the manifold dangers which surrounded a prince at variance with his nobles; and that he began to feel that he was engaged in a contest in which they might prove too strong for him.

A parliament.
James's decided measures.

Whatever credit we may attach to these reports, the conduct of James gave decided proofs that he was determined to continue the struggle; and in a Parliament which soon afterwards assembled in the capital, he strengthened his own hands by annexing to the crown the whole of the Hebrides, by which we are to understand the isles north and south of the two Kintyres. But this was not all. To these new acquisitions were added the Orkney and Zetland isles, many extensive lordships, Jedburgh forest, and the demesnes of Angus, Glamis, Liddaldale, and Evandale.

In the want of contemporary evidence, it is difficult to decide upon the strict justice of this sweeping measure. It is possible that, by rigidly investigating the history of former rebellions, and present treasons, James may have persuaded himself that he was entitled to the forfeiture of all these large estates and principalities; but in such circumstances it had been the practice of former monarchs to parcel out the forfeited lands among his nobles who had preserved their loyalty; and in the measure now adopted, of annexing the whole to the crown, the aristocracy saw little else than their own intended ruin. It was in vain that the measure was followed by the publication of a general act of amnesty for all former treasons. The earl of Angus, Sir George Douglas, and the whole of their adherents were excepted; and men observed that while the king's generosity was vague and capricious, his aversion to those who had once injured him, was stern and immutable.

The king's
conduct re-
garding the
Reformation.

It is not easy to discover James's exact opinions regarding the progress of the reformed doctrines, which now began to create great alarm in the Roman Catholic clergy. On the one hand he seems to have become convinced of the necessity for a reform in the church, and to have looked with a severe eye upon the idleness, corruption, and ignorance of a large portion of the clergy. He encouraged Sir David Lindsay, whose satire upon the three estates contained a bitter attack upon the prelates; and being himself much in-

involved in debt, there is reason to believe he regarded the overgrown possessions and extraordinary wealth of the clergy with certain longings to appropriate some portion of it towards the exigencies of the state. Yet, in the Parliament to which we have just alluded, it was made a capital offence to argue against the supreme authority, or the spiritual infallibility of the pope; the discussion of religious questions in private meetings was interdicted; a law was passed against the demolition of the shrines and images of saints; and it was evidently the opinion of the king that the reformation should be made by the church itself, within itself, and under the sanction of its head the pope.

Such seems to have been the feelings and the policy of the sovereign. Those of another influential body in the state, the clergy, are easily detected. To counteract the intrigues of Henry the Eighth, and to check any incipient feelings of favour towards the reformation, the great reliance of cardinal Beaton and the Roman Catholic party was in the prospect of a war with England. To accomplish this, they had unfortunately ample materials to work upon. Henry the Eighth was violent and dictatorial; James proud, and jealous of his independence. The English king had espoused the interests of the banished house of Douglas, and fomented discontent among the rest of the Scottish nobles. James was animated by an unrelenting animosity to the earl of Angus, the head of the house of Douglas, and to all who bore the name. Henry, instigated by the utmost hostility to the Roman see, eagerly desired that his royal nephew should imitate his example, suppress the religious houses, and proclaim his independence; but the instructions to his ambassador, Sadler, upon this subject, contained expressions so personally insolent to James, that if obeyed, his mission must have occasioned disgust rather than conciliation. The English king requested a personal interview at York; and James, after a promise to meet him, broke the appointment with Henry, who had proceeded to that city in expectation of his arrival.

At this crisis, the Scottish king evidently dreaded being prematurely hurried into war. He was in debt, he suspected the fidelity of his nobles, he was well aware that a feudal monarch at variance with his barons, the sinews of his strength, was likely to be dishonoured and defeated. He had lately lost his only children, Arthur and James, and he believed that Beaton's anxiety for war was dictated by selfish motives, and influenced by his intrigues with Rome. Under these circumstances, public policy and personal feeling alike made him dread any immediate hostilities with England, and he endeavoured by an embassy to avert the rupture; but Henry, from the moment of his disappointment at York, would listen to no message of conciliation. War was resolved on, the east and middle marches were put into a state of defence, Berwick inspected, musters raised in the north, and soon afterwards Sir James Bowes, with the force of the east marches, marched across the border. The banished Angus, his brother Sir George Douglas, and a large body of the retainers of the Douglasses, had joined him; but they were encountered, and completely defeated by Huntly and Home.

This, however, was merely a preliminary outbreak; and as such border outrages had frequently occurred without drawing after them more serious consequences, James made a last effort to avert the storm, by sending commissioners first to York, and afterwards to meet the duke of Norfolk, who, at the head of an army of forty thousand men, had crossed the Tweed, and already given many of the granges and villages to the flames. It was in vain, however, to attempt negotiation; and aware that the crisis had arrived, the Scottish king commanded Huntly and Home, upon whose fidelity he had most reliance, to watch the progress of Norfolk, while he himself assembled the main force of his kingdom on the Borough-moor near Edinburgh.

James V.
A.D. 1540.

Mutual ani-
mosity be-
tween
James and
Henry
VIII.

James in-
vain desires
peace.
Invasion by
England.

The king
makes a last
attempt to
avert hosti-
lities.

Scotland.

James V.
A.D. 1542.
James re-
solves on
war.
The nobles
refuse to
invade
England.

With this army, which mustered thirty thousand strong, he advanced to Fala-moor, and when encamped there, received the welcome intelligence that Norfolk, compelled by the want of supplies and the severity of the winter, was in full retreat. It was now the time to retaliate, and James issued orders for an immediate invasion of England. But the nobles felt their own strength. They had long regarded the measures of the court with distrust, some even with indignation and a desire of revenge; they recalled to mind the proceedings of the monarch, the threatening attitude lately assumed by the crown towards the whole body of the aristocracy; and when commanded to cross the borders, they haughtily and unanimously refused. It was in vain that James, stung with such an indignity, threatened, remonstrated, and even entreated them, as they valued their own honour and his, to proceed against the English. The feeling of attachment to their prince, or revenge against the enemy seemed to be completely extinguished in a resolution to assert their power, and procure a redress of their grievances; and the sovereign was at last compelled to disband the army, and return outbraved and defeated to his capital.

He assem-
bles a se-
cond army.
The Scots
entirely
routed by
the Eng-
lish.

A.D. 1542.

There can be no doubt that so mortifying a reverse sunk deep into the heart of James, but his pride, and the natural vigour of his character supported him. Though deserted by the majority, he had still some powerful friends among the nobles, the clergy were unanimously in his favour, and it was resolved to make a second effort to re-assemble the army for the invasion of England. Its success, though partial, once more gave a gleam of hope to the monarch. A force of ten thousand men was collected chiefly by the exertions of Lord Maxwell; with this it was resolved to break across the western marches, and the king took his station at Caerlaverock, where he eagerly awaited the result of the expedition. A distrust of his nobles, however, still haunted him; and secret orders were issued, that as soon as the army reached the river Esk, his favourite, Oliver Sinclair, should be intrusted with the chief command. Nothing could be more unwise than this resolution. It was received with murmurs of discontent; and when the new general exhibited himself to the camp, and a herald attempted to read the royal commission by which he was appointed, the whole army became agitated, disorderly, and almost mutinous. At this crisis, Dacre and Musgrave, two English officers, advanced to reconnoitre at the head of three hundred horse, and approaching near enough to perceive the condition of the Scots, boldly charged them. The effect of this surprise was instantaneous and fatal. Ten thousand Scots fled from three hundred English cavalry, with scarcely a momentary resistance. In the panic the greater number escaped, but a thousand prisoners were taken, and among them many of the leading nobles, Cassillis, Glencairn, Maxwell, Somerville, Gray, Oliphant, and Fleming.

The king
dies of a
broken
heart.

This second calamity completely overwhelmed the king. He had eagerly awaited at Caerlaverock the first news from the army, and he anticipated a victory which should efface the late dishonour, and restore the feelings of cordiality between himself and his barons. In an instant the hope was blasted, and gave place to the most gloomy despondency. For their unheard-of conduct, James could find no solution but in the persuasion that his nobles had secretly conspired to betray him to England, and to sacrifice the independence of the kingdom to the gratification of their personal revenge. This idea preyed upon his mind. The feeling that his army had exposed themselves, their sovereign, and the Scottish name to contempt, took entire possession of him. He became the victim of a low fever, which had its seat in a wounded heart, and from a proud monarch, lately in the vigour of his strength and the prime of his age, he sunk into a state of silent melancholy. When in this hopeless condition, the news arrived that his queen had given birth to a daughter.

He had already lost his two sons, and clung to the hope that his next might be a boy. But here too he was met by disappointment; and wandering back in thought to the time when the daughter of Bruce brought to his ancestor, the steward of Scotland, the dowry of the kingdom, he received the intelligence with the melancholy remark, "It cam wi' a lass, it will gang wi' a lass." "It came by a girl, and will go with a girl." As he said this, a few of the most faithful of his nobles and councillors stood round his bed; and as they strove to comfort him, he stretched out his hand for them to kiss, and regarding them with great affection, closed his eyes, and placidly expired. He died in the thirty-fifth year of his age, and the twenty-ninth of his reign.

Somewhat more than two centuries and a half had elapsed since the death of Alexander the Third had left the country under circumstances of calamity and danger strikingly similar to those in which it now found itself in losing James the Fifth. Alexander had been bereft of all his sons, and the crown descended to an only grand-daughter, the Maiden of Norway. James had been visited by a like bereavement. His sons, Arthur and James, had been cut off, and his only daughter, Mary, an infant eight days old, was now queen. On the death of Alexander, the kingdom saw itself exposed to the ambitious designs of Edward the First, who immediately conceived the project of marrying the queen of Scotland to his eldest son. On the death of James, Henry the Eighth, a monarch far inferior in talent to Edward, but equally ambitious, and, where the rights of others were concerned, still more unscrupulous, at once embraced the design of marrying his son the prince of Wales to the infant Mary. Edward, when disappointed of his first object by the death of the infant queen, resorted to intrigue and force to accomplish his purpose; and Henry having been baffled in his ambition, not indeed by the death, but by the betrothment of Mary to the dauphin, resorted to the same weapons to effect his designs. One point of the parallel, and that the most mortifying of all, remains. In the days of Edward, Scotland was basely deserted by her leading nobility, and owed her liberty to the inherent love of freedom and the persevering courage of her people. It was the same under Henry the Eighth and Edward the Sixth. The lapse of two centuries and a half found the great majority of the Scottish nobles as selfish, wavering, and unprincipled as their ancestors in the days of Edward,—supported by the money of England, ready to sacrifice the independence of their country to their individual ambition; and if Scotland preserved her liberty as a separate kingdom, which, by the blessing of God, she did, the agents selected for her deliverance were the great body of her people, and the numerous and influential classes of the clergy. From these general remarks let us return to our historical sketch.

The rout at the Solway Moss, followed, as we have seen it, by the death of the king, gave an alarming advantage to Henry the Eighth. The earl of Angus, Sir George Douglas, and the numerous supporters of this house, still powerful though in banishment, had been long devoted to his interests, in the support of which they saw the only sure hope of their own restoration. To these were added the prisoners of highest rank who were taken in the late disgraceful flight. To them the English monarch now proposed an alternative, trying indeed, but in the choice of which no citizen of a free country ought to have hesitated. On the one hand, they were threatened with imprisonment in the Tower, to which they had been conducted immediately after their being taken. On the other, they were promised freedom, and a return to their native country, but coupled with extraordinary conditions. A bond was drawn up which they were required to sign. By it they acknowledged Henry as lord superior of the kingdom of Scotland; they promised to exert their influence to procure for him the government of the kingdom, and the

Scotland.
James V.
A.D. 1542.

Mary, an
infant eight
days old,
succeeds to
the crown.

Intrigues of
Henry with
the prison-
ers taken at
Solway
Moss.

Scotland. resignation into his hands of all its fortresses ; they engaged to have their infant queen delivered to his keeping ; and they solemnly stipulated, that if the parliament of Scotland resisted such demands, they would employ their whole feudal strength to co-operate with England in completing the conquest of the country. To this engagement they were required to swear fidelity ; and if they failed in accomplishing the wishes of the king, the penalty was to be their immediate return to their prisons in England. It must have been apparent to the Scottish prisoners that such an engagement virtually annihilated the existence of their country as a separate kingdom ; and yet it is mortifying to add that it was embraced by the earls of Glencairn and Cassillis, with the lords Maxwell, Somerville, and Oliphant. These were among the chief prisoners taken in the rout of Solway Moss ; the rest were of inferior rank, and remained in captivity, while Angus, Sir George Douglas, and the strength of their house, cordially co-operated with Henry.¹

A.D. 1542. It was the policy of these lords on their return to Scotland, to conceal the full extent of their engagements, and to proceed with great caution. On their arrival they found the country divided into two factions. On the one side, was cardinal Beaton the chancellor, supported by the queen-mother Mary of Guise, the whole body of the clergy, the Roman Catholic nobility, and the interest of France. On the other stood the earl of Arran, nearest heir to the crown, a weak and indolent man, who leaned to the reformed opinions ; all the nobles who had forsaken the ancient faith, the adherents of the house of Douglas, and many who, ignorant of the unjust and degrading demands of Henry, considered a marriage with England, under due safeguards, as a wise and politic step. As to the great body of the people, by which we must chiefly understand the middle and commercial classes, their feelings, as far as they can be detected, were somewhat discordant. Many favoured the reformation, and from hostility to the cardinal, gave a virtual support to Henry the Eighth and the English faction ; but their feeling of national independence was so strong, that on the slightest assumption of superiority, it was ready to exhibit itself in determined hostility.

Arrival of the Douglases and the Solway prisoners. Into the details of the struggles between these opposite factions, it belongs not to our plan to enter. We must touch only the great leading events ; but these, even in their most general form, are full of interest. On the death of the king, Beaton produced a will which appointed him chief governor of the realm, and guardian to the infant queen ; but the paper was thrown aside as a forged instrument ; Arran, the nearest heir to the crown, was chosen governor ; and the cardinal having contented himself with securing the interest and support of France, prepared for a determined struggle with his opponents. At this moment, the Douglases and the Solway prisoners arrived, of which party Sir George Douglas, brother to Angus, and father of the celebrated regent Morton, was the leader. Their first act was bold and successful. Beaton was arraigned of a treasonable correspondence with France, and hurried to prison ; a parliament was summoned for the discussion of the proposed alliance with England ; and as the governor, Arran, appeared to be completely under English influence, it was confidently expected that Henry's schemes of ambition were not far from their accomplishment. But they were defeated by his own violent and intolerant conduct. He insisted on having the cardinal delivered up to be imprisoned in England ; he upbraided the Douglases for their delay to surrender the fortresses of the kingdom ; and instead of being contented with the proceedings of the parliament, which agreed to the marriage between the Scottish queen and his son, he expressed the most violent resentment, because the estates

Imprisonment of Cardinal Beaton.

insisted that their country should preserve its liberties as a Scotland. separate and independent kingdom.

Amidst these collisions the secret treachery of the Douglases and the Solway lords began to transpire. Beaton nearly about the same time recovered his liberty, and after an ineffectual attempt to secure a matrimonial alliance with England on just and equal grounds, he placed himself and the great party of which he became the leader in determined hostility to Henry. A last effort, however, was made, and a Scottish embassy sought the English court. In a personal interview, the ambassadors explained to the king the conditions on which the country would agree to the marriage. To their astonishment, the monarch, overcome by passion, proclaimed himself lord paramount of Scotland, and insisted that the government of that kingdom, and the custody of its infant sovereign, belonged of right to him. This disclosure, which was made in a moment of passion, and against the earnest entreaties of the English faction, produced an instantaneous effect. It was received in Scotland, as had been predicted, with a universal burst of indignation. It gave the cardinal and the French party an immediate ascendancy ; the governor, Arran, and his friends joined their ranks ; and the people became so exasperated, that Sadler, the English ambassador, could not safely shew himself in the capital.

To counteract all these effects, Sir George Douglas exerted himself with indefatigable activity. Henry was prevailed upon to renounce the most obnoxious part of his demands, Arran, with his characteristic caprice, deserted his new friends ; and in a convention of the nobles, which was not attended by the opposite faction, the treaties of marriage and pacification with England were finally arranged. Yet although, as far as it was promulgated to the people, the negotiation now concluded, preserved entire the rights and liberties of Scotland, a paper has lately been discovered, drawn up at the same time, and entitled a *secret Devise*, in which the earls of Angus and Glencairn, with lord Maxwell, Sir George Douglas, and the rest of their party, once more tied themselves to the service of the English king, and promised that, if he did not accomplish the full extent of his designs, he should at least have the dominion on this side the Forth.²

To fulfil this treaty, however, was found no easy matter. Treachery It was averred by the opposite faction, that it had been of the earl carried through by private influence, unsanctioned by the highest nobles, unauthorized by any parliament, contrary to the wishes of the people ; and at this very crisis the cardinal obtained possession of the person of the infant queen, who had hitherto been strictly guarded by the governor and the Hamiltons. To balance this success, Arran, whose character had hitherto been only weak, became alarmed at the success of the cardinal ; and, flattered by a proposal of the English king to make him sovereign of Scotland beyond the Forth, declared his readiness to co-operate with an English army for the entire subjugation of the country. In the mean time, he held a convention of the nobles in the abbey church of Holyrood, and in his character of governor of the realm, ratified the marriage treaty with England, unmindful of the protestations of Beaton and his party, that they were no parties to such a transaction, and would not hold themselves bound by a decision contrary to the opinion of the majority of the nobles and the wishes of the people.

Henry the Eighth, enraged by this opposition, acted with Violence his wonted impetuosity and want of principle. He intrigued of the against the life and liberty of the cardinal, but his plots to English get possession of the prelate were unsuccessful ; he seized king. the ships of the Scottish merchants which were in English ports, a measure which was deeply resented ; and he assumed that tone of haughty defiance, which, when united to his

Mary. A.D. 1543. Beaton regains his liberty and places himself in opposition to Henry VIII.

Treaty of marriage with England.

Treachery of Arran.

Violence of the king.

¹ Sadler's State Papers, vol. i. pp. 69, 81.

² Tytler's History of Scotland, vol. v. p. 339.

Scotland. hostile preparations, made it apparent that war could not be long averted. France now offered her assistance to her ancient ally. The earl of Arran, ever wavering and irresolute, once more threw his whole influence into Beaton's hands; and this minister, availing himself of an accession of strength, proceeded with a vigorous hand to suppress heresy, and to inculcate determined resistance to England.

Henry encourages an attempt to assassinate Beaton. Invasion by Henry. Henry, who was thoroughly unprincipled, and cared not what means he used to rid himself of his opponents, attempted to remove the cardinal, by hiring Brunston, Grange, Rothes, and some of the opposite faction, to seize, or assassinate him; but he once more failed in this nefarious project, and, foiled and irritated, let loose his vengeance in the shape of a naval invasion. An English fleet of a hundred sail, under lord Lisle, high admiral, appeared suddenly in the Forth, and disembarked a force which plundered Leith, sacked Edinburgh, which had been deserted by its inhabitants, ravaged the adjoining country with merciless cruelty, and left upon land a considerable force, which, in its retreat, was as remorseless in its devastations as the fleet had been in its attack. Such was Henry's mode of wooing, of which it was well observed by lord Herbert, that he did too much for a suitor, and too little for a conqueror.

It might have been expected that the rival leaders and factions in the state, all of whom had suffered by this invasion, would have had their eyes opened to the necessity of saving the country, by uniting their strength; but in vain the cardinal strained every effort to effect so desirable a result. Mutual jealousies, feudal quarrels, renewed intrigues with England, private bonds or covenants among themselves, all co-operated to destroy any cordial union; and the earls of Lennox and Glencairn, two of the most powerful of the Scottish barons, seized this opportunity to sell themselves to Henry, and to conduct a hostile expedition into the heart of Scotland.

Battle of Ancram Muir. A.D. 1544. It was at this moment, when all was gloom and despondency, that the earl of Angus, who, with his brother, had been lately restored to his estates, and absolved in Parliament from the sentence of treason, encountered and totally defeated Sir Ralph Evre and Sir Brian Layton at Ancram Muir. These English leaders had procured from Henry a grant of all they could conquer in Teviotdale and the Merse, where Angus's estates chiefly lay; and penetrating at the head of five thousand men to Melrose, they not only ravaged that district, but plundered the abbey, and wantonly defaced the tombs of the house of Douglas; an insult which Angus revenged in the most signal manner, by attacking the English in their retreat, dispersing their force, with the slaughter of eight hundred men, leaving Evre and Layton dead on the field, and making a capture of one thousand prisoners.

This victory, although resulting not from patriotic principle, but personal revenge, had a good effect in restoring confidence to the people; and it was followed up by the resolution of Francis the First to equip a fleet for the invasion of England, and to assist Scotland by an auxiliary force. Beaton, encouraged by this expected aid, having concentrated his party, prevailed upon the majority of the nobles, in a convention held in the capital, to refuse every advance of the English monarch, and to declare the treaty of peace and marriage at an end; while Henry, enraged to the utmost pitch by this success, eagerly encouraged a second plot of the earls of Cassilis, Angus, and Glencairn, for the murder of the cardinal. The king, however, enjoined Sir Ralph Sadler to propose the assassination, as coming from himself, and the conspirators

at this moment would not act without Henry's direct approval.¹

In the midst of these dark plots, a French fleet arrived in Scotland with three thousand men. This led to decisive measures. A Scottish army was assembled; but torn as usual by internal dissensions, and betrayed by the Douglasses, who held a principal command, its operations were insignificant, and its retreat almost immediate. This was followed by a cruel invasion of the English, in which the earl of Hertford, at the head of an army, whose numbers rendered opposition fruitless, invaded Scotland, and after a desolating progress, sent word to his master, that for three hundred years there had not been such ravages committed. Seven monasteries and religious houses, sixteen castles and towns, five market towns, two hundred and forty-three villages, thirteen mills and three hospitals, were burned down during this atrocious expedition; and there still exists a characteristic letter, in which Henry, on receiving some French deserters into his service, enjoins them to show their attachment by some notable exploit, such as the "trapping or slaying the cardinal." He, at the same time, engaged the earl of Lennox, and Donald, lord of the Isles, to attack Scotland on the west coasts; and having heard that Beaton, his able and indefatigable enemy, meditated a visit to France for the purpose of subsidising a large auxiliary force for the continuance of the war, he determined to make a last effort to cut him off, and with this view, resumed with the laird of Brunston the plot for his assassination.

Into the details of this remarkable conspiracy, and the various parties whom Henry contrived to bring together for the execution of his sanguinary purpose, we cannot here enter.² Fanaticism of the sternest kind, which had been worked up into action by the cardinal's cruel execution of George Wishart, commonly called the martyr, united itself to more mercenary motives with some of the conspirators, and with others, to the desire of private revenge; and on the morning of the 28th of May, a band of desperate men, who are now known to have been in the pay of England, and some of whom had been on former occasions urged by the English king to the commission of the murder, broke into the cardinal's apartments in the castle of St. Andrews, beat down the barricades with which the miserable man had attempted to defend the door, and putting him instantly to death, hung out his naked and mangled body over the window of his bed-chamber, in savage and brutal triumph. They then seized the castle, dismissed unharmed the household servants of the cardinal, sent off a messenger to the English court to inform Henry of their success; and being soon afterwards joined by John Knox, and a considerable band of his friends, who considered the death of Beaton as favourable to the reformation, they determined to defend the castle for Henry against any force which might be brought against them.

These confident anticipations were, for a time, overthrown by the death of Henry the Eighth, an event soon followed by that of his rival Francis the First; but the accession of Edward the Sixth in England, and that of Henry the Second in France, did not materially alter the policy of either kingdom towards Scotland. In England, the protector Somerset, who was placed at the head of the government during the minority of his royal nephew, considered himself bound to enforce the observation of the marriage treaty between Edward and the young queen of Scots; while in France, Henry the Second, devoted to the cause of the Catholic church, and directed in his affairs by the Guises, foresaw at once the necessity of an intimate union with Mary of

¹ Tytler's History of Scotland, vol. v. pp. 388, 389.

² The whole of the plot, as it is to be traced in authentic letters in the State Paper-Office, will be found detailed in Tytler's History of Scotland, vol. v. p. 387—391, and in an Appendix to that volume, entitled, "Historical Remarks on the Assassination of Cardinal Beaton."

Scotland. Guise the queen-dowager, and the governor Arran; his policy being to arrest the spread of the reformed opinions, and to weaken England in the quarter to which Somerset looked for an easy triumph.

Mary.
A.D. 1545.
Arrival of
a French
fleet in
Scotland.

For nine years after the assassination of Beaton, the earl of Arran continued at the head of the government; and during that period some events took place which drew after them important effects. The warlike preparations of Somerset induced the French government to anticipate his motions; and a French fleet of sixteen armed galleons having entered the Frith, bombarded and carried the castle of St. Andrews, in which the conspirators against Beaton, and Knox the Scottish reformer, had deemed themselves secure.

Knox called to the ministry.
A.D. 1546.

It was when shut up in St. Andrews, that this extraordinary man first assumed the office of a minister of the reformed religion; but having capitulated with the rest, he was embarked with his associates for France, and on his arrival there, kept a prisoner in chains on board the galleys. He remained on the continent till 1550, when he returned not to Scotland, but to England, and became one of the chaplains to Edward the Sixth.

Somerset invades Scotland.
Battle of Pinkey.
A.D. 1547.

Immediately after the siege of St. Andrews, the protector Somerset invaded Scotland at the head of an army of fourteen thousand strong, and supported by a fleet of thirty-four ships of war. He was met by Arran, the governor, at Musselburgh, or Pinkey-cleugh, within about six miles distance from the capital, where an army considerably more than double the number of the English had encamped in so strong a position on the banks of the Esk, that with proper military skill on their part, any attempt to dislodge them might have brought ruin on their assailants. The inexperience and folly of Arran, the governor, threw away this advantage. He mistook a movement of Somerset, in which the English leader meant to possess himself of an adjoining height, for an intention to communicate with his fleet and re-embark his army; and contrary to the remonstrances of his best officers, he gave orders for the whole army to strike their tents and cross the river on which he had encamped. The order was at first resisted, at last unwillingly and imperfectly obeyed; and in the midst of the confusion which ensued, the English attacked the Scottish divisions in detail, and after a sanguinary conflict, gained a complete victory. Fourteen thousand were slain in the battle and in the chase, while the English loss was comparatively trifling.

Since the fatal day of Flodden, Scotland had sustained no defeat in the least degree approaching to this at Pinkey, and had it been followed up by the Protector, the consequences must have been of the most serious kind, perhaps fatal to the liberty of the country. But happily Somerset, at the very moment of his victory, received accounts of a conspiracy which his enemies at the English court had organized against him; and impatient to confront them in person, his measures were hurried, confused, and ill-digested. After a brief stay in the capital, he commenced his retreat through Teviotdale, and the fleet at the same time weighed anchor and returned to England.

Mary sent to France, and betrothed to the Dauphin.

The consequences of the defeat at Pinkey, and the effects of a subsequent and cruel inroad into Annandale by Lord Wharton and the earl of Lennox, were to exasperate the feelings of national antipathy, and to throw the governor and the queen-mother more decidedly into the arms of France. A convention was held at Stirling, in which it was determined to request the immediate assistance of a French force, and to send Mary, the young queen of Scots, to be educated at the court of Henry the Second. Soon afterwards, the Sieur Montalembert, commonly called Monsieur d'Esse, one of the ablest officers in the service of that country, arrived in Scotland with six thousand men. In a parliament held at Haddington, the marriage of the French dauphin to the queen of Scots was finally determined; and the infant Mary,

then in her sixth year, took her voyage to France, accompanied by lords Erskine and Livingston, her governors, and arrived in safety at the court of St. Germain, in August 1548.

Scotland.
Mary.
A.D. 1548.

It belongs not to an historical sketch of this kind, to enter into the details of that sanguinary and obstinate war which now took place between England and the united strength of France and Scotland. The slaughter at Pinkey, the burning of their sea-ports and shipping, and the pitiless severity with which the repeated invasions of their country were accompanied, had at length animated the Scots with a common feeling of revenge, which gave to the contest a character of peculiar ferocity, and manifested itself in shocking excesses. Happily the struggle did not continue long. The peace of Boulogne, between France and England, led, in 1550, to a cessation of hostilities in Scotland, where for some time before, the tide of success had run in favour of the governor and his foreign auxiliaries; and thus, after a war which had lasted for seven years, dating it from the year 1543, when Henry the Eighth determined to enforce the observation of the treaty, the English saw themselves obliged to abandon the extravagant project of compelling the Scots into a matrimonial alliance.

This war, for the accomplishment of the marriage, was not long afterwards followed by the still more important and eventful struggle for the establishment of the reformation, the history of which may properly be divided into the war of opinion, which extended from the arrival of Knox in Scotland in 1555, to the attack upon Perth in 1559; and the actual war between the Congregation and their opponents, which was comparatively of short duration, and concluded in the treaty of Edinburgh and the triumph of the party of the Congregation, in 1561. How difficult is it, in the narrow compass allowed us for this picture, to do justice even to its prominent outlines? The queen-dowager, Mary of Guise, a woman, by the confession of her enemies, of good judgment, and sincere and upright principles, succeeded in procuring the retirement of Arran and her own nomination to the regency, (April 1554). She was enabled to accomplish this chiefly by the influence of France, then high in Scotland; but she was assisted also by the leaders of the protestant party, whom she courted and attached to her interest. Her possession of the supreme power was soon followed by the death of Edward the Sixth and the accession of Mary, a princess, as is well known, sincerely devoted to the ancient faith; but these changes were not accompanied by any important political events. The queen-dowager, indeed, when she saw England and Spain engaged in Italy in a struggle with France and the pope, deemed it her duty to support her country and attack England; but although the Scottish barons assembled an army, it was only to act on the defensive; they refused to cross the border, and the Regent, hitherto on the most amicable terms with the nobles, dismissed them with undissembled resentment.

To make up for this disappointment, the marriage between the young queen of Scots and the dauphin was concluded of Mary to with much solemnity at Notre Dame; and in a parliament the Dauphin held at Edinburgh, it was agreed that the youthful husband should bear the title of king of Scotland during the continuance of the marriage, that all letters in Scotland should run in the joint names of Francis and Mary, and that the arms of both kingdoms should be quartered in the great seal and the current coin of the realm. These transactions had not been long concluded, when Mary of England, broken-hearted by the loss of Calais and the neglect of Philip, sunk into the grave; and Elizabeth's accession to the throne was hailed with universal delight by the protestant party in Europe.

When the English queen placed herself at the head of the reformation, this great moral revolution had made no inconsiderable progress in Scotland. The return of Knox to his native country in 1555, and the influence which his

War with England.
Peace concluded.
Mary of Guise obtains the regency.
A.D. 1554.

Marriage of Mary to the Dauphin.
A.D. 1557.
Accession of Queen Elizabeth.
A.D. 1558.

Progress of the Reformation in Scotland.

Scotland. fiery zeal and popular eloquence soon gained over the Congregation, determined them to make a formal separation from the Catholic Church; and although the reformer was once more compelled, probably by fears for his life, to retreat to Geneva, the danger appears soon to have passed, and the leaders of the Congregation, conscious of increasing strength, entered into that memorable bond or covenant, by which they engaged to establish the word of God, to maintain the gospel of Christ, to labour to have faithful ministers, and to execute judgment upon what they termed the superstitions and abominations of the ancient faith.

This bond was little less than an open declaration of war against the established religion; and lest it should be misunderstood, the lords of the Congregation at the same time passed a resolution, declaring, that in all parishes the common prayer, by which was meant the service book of Edward the Sixth, should be read in the churches by the curates, if qualified to perform this service, if not, by others in the parish who were qualified. It was resolved at the same time, that doctrine, preaching, and the interpretation of Scripture should be used privately, until it pleased God to move the prince to grant public preaching by faithful ministers.

Burning of Walter Mill. A.D. 1558. The Roman Catholic clergy received such a denunciation of the national faith with alarm and indignation; and resorting once more to those weapons which had already so deeply injured their cause, they deemed it expedient to hold up an example which should strike terror into the new converts. Walter Mill, a priest who had embraced the reformation, was seized, tried, delivered over to the secular arm and burned at St. Andrews. The people, however, only execrated the cruelty of which he was the victim, and his last words were never forgotten. "I am now fourscore and two years old, and could not have lived long by the course of nature; but a hundred better shall rise out of the ashes of my bones, and I trust in God I am the last who shall suffer death in Scotland for this cause." A pathetic declaration, and happily prophetic.

Remonstrance of the Congregation. A.D. 1558. Against this cruel execution, the lords of the Congregation, Glencairn, Argyll, Morton, Erskine of Dun, and others, presented a remonstrance to the queen-dowager. It was impossible, they said, that her Grace could be ignorant of the controversy which had arisen between them and the popish clergy, concerning the true religion and the right worshiping of God. They denounced the power which was claimed by these priests of dictating their creed under the penalty of fire and faggot, and declared, that although hitherto they had remained quiescent under such abuses, they now were persuaded, that they, "as part of that power which God had established in the land," were bound to defend their persecuted brethren. They proceeded still more boldly to state, that a reformation of abuses was necessary, not only in religion, but in the temporal government of the state; and after claiming for themselves the free right of assembling in public or private, hearing common prayers, and having the sacrament of the Lord's Supper administered in the vulgar tongue, they concluded by declaring that they were willing that the controversy between themselves and the Catholic priesthood should be determined by a reference to the New Testament, the writings of the fathers, and the laws of the emperor Justinian. This declaration was soon after followed by a supplication to parliament, in which they requested that all statutes by which churchmen were empowered to proceed against heretics, should be suspended until the controversies in religion were determined by a general council of the church.

Proceedings of the queen-dowager. This petition was received by the queen-regent with concealed dissatisfaction, by the great body of the Roman Catholic clergy with undisguised scorn and reprobation. It suited however the regent at this moment to dissemble. She required the aid of the protestant lords to carry her favourite measures in this parliament, the obtaining the crown-

matrimonial and the title of king of Scots for the dauphin; and intreating the lords of the Congregation to withdraw their petition and articles for a season, she promised them her protection, and a favourable consideration of their demands. To this they agreed, but under a protestation which was publicly read in parliament. It proved by the manner in which it was worded that they knew their own strength; and, in the event of a refusal, were prepared to enforce their demand for liberty of conscience and a thorough reformation of the church.

It was at this crisis, when the lords of the Congregation had taken their stand on the ground which they never afterwards deserted, and when the queen-regent, having obtained her wishes, considered herself independent of their support, that Elizabeth succeeded to the throne, and Knox, who soon after his first return had left Scotland, again arrived in his native country. Both events produced the most important effects. It was one of the great principles of Elizabeth's policy to increase her own security by weakening her neighbours; to accomplish which, she invariably fomented a secret faction which opposed itself to the existing government. We have already seen how lightly the feudal nobility of Scotland were accustomed to regard the power of the crown or the laws of the realm, if they interfered in any prominent manner with their personal freedom or privileges; and the history of the country, from the rebellion in the reign of James the Third, to the moment when they so recently refused to lead their forces against England, had exhibited little else than the total destruction of any balance between the fierce unbridled license of the aristocracy, and the decreasing influence of the crown and the laws.

Of those nobles who had been ready, without any feelings of shame, to renounce their allegiance to their country, and to be bought over by England, many had embraced the principles of the reformation. To men so long accustomed to make their personal interest the measure of their duty, and to think and act as they pleased, a revolution which contended for liberty of conscience and the license of private judgment, must have warmly recommended itself; and when they considered the history of the English reformation, and the appropriation of the church lands by Henry and Edward, they could not, we may believe, be totally dead to the lesson. The church of Rome in Scotland was comparatively as rich as her sister had been across the border; and if the reformation was to be as complete in their own country as in England, it was not difficult for these shrewd barons to persuade themselves that they might imitate, perhaps improve the example.

Over an aristocracy of such a character, Elizabeth and her ministers at once perceived how easy it would be to acquire an influence. Her policy at home was to avoid war, and to enforce in every department of the state the most rigid economy. Her policy abroad, as already observed, was to give her neighbours full employment within their own realm, by secretly encouraging every faction which rose against the government. From the first moment of her accession, therefore, she favoured the leaders of the Congregation, directed their measures, supported them with money, and received from them in return a respect and deference superior to that which they paid to their own sovereign.

But if the effects of the accession of Elizabeth upon the body of the Scottish nobles, were important in reference to the reformation, the consequences of Knox's re-appearance were not less momentous upon the character of the people. Hitherto the healthy patriotic feeling, the resolution to defend their independence as a separate kingdom from foreign domination and attack, had existed almost exclusively in the middle and lower orders, the commercial classes, and the labourers of the soil. But among these, the principles of the reformation had taken a deep root. They had adopted

Scotland. Mary and Francis. A.D. 1558.

A.D. 1558. Progress of the Reformation in Scotland.

Influence acquired over the Congregation by Elizabeth.

Influence of Knox. Change in the feelings of the people.

Scotland.
Mary and
Francis.
A.D. 1558.

them, not like many of the nobles, from interest, but from conviction; and upon their minds the popular eloquence of Knox, his fiery zeal, his denunciations of superstition, his sarcastic attacks upon the ignorance and the vices of his opponents, produced a powerful impression. Till this period they had been wont to regard France as their ancient ally, and England as their ancient enemy. But France was now held forth to them, in the discourses of their favourite preacher, as their bitterest foe, because the enemy of their soul's health; while England was the land of gospel light, and its queen the princess to whom, as the bulwark of the truth, they ought to look with affection and admiration.

Such were the feelings of the Scottish nobles, and the great body of the people, with reference to the momentous struggle between the reformation and the Roman Catholic faith, which was now about to convulse the country. Had the queen-dowager continued to act with the same judgment and caution which had distinguished the commencement of her government, it is possible that the struggle might have been for a time averted; but at this moment the powerful princes of the house of Guise deemed it expedient to join the league which had been concluded between the pope, the king of Spain, and the emperor, for the destruction of the protestants, and the re-establishment of the catholic faith in Europe. They immediately communicated with their sister, the regent, in Scotland; and such was unfortunately their influence over her mind, that after a feeble resistance she joined the papal coalition.

A.D. 1558.
Collision
between
the Catho-
lics and the
Protest-
ants.

This fatal step was followed, as might have been expected, by an immediate collision between the two parties. In a convention of the clergy which was held at Edinburgh, in March 1559, the lords of the Congregation, in addition to the demands which they had already presented, insisted that bishops should not henceforward be elected without the consent of the gentlemen of the diocese, nor parish priests except by the votes of the parishioners. These proposals were met by the queen with a determined refusal. A proclamation was issued, commanding all persons to resort daily to mass and confession. It was declared that no language but the Latin could be used in public prayers, without violating the most sacred decrees of the church; and the protestant ministers who had acted in defiance of these injunctions, were summoned to appear at Stirling, and there answer to the accusations which should be brought against them.

They accordingly did appear; but it was with Knox at their head, and surrounded by crowds of their devoted followers, who were led by the principal barons of Angus and Mearns. On reaching Perth, however, it was judged expedient to attempt a measure of conciliation; and Erskine of Dun, a gentleman of ancient family, and grave experience, leaving his brethren, proceeded to the court at Stirling, where he was admitted to an interview with the regent. He assured her that their single demand was to be allowed to worship God according to their conscience, and to secure liberty for their preachers. She replied, that if he would prevail on the Congregation to disperse, their preachers should be unmolested, the summons discharged, and their grievances redressed.

Duplicity
and severity
of the
queen-re-
gent.

To this Erskine consented. He communicated the agreement to his brethren; the people were disbanded; and when the reformers looked for toleration and redress, the queen-dowager, with a perfidy which was as base as it was unwise, reiterated the summons, and on their failure to appear, denounced the ministers as rebels. Such conduct inflamed the resentment of the Congregation to the utmost degree; and Knox having seized the moment to deliver a stern and impassioned sermon against idolatry, the people were wrought up to a state of high excitement. Observing a priest about to celebrate mass, after the preacher had retired, they burst in upon the altar, tore down its ornaments, shivered

the shrines and relics, and speedily demolished every monument which seemed to savour of idolatry. From that moment the fate of the Roman Catholic church in Scotland was decided. Having once broken through restraint, and found their own strength, the multitude rushed to the religious houses of the Black and Grey friars, and inflicted on them an equally summary vengeance. They then attacked the charter-house or Carthusian monastery, which experienced a similar fate; and the infection of tumult and destruction spreading throughout the country, many excesses of the same kind were committed in the provincial towns. That Knox or his disciples directly advised such spoliation cannot be proved; that the principles which he laid down, and his stern denunciations of his opponents as idolaters, led to these excesses, is certain.

The effects of such scenes on the queen-dowager, were to rouse her to instant activity, and to array the two parties in determined opposition to each other; for although some of the protestant leaders, disclaiming all intentions of rebellion, disapproved of the late violence, and still acted with the regent, their neutrality was so short-lived that it scarcely demands attention. It had the effect, however, of producing a momentary spirit of conciliation. The protestants presented an address to the queen, to the nobility, and to the Roman Catholic clergy. In the first they professed their loyalty, deprecated her injustice, and demanded liberty of conscience, and the right of hearing their own preachers. In the second they vindicated their conduct to their brethren of the Roman Catholic nobility from the charge of heresy and sedition, while they upbraided those who first espoused and now deserted their cause. The third epistle to the Roman Catholic clergy, whom they broadly stigmatized as the generation of antichrist, was a denunciation of war, composed in that spirit of coarse and abusive railing which unfortunately marks the style of the early reformers. Such accusations were little calculated to produce pacific feelings; but the queen-regent, who had assembled her army, finding it inferior in strength to the Congregation, proposed an armistice, which on certain conditions was accepted. The Congregation having bound themselves to each other in a new covenant, disbanded their forces, and for the second time, as they allege, were overreached by the treachery of the dowager, who, against a solemn stipulation, occupied Perth with a body of French soldiers, expelled the magistrates who favoured the reformation, and garrisoned the town with troops in the pay of France, though in reality Scots.

This unwise and unjustifiable duplicity had the worst effects. The lord James, afterwards the regent Murray, a young man of great talents and ambition, who had hitherto adhered to the regent, though professing reformed opinions, deserted her. Argyll, a powerful and influential nobleman, followed his example; and, faithful to their renewed covenant, the army of the Congregation assembled in Perth, at St. Andrews. Knox in the mean time, whose voice, Sadler, the English ambassador, compares in his letters to the sound of a thousand trumpets, set out on a preaching tour through the country. Directing his powerful and popular eloquence against the evils of superstition, and the misery of the thralldom which, by means of foreign mercenaries, the house of Guise were attempting to fix upon their country, he so powerfully excited the people, that they determined to take the reformation into their own hands, and levelled with the ground the monasteries of the Franciscan and Dominican orders. It was in vain that the regent exerted herself to check these popular outrages. The phrensy gained strength; the nobles and leaders of the Congregation felt proportionally encouraged, and advancing with their forces upon Perth, they opened a cannonade, and in a short time made themselves masters of the town. Stimulated to a high pitch of excitement by such success, the

Scotland.
Mary and
Francis.
A.D. 1559.

Progress of
the contest
Armistice
proposed
by the
queen-re-
gent.

The Lord
James de-
serts the
Regent.
The Con-
gregation
take
A.D. 1559

Scotland. multitude, contrary to the entreaties of Knox, attacked and destroyed the abbey church and palace of Scone; after which, a portion of the army of the Congregation, under the lord James and Argyll, made a rapid march upon Stirling, which they occupied, hastened afterwards to Linlithgow, and having in both towns pulled down the altars, destroyed the shrines, and, as they said, purged the places of idolatry, they compelled the regent to make a rapid retreat to Dunbar, and entered the capital in triumph, in June 1559.

The queen-regent calls for French assistance. This last success, while it gave the highest courage to the party of the reformation, convinced the queen-regent that every hope to avoid a civil war must be abandoned, and that the crisis called for her most determined exertions. She instantly communicated her dangerous situation to France, and received in return a large reinforcement of French troops, whose discipline, skill, and equipment, being superior to the common feudal militia which the Congregation brought into the field, at once gave her a superiority. The reformers, on the other hand, threw themselves upon the protection of England; and Elizabeth, although she scrupled to send them either money or troops, encouraged them with general promises of approval, and, in case of extreme danger, with some hopes of support. In addition to this, her minister Cecil hinted in his letters the expediency of using their present power to "strip the Romish church of its pomp and wealth," and, as he termed it, "to apply good things to good uses;" while the terms in which the Congregation replied, seem to point to a more secret communication, in which this unscrupulous politician had advised the deposition of the regent, and a change of the government. It is certain that the necessity of such a measure had been for some time contemplated by the Congregation, but it was to be resorted to as the last extremity. In a letter from Kirkealdy of Grange, one of their principal leaders, addressed to Sir Henry Percy, (1st of July 1559), and explanatory of their intentions, he declared that if the regent would consent to a reformation conformable to the pure word of God, cleanse the popish churches of all monuments of idolatry, suffer the book of common prayer published by Edward the Sixth to be read, and send away the French troops, they were ready to obey and serve her, and to annex the whole revenues of the abbeys to the crown.

Deposition of the queen-regent. For the queen-dowager to have agreed to this would have been equivalent to the giving up of the whole question, and would have been to establish protestantism on the ruins of what she esteemed the true church. She accordingly met the demands of the Congregation by a peremptory denial. In return they withdrew from her their allegiance, and in the name of their sovereign, whose authority they unscrupulously assumed, suspended her from the high office which she had abused.

The war now broke out with a violence proportioned to the exasperated feelings of either faction. The Congregation, at first intimidated by the superiority in the discipline of the French troops, began to dread a calamitous result; but they soon saw themselves strengthened by the arrival of an English fleet, while a land force under the duke of Norfolk advanced to Berwick, and after a negotiation with the reformed leaders, pushed forward into Scotland, and was joined at Preston by the army of the reformers.

The war is of brief duration. Treaty of Peace at Edinburgh, A.D. 1560. It belongs not to this sketch to enter into details of hostilities, and happily for both countries the war was of brief duration. The queen-dowager, sinking under a broken constitution, died at Edinburgh, on the 10th of June 1560. The Congregation, disheartened by some reverses, and weakened by disunion among their principal leaders, felt no inclination to prolong the struggle; and Elizabeth having offered her services as a mediatrix between the two parties, a meeting of the English, French, and Scottish commissioners

took place at Edinburgh, by whom a treaty of peace was concluded, having for its basis the withdrawal of the French troops from Scotland, and a recognition of the validity of the treaty of Berwick between Elizabeth and the party of the congregation. Into this last proviso the French commissioners sent over by the young queen of Scots and her husband the dauphin, were entrapped by the diplomatic skill of Sir William Cecil, one of the English commissioners, contrary to their express instructions; and its validity was never admitted by the Scottish queen; but in the mean time it greatly strengthened the hands of the Congregation. At the same moment the leaders of this party presented to the commissioners certain "articles" concerning religion; but Elizabeth had directed Cecil and Woolton to decline all discussion upon the subject; and the reformers, who looked to the convention of Estates for the settlement of the question, did not press the point.

A parliament accordingly assembled at Edinburgh, on the 10th of July 1560. The lesser barons who had for some time suffered their rights of sitting in the convention of estates to fall into disuse, were mostly attached to the doctrines of the reformers, and looked with deep interest to the debates which were about to take place on the subject of religion. They accordingly met, claimed their right, and after some opposition, were allowed to take their place. This threw a preponderating weight into the party of the Congregation; and the "Confession of Faith," together with a "Book of Discipline," which embodied the great principles of a reformed church, and protested against the errors, abuses, and superstitions of the Roman Catholic faith, was submitted to Parliament. The Confession of Faith passed with little opposition. This remarkable paper, or rather treatise, professes to be a summary of Christian doctrine founded on the word of God; and although drawn up by Knox and his brethren in a very short space, embodied the result of much previous study and consultation. It is worthy of observation, that at this early period, the church of Scotland, in explaining the articles of its faith, approaches indefinitely near to the Apostles' creed, and the articles of Edward the Sixth; and that where it differs, it leans more to the side of catholicism than ultra-protestantism.

Three acts followed the adoption of this Confession of Faith. The first abolished for ever in Scotland, the power and jurisdiction of the Pope; the second repealed all former statutes passed in favour of the Catholic church; the third inflicted the highest penalties upon any who thenceforward should dare to say or to hear mass.

All this met with little opposition; but the Book of Discipline, by which the future government of the church was to be determined, gave rise to the keenest debates. "Some of the nobles and barons at once refused to sign it; others did sign, but eluded its injunctions; others mocked at its provisions, and called them devout imaginations."¹ The cause of this is attributed by Knox to its interfering with the privileges and property of many powerful barons who had already "gripped the possessions of the church." It also discouraged other expectants, "who thought they would not lack their part of Christ's coat."² The first class, according to the same authority, had no remorse of conscience, nor intended to restore any thing of that which they had long stolen or reft. The second were no doubt afraid, that if the ministers were first provided for, little or nothing would be left for them.

In considering its provisions it is material to notice, that it committed the election of ministers solely to the people, using, however, the precaution that the minister so chosen, before he was admitted to the holy office, should be examined and approved of by the ministers and elders, upon all points of controversy between the church of Rome and the

¹ Tytler's History of Scotland, vol. vi. p. 219.

² Knox's History, p. 276.

Scotland. Congregation; after which he was to be considered an ordained minister, without any further solemnity, it being observed that although the apostles used the imposition of hands, it was intended to impart, and did impart miraculous powers, and "the miracle having ceased, the using the ceremony was judged henceforth unnecessary." The country was divided by it into ten dioceses, over which ten ministers, named Superintendents, were appointed, whose duty it was to be ambulatory preachers, and to inquire, in the course of their progress, into the lives of the clergy, the provision for the poor, and the proper instruction of youth. It is in this last clause that we meet with the first proposal of that admirable institution of parish schools, to which Scotland has since owed so much of her prosperity. Having thus established their reformation, the Parliament appointed an interim provisional government, confirmed the treaty of Berwick which had been entered into between Elizabeth and the Congregation, and proposed that as a basis of perpetual amity between England and Scotland, there should be a marriage between queen Elizabeth and the earl of Arran, heir apparent to the crown. In conclusion, they dispatched Sir James Sandilands of Calder to carry an account of their proceedings to their sovereigns in France, while Sir William Maitland of Lethington, with the earls of Morton and Glencairn, were sent on a similar mission to Elizabeth.

Mary's feelings towards the Congregation. She refuses to ratify the treaty of Edinburgh. A.D. 1560. It was not to be expected that their youthful sovereign, educated in the bosom of the Roman Catholic church, and accustomed to look for direction and guidance to the advice of her uncles the Guises, could possibly ratify the extraordinary proceedings of this parliament. It had, by a few sweeping acts, abolished the national faith, confirmed the treaty which a faction of her subjects whom she had all along treated as rebels, had entered into with England; and by sending an embassy to Elizabeth, composed of men of higher rank and greater influence than Sandilands, who was deputed to wait upon their sovereign, it was intimated pretty significantly, that the Congregation were determined to treat the English princess with equal if not superior deference to that with which they regarded their own queen. She accordingly received the Scottish envoy with coldness, and peremptorily refused to ratify the treaty of Edinburgh.

Death of Francis the Second. At this moment Mary had the misfortune to lose her husband, Francis the Second, the young king of France; an event which made it necessary for her to return to her own kingdom, and at once threw her from a condition of much contentment and prosperity into circumstances of extraordinary trial and embarrassment. She had been educated in the most brilliant and accomplished, but, it must be added, one of the most profligate courts in Europe. From her infancy, as queen of Scotland, and presumptive queen of France, she had been flattered and caressed; and as she was extremely beautiful, possessed of amiable manners, highly accomplished, generous, and kind-hearted, she had received from every class of her French subjects the unaffected homage of their admiration and regard. All was now to be changed; and on turning her eyes from France to her own country a melancholy contrast soon presented itself.

Parliament at Edinburgh. Character of the Lord James. As soon as the king's death was known in Scotland, a parliament assembled at Edinburgh, of which the proceedings appear to have been overruled by the Congregation. It was resolved to invite their sovereign to return to her kingdom, and for this purpose to send the lord James to France, while the Roman Catholic party dispatched Lesley, afterwards the celebrated bishop of Ross, on the same errand. The lord James, afterwards the regent Murray, was the natural son of James the Fifth by lady Margaret Erskine, who afterwards married the laird of Lochleven. From his earliest years he had exhibited marks of an extraordinary

ambition, and a genius for affairs of state. His apparently blunt and careless manner, disposed men to treat him with confidence, and enabled him, when he was least suspected, to carry on the most deep-laid and ambitious designs. At this moment he was regarded as the leader of the reformed party; and it is a remarkable proof of his talents, that, on his arrival in France, although at first suspected by Mary, he acquired an extraordinary influence over her character.

It was the misfortune of the queen of Scots, who was now only eighteen, that she was surrounded by difficulties which would have required to meet them a matured experience, and the most attached and faithful councillors. Elizabeth, who saw her opportunity, and was determined not to lose it, dispatched the earl of Bedford to demand the confirmation of the treaty of Edinburgh; and when this was refused, she exhibited her resentment by declaring that Mary, who had at first intended to pass through England into her own realm, should receive no safeconduct; a circumstance which made her resolve to sail at once from Dieppe to Leith. But Elizabeth was at least an open opponent, and the young queen, aware of her enmity, could secure herself against it. Murray, on the other hand, to whom she too heedlessly gave her confidence, had already visited the English court on his passage to France, communicated his plans to Elizabeth, and received his instructions from Cecil, her prime minister. On his return from Paris he again passed through England, consulted with the English queen on the best methods of detaining Mary in France, and actually carried his double dealing so far as to devise means for intercepting her, should she persist in her determination and set sail. This she at last determined to do at all risks; and having had the good fortune to escape the English cruisers, which were directed to be on the look out, she arrived at Leith, and was received with the utmost enthusiasm by all classes of her subjects, (August 19, 1561).

These happy indications were of short duration; and when the young queen considered the state of parties in Scotland, the difficulties of her situation appeared complicated and disheartening. She was herself a conscientious Roman Catholic, warmly attached to France and the Guises her uncles. This of itself rendered her an object of suspicion and aversion to Knox, the great leader of the protestant clergy, and to the powerful nobles who had espoused the reformation. She had already peremptorily refused to sanction the proceedings of the Parliament, which had confirmed the treaty of Berwick, abolished the papal supremacy, and substituted the protestant doctrines and worship for the ancient faith. This drew upon her the enmity of England, and the English party in Scotland, led by Murray and Lethington; and as the influence of Knox and the preachers over their congregations was strong and universal, the feelings of the ministers were communicated to the great body of the people, and checked those sentiments of loyalty which manifested themselves upon her arrival. If, from such opponents, Mary turned to the body of her Roman Catholic nobles, among whom the most powerful and influential was the earl of Huntly, she found them animated indeed upon one great subject, by a community of sentiment; but then they, in common with all the nobles, had been so long accustomed to independence, and looked so constantly to the preservation and increase of their own power that, as a party, they were extremely difficult to manage. Lastly, looking to the great body of the Roman Catholic clergy, there was no one who, since the death of Beaton, had possessed that vigour of character and talent for state affairs, which were absolutely necessary in any minister to whom the queen should give her confidence, if we except Lesley, afterwards bishop of Ross.

It was necessary for her, however, to decide upon a line of policy; and after deliberate consideration, the queen determined to make the lord James her chief minister, and to secure the friendship and good offices of Elizabeth. In this

Scotland. Mary. A.D. 1560.

Conduct of Elizabeth and the Lord James.

Mary arrives in Scotland. A.D. 1561.

Difficulties of her situation.

James made chief minister.

Scotland. Mary. A.D. 1563. way she hoped to attach to herself the great body of her people, who were mostly protestants; and as from France, torn at this moment by civil and religious dissensions, she could expect little assistance, she deemed it the more necessary to preserve peace with England. Events of much interest now succeeded each other with a startling rapidity, and the history of Mary, in the brief circle of six years, presented an appalling tragedy, of which we can only give the outline.

Mary's intended marriage. A.D. 1561. The first point on which the two queens came into collision was on the delicate subject of marriage. Mary's subjects wished her to marry, and she considered it wise and necessary that she should gratify their wishes. She was in the bloom of youth, extremely beautiful, and of manners so engaging and attractive, that few could see her without sentiments of admiration and regard. She was queen of Scotland, and, after Elizabeth, undoubted heir to the English throne; though this queen, from her morbid jealousy upon the subject of the succession, had never recognised her right. Mary's great object, at this moment, was to marry with her approbation, and to procure a declaration of her right of succession to the throne, failing Elizabeth's issue. She accordingly declared that she would regard her advice upon this subject as that of a mother, and consulted her sister of England with an openness and devotion which, if not perfectly prudent, appears to have been perfectly sincere.

Elizabeth's duplicity. A.D. 1562, 1563. In return for this confidence, the conduct of the queen of England was marked by that insincerity, selfishness, and want of truth which too frequently characterised her policy. She was determined that, if Mary did marry, she should lower herself by the alliance; but she would have been still better pleased could she have so ordered matters that she should not marry at all; and, guided by this ungenerous object, Elizabeth commenced a system of intrigue, the sole object of which was mystification and delay, and in which she enjoyed the satisfaction, not only of deceiving Mary and her councillors, but of setting her own ministers at fault, and rendering it impossible for them to decipher her real intentions. In the course of these negotiations, after objecting to every foreign alliance, the English queen at last proposed her own favourite, Leicester, and held out as a bait to Mary, who justly deemed such an alliance beneath her rank, the promise that the issue, if any, of this marriage should succeed to the English throne. Nothing can be more certain than that she had no such intention; but the farce was so well acted, that not only Mary and the lord James, now earl of Murray, but Randolph, the English ambassador at the Scottish court, were deceived; and when at last the bubble broke, and it was discovered that, from first to last, Elizabeth had been playing her usual dark and double game under the mask of friendship, the indignation of the sufferers was roused, as might have been expected, to the highest pitch.

Mary is incensed, and acts with precipitation. An almost immediate and violent re-action took place. Mary had hitherto confided in Elizabeth, and consulted her upon the marriage. She now trusted her no longer, and determined, without delay, to follow her own inclination. Since her arrival in her dominions, she had favoured the protestants and rather repressed the Roman Catholics. She was now disposed to reverse the system. She had hitherto chosen Murray and Lethington as her chief ministers, had entrusted to the first almost regal power, loaded him with estates and honours, and placed him at the head of her nobility; and it was by Murray and Lethington's advice that she had shaped her policy towards England; but the road they marked out for her had led to insult, mortification, and defeat. Was it possible then, that she could continue to those two men, or to the protestant party, whom they represented, the confidence with which she had regarded them? or rather, was it not natural that, when she discovered their devotedness to Elizabeth, who had deceived and injured her, she should regard them with suspicion and distrust?

Scotland. Mary. A.D. 1564. Under these circumstances, and when agitated by such feelings, Mary saw the lord Darnley, the eldest son of the earl of Lennox, who, with his father, had lately returned to Scotland. This young nobleman could boast of a royal descent, his grandmother being a sister of Henry the Eighth, and he himself, next to Mary, the nearest heir to the English throne. He was now in his twenty-first year, and had not yet discovered that weak intellect and propensity to low vices which betrayed themselves soon after his marriage. It was the misfortune of the Scottish queen that she acted under impulses. She had been deceived by Elizabeth, and she determined to shew her that she could choose for herself. Without giving herself time to study his disposition, and purposely abstaining from any previous communication of her intentions to England, she selected Darnley as her future husband, and dispatched Lethington to Elizabeth, not, as before, to ask her counsel, but to inform her of her resolution.

Elizabeth's opposition. Mary's marriage to Darnley. A.D. 1565. The consequences of this step were extraordinary. Darnley and his father were strongly suspected of being Roman Catholics. Murray and Lethington saw in this alliance little else than the demolition of their own power; the party of Knox and the kirk anticipated the restoration of the ancient religion; and Elizabeth not only declared herself hostile to the alliance, but bitterly accused the Scottish queen, insisted that Lennox and Darnley were English, not Scottish subjects, and sent them orders to repair instantly to her court. It was hardly to be expected that so ridiculous a command should be obeyed, and the opposition of England only rendered Mary more determined upon the marriage. A convention of her nobility was held at Stirling; it was numerously attended; the queen communicated to them her intention of marrying Darnley; the measure was approved without a dissentient voice; and although Murray and the faction with whom he acted, attempted to instigate the people to opposition and rebellion, the endeavour was signally unsuccessful, and the queen carried her wishes into effect. She was married to Darnley in the chapel of Holyrood, on the 29th of July 1565.

The earl of Murray and the party of the kirk revolt, and are driven into England. A.D. 1565. Previously to the queen's marriage, Murray, Argyll, Lethington, and the party of the kirk had been encouraged by Elizabeth to rise against their sovereign; and had they received from the English queen the substantial assistance which she promised, the result might have led to the dethronement of her whom they represented as the oppressor of her nobility, and the bitter enemy of the truth. But their schemes were defeated by the energy and promptitude of the Scottish queen and the timid parsimony of her sister of England. It was in vain that Murray and his brother insurgents reminded Cecil of their desperate situation, and the necessity of speedy assistance both in money and in soldiers. Neither the one nor the other could be wrung from Elizabeth. They were proclaimed traitors, driven from one position to another by the queen of Scots, who herself headed the forces which she led against them, and were at last compelled to fly to England and throw themselves upon the protection of Elizabeth. To their dismay she disowned and repulsed them; upbraided Murray as a traitor to his royal mistress; and, although herself the encourager of their revolt, compelled them publicly to declare that she knew nothing of the matter. They were then dismissed from the queen's presence, and permitted to retire to Carlisle, where the earl of Bedford received secret instructions to supply their wants during their banishment.

While such was the course of events in England, Mary's satisfaction in the triumph over her rebels was grievously diminished by discovering that her husband was weak and profligate, the dupe of every artful companion whom he met, and unworthy of the confidence and affection with which she had treated him in the first ardour of her passion. To entrust him with any responsible share in the government

Scotland. was impossible; and Murray's friends who remained at court, and watched the increasing estrangement between the Queen and her husband, determined to turn it to their advantage.

Mary pro- It was the misfortune of the Scottish queen that she had few or no servants whom she could trust. Her secretary, Riccio. Maitland of Lethington, had betrayed her interests to Elizabeth, and was in disgrace, and, in the mean time, the queen Murder of had availed herself of the services of Riccio, her foreign Riccio. secretary. This person had entered her service at first as A.D. 1565. a singer in her band, but afterwards, by his skill and fidelity, he raised himself to this confidential employment, much to the annoyance of the young king, who regarded him with peculiar aversion; and, incredible as it may appear, Darnley having persuaded himself that he had stolen from him the affection of the young queen, resolved to assassinate him. Nor was it difficult, among a fierce and unscrupulous nobility, to find associates in his flagitious schemes. His father the earl of Lennox, Morton the lord chancellor, Lethington the ex-secretary, Murray and his friends who were in banishment, and many of the stern supporters of the reformation, who suspected Riccio of intriguing with the papal court, willingly joined in the conspiracy. The parliament was at hand in which it was intended to pronounce sentence against the banished lords: it had been reported that measures were in preparation for the establishment of the Roman Catholic faith; and it was determined to arrest both the one and the other by striking the blow against Riccio. Accordingly, when Mary, who was then six months gone with child, sat at supper in a small cabinet adjoining to her bed-room in the palace of Holyrood, the king led the conspirators up a secret stair which communicated with the apartment, while the earl of Morton and a band of armed soldiers seized the gates of the palace. The countess of Argyll, Erskine, captain of her guard, the comptroller of her household, Riccio her secretary, and one or two domestic servants formed the queen's party, some sitting at table and others being in attendance. Indeed, the little closet or cabinet was so small that three or four persons could with difficulty have seated themselves. But its narrow dimensions prevented escape and favoured the ferocious purposes of the conspirators. Led by the king they burst into the cabinet, overturned the table, and threw themselves upon Riccio, who sprung for protection behind the queen. In a moment his fate was decided. One ruffian threatened Mary with his dagger, another held a pistol to her breast, a third, snatching the king's dagger, stabbed Riccio over her shoulder; and at last tearing him from the closet, amidst the shrieks of the women, and the shouts and execrations of the conspirators, they dispatched him, or rather cut him to pieces in an adjoining apartment, with fifty-six wounds.¹

Mary escapes, and drives the conspirators out of the kingdom.

After this atrocious murder, which, considering the situation of the queen, might have cost her and her infant their lives, the conspirators detained her as a prisoner in her palace, permitted no one but the king and their own party to hold any communication with her; and having been joined next morning by the earl of Murray and the exiles from Carlisle, it was determined to make a complete change in the government. Darnley, weak and profligate as he was, they rewarded by placing at the head of their new system, being well aware that he would soon be their tool. The queen was to be confined in Stirling till she should consent to the full establishment of the reformed religion; and the earl of Murray and his associates were to be restored to their former favour and power. In a single day all these intentions were overturned. Mary, left alone with her husband, regained her ascendancy over him; she convinced him of the perfidy of Morton, Ruthven, and his associates,

obtained from him a confession of all the secrets of the conspiracy, escaped with him to Dunbar, and being instantly joined by eight thousand men, advanced with such rapidity against the conspirators, that they fled in dismay to Berwick, and solicited the protection of Elizabeth.

Darnley, in his confessions to Mary, had betrayed his brother conspirators, whilst he solemnly asserted his own innocence; but Morton and his associates produced in their own defence various bonds and letters, which were signed by the king, and fully established his guilt; and Mary saw, to her inexpressible grief and disgust, that the cruel outrage was planned by her husband. From this moment this miserable prince became an object of contempt and aversion to all. His conduct had been a tissue of cowardice, cruelty, falsehood, and weakness: to treat him with confidence, or to entrust to him any share in the government was impossible; and the unhappy queen, without a stay to rest on, fell into a state of the deepest despondency. Whom indeed could she trust? Murray and his party had but recently been rebels; Morton and his associates were stained by the blood of her confidential servant, murdered at her knees; the king was the chief conspirator, the queen of England had deceived her, the party of Knox and the Scottish church regarded her with avowed aversion; and even the Roman Catholics were somewhat estranged by the preference which at first she had given to their opponents. Under these complicated difficulties, the queen pursued the course which she deemed most likely to ensure success. She broke with none, pardoned some of the conspirators, affected to believe her husband, hoping even against hope, and restored Murray to some portion of the power of which he had been deprived. Such was the state of things, when, the period for her confinement having arrived, she gave birth to a son in the castle of Edinburgh. The child was named James Charles, and on the death of Elizabeth succeeded to the English throne.

When her recovery permitted Mary to attend to the affairs of the country, it was apparent that unless immediate steps were taken to establish something like a strong government, the kingdom would fall to pieces; and yet such was the weakness and treacherous nature of the king, that to admit him to a share in it was impossible. She next turned to her nobles. Of these the most powerful were Murray, Bothwell, Huntly, Argyll, Lennox, Morton, and Lethington; but there had long existed a feud between Murray and Bothwell, while Morton, Lethington, Lennox, and their partisans were still in disgrace for the murder of Riccio. It was necessary to make an effort, and the queen succeeded in reconciling Murray to Bothwell: Huntly was made chancellor, Lethington was pardoned and restored to his office of secretary; while Murray, Argyll his brother-in-law, and Bothwell, were entrusted with the chief management of affairs.

Enraged at his exclusion from power, the king sullenly retired from court, threatened to murder the earl of Murray, and at last declared he would leave the kingdom. It was in vain that his father remonstrated against his resolution; in vain that the queen herself, leading him before her council, conjured him to detail his grievances, and if she had injured him in any respect, to accuse her without reserve. He declared she had herself given him no cause of complaint; but afterwards, in a letter, he complained that he had no power in the state, that he was neglected by the nobility, and would bear it no longer. Soon after this the unhappy princess was seized by a fever at Jedburgh, during which her life was despaired of. Her enemies ascribed it to the injurious effects of a rapid ride which she took from Jedburgh to visit Bothwell, who had been wounded in a skirmish with some border thieves; it had more probably its origin in that anxiety which followed the conduct of Darnley; but be

Scotland.
Mary.
A.D. 1566
Mary's difficulties.

Birth of James VI.

Parties in the state.

Darnley's violent courses.

¹ Keith's History of Scotland, p. 283.

Scotland. this as it may, she recovered only to be the victim of more aggravated sufferings. Partial reconciliations were followed by no revival of affection or confidence; and in the anguish of a wounded spirit, she sometimes lamented that she had not died at Jedburgh.

A divorce proposed. It was in this season of depression and despair that Murray and Maitland proposed to her a divorce from the king. They had previously confided their project to Huntly, Argyll, and Bothwell; and at first Mary seemed inclined to follow their advice, provided the divorce could be lawfully procured, and without prejudice to her child. But after weighing the whole matter her opinion changed, and when Maitland urged that means could be found to free her of Darnley without injury to her son, declaring that Murray would look on and say nothing against it, she broke off the conference. "I will," said she, "that ye do nothing through which any spot may be laid to my honour or conscience; let the matter be in the state it is, abiding till God of his goodness put remedy thereto."

Conspiracy for the murder of Darnley. Having failed in this device, a conspiracy for the murder of the king was entered into by Maitland, Bothwell, Huntly, Argyll, and Sir James Balfour. It has been disputed whether Murray was, or was not, a party to this atrocious design. It is certain that he did not sign the bond, by which, according to the custom of this age, the conspirators bound themselves to each other. There is a strong presumption, however, that he knew of its existence; and the deed was communicated to Morton and his associates, who signed it, and agreed to support the conspirators in the execution of their purpose. Such was the state of matters when the baptism of the young prince took place at Stirling. From this ceremony the king obstinately absented himself, alleging in excuse the neglect and rigour with which he was treated. Soon afterwards he left the court and retired to Glasgow, where he was seized with the small-pox, and appeared in imminent danger. His situation appeared to awaken the tenderness of the queen. She sent her own physician to wait on him, and soon after visited him herself, and ministered to his wants. When his convalescence permitted him to be removed, she returned with him to Edinburgh, and placed him, for the benefit of the air, in a house in the suburbs called the Kirk-of-Field. It was here that the conspirators determined to carry their dreadful purpose into effect. At the solicitation of Elizabeth and the French king, Morton had been pardoned and permitted to return; and in a secret interview between him, Maitland, and Bothwell, the particulars of the murder were arranged. Bothwell undertook the chief part, and his men having obtained access to the cellars of the Kirk-of-Field, undermined the foundation, and placed gunpowder in the cavities which they had formed. According to another account, they deposited it in the queen's bed-chamber, which was immediately under that of the king. While all this had been secretly carrying into effect, Mary continued her attendance upon Darnley: their reconciliation appeared to be perfect, she often slept in the house, and on the evening of the 9th of February, when she took leave of him to attend a marriage of one of her servants, which was to be held at the palace, it was remarked that she embraced him tenderly, took a ring from her finger, and placed it on his. On that night, after she had retired to her chamber in the palace, a sudden and terrific explosion was heard, which shook the city, and it was soon discovered that the Kirk-of-Field was blown up. The dead bodies of the king and his page were found at a little distance in the garden. It is well known that this miserable catastrophe has given rise to a celebrated historical controversy, in which authors of great name

and talents have taken different sides; some insisting that the queen was cognizant of the plot for the murder of her husband, and others as positively asserting the contrary. The limits of this historical sketch render it impossible that we should enter into its details.¹ In the preceding narrative we have carefully avoided the introduction of a single controverted fact; in the sequel we shall as sedulously follow the same rule.

Scarcely were the citizens of the capital recovered from the horror and dismay which was incident to such a calamity, when bills appeared on the walls of the Tolbooth, which accused Bothwell of the murder, and added that the queen had assented to it. Soon afterwards, the earl of Lennox, the unhappy father of the late king, earnestly required the imprisonment of the persons named in the anonymous handbills, and Bothwell declaring his innocence, demanded an instant trial. It was granted, and Lennox received due notice of it; but on the day of trial Bothwell appeared surrounded by upwards of four thousand of his friends and adherents; and Lennox, intimidated by the array, or finding it impossible to collect sufficient proof, requested an adjournment. This, however, was peremptorily refused, and the accused was acquitted by the jury, who considered it established by sufficient evidence that Bothwell could not have been at the Kirk-of-Field when the explosion took place.

Soon after this acquittal the Parliament assembled, and the majority of the nobility prevailed upon the queen to consent to an act by which all the grants of crown property which had been made during the present reign were confirmed, and herself and her successors deprived of all power of revocation. In the same assembly of the estates, the verdict passed upon Bothwell, which many accused as informal, was declared just and legal, and soon afterwards a bond was drawn up by twenty-four of the principal peers. It affirmed in solemn terms the innocence of this profligate baron, whom the public clamour still denounced as the murderer of the king; recommended him as a proper husband for the queen; and bound its authors, as they should answer to God, to defend him from all danger, and to promote this unhallowed marriage to the utmost of their power and ability. The tragedy now hurried on to its conclusion. Bothwell, at the head of a thousand men, intercepted the queen on her way from Stirling to Edinburgh, and carried her captive, with the slender suite by whom she was accompanied, to Dunbar castle. Among her attendants were Huntly, Maitland, and Melville, but the first two were in Bothwell's interest, and had signed the bond. The last was completely in his power, and so was the unfortunate queen. He proposed marriage, and on her refusal exhibited the bond signed by her nobles. She still, it is said, resisted his request, and hoped for a rescue; but it was a vain expectation. He became more peremptory, and if we may trust the expressions of Mary, corroborated by Melville and her enemies, he compelled her by fear, force, and other unlawful means, to yield to his wishes, and admit him to her bed. From Dunbar he now carried his victim to Edinburgh. A divorce was procured from his wife on the ground of adultery, and the process having been hurried through the court, and the sentence passed, Bothwell was married to the queen at Holyrood, within a month after his acquittal of the murder of her husband, (May 15, 1567.)

Events of the deepest and most tragic interest now crowded on each other. The nobles who had advised the marriage, who had acquitted Bothwell, and abetted him in his career of ambition and outrage, at once dropped the mask, assembled their forces, and declared their determination to separate the queen from the murderer of her husband. As

¹ The reader who wishes to make himself master of the controversy should consult for the Queen's innocence, the work of Goodall, and that of William Tytler, with the volumes of Stuart, Whitaker, and Chalmers; against her, the Histories of Hume and Robertson, with the Dissertation by Mr. Malcolm Laing.

Scotland. they advanced and occupied Edinburgh, the earl and the queen retired; but in a few days they found themselves strong enough to confront their enemy on Carberry hill, near Musselburgh. Both factions, however, seemed anxious to avoid a battle, and an extraordinary agreement took place. Bothwell, whom they had declared their determination to seize and punish as the murderer of his sovereign, was permitted, without molestation, to ride off the field. The queen was assured of their unshaken fidelity; and so completely did she credit their asseverations, that she gave her hand to Grange, and suffering him to lead her to his associates, was conducted by them to the capital.

Mary confined in Lochleven castle.

Within an hour she discovered that she had surrendered herself to her mortal enemies. On her entering the city, a furious mob assailed her with execrations, and displayed before her a broad banner bearing the figure of her murdered husband. Amidst these indignities she was carried to a house, where she was so strictly guarded, that not even her maids were allowed access. And on the succeeding evening she was conveyed by the lords Lindsay and Ruthven a prisoner to Lochleven, a strong castle in the middle of a lake, from which all escape seemed hopeless.

Mary signs her abdication.

A.D. 1567.

From those who had thus shamelessly broken their solemn engagement, little else could be looked for but additional indignity and outrage. Mary was soon visited in her prison by lord Lindsay of the Byres, whose fierce temper and brutal manners peculiarly fitted him for the mission on which he was sent. He presented to her three written instruments. By the first she was made to resign the crown in favour of her son; by the second, the earl of Murray was nominated regent during the king's minority; by the third, a temporary regency was appointed to act until Murray returned from the continent. When Lindsay threw these deeds on the table, he plainly informed the queen that no alternative was left, but either to sign them without delay, or prepare for death, as the murderer of her husband. We are not to wonder that, aware that her life was in the hands of her bitterest enemies, Mary instantly obeyed.

Coronation of the young king.

Mary escapes from Lochleven. A.D. 1568.

The young king was now crowned, and Murray having arrived from France, assumed the regency, and entered upon the cares of government. He had not, however, for many months enjoyed the sweets of power, when the queen, by the assistance and ingenuity of a youth of sixteen, named Douglas, escaped in the night from Lochleven, and riding first to Seaton, and next day to Hamilton, soon found herself surrounded by a band of her nobles, and at the head of six thousand men. Mary was desirous to avoid war, and addressed repeated pacific proposals to the regent, who was then at Glasgow. She offered to call a free parliament; she was ready to deliver up to justice all whom he accused as guilty of the murder, provided those whom she arraigned of the same crime were also delivered up. This was peremptorily refused, her messengers were arrested, her adherents denounced as traitors; and the queen, aware that it must come to the decision of the sword, determined to await the arrival of additional forces, when she was hurried into an engagement with the regent, who threw himself in her way at Langside, as she was on her march from Hamilton to Dunbar. The result was calamitous. Her army was completely defeated, and she herself compelled to fly from the field with a slender train, who rode to Dundrennan, a distance of sixty miles, before they drew bridle. Next day she intimated her resolution of throwing herself on the protection of Elizabeth. From this step her friends passionately dissuaded her; but she declared she would trust to the assurances which she had received from her good sister; and crossing the Solway, she proceeded through Cockermouth to Carlisle. The return for this act of generous confidence and devotedness is well known. Elizabeth refused to see her, gave orders that she should be detained, kept her in

prison a miserable and heart-broken captive for fourteen years, and at last brought her to the scaffold.

From the imprisonment of Mary, (1568,) till the accession of James the Sixth to the English throne (1603,) there is an interval of thirty-five years. It is occupied by the successive regencies of Murray, Lennox, Mar, and Morton, after whose execution we have that portion of the reign of James which extends from 1581 to 1603. With a rapid review of the most interesting and influential events during this period, we shall conclude our labours.

The imprisonment of Mary left Murray the undisturbed Regency of Scotland; but the queen strenuously and indignantly asserted her innocence of the atrocious crimes of which she was accused; and as the English queen could bring forward no possible justification of her conduct in detaining Mary, except her alleged accession to the murder, it was evident that an investigation of the circumstances, if demanded by the accused party, could not in justice be refused. Mary offered to hear the accusation of her enemies in the presence of Elizabeth, and in the same presence to undertake her defence; but this was denied her. It was then proposed by the English ministers that she should consent to a public trial; but this she rejected as beneath the dignity of an independent sovereign. It was lastly suggested that her enemies should be summoned to produce their proofs before certain English and Scottish commissioners, and that the cause should be left to their decision.

A commission was accordingly held at York, but it led to political intrigues rather than judicial investigation. After some interval Murray was summoned to hold a private interview with Elizabeth at Westminster; and Mary again demanded to be admitted to the same presence, and confronted with her accuser. This was denied, while the English queen permitted Murray to bring forward his charge, and to attempt to substantiate it by letters, affirmed to be in the queen's hand-writing, addressed to Bothwell, and conclusive, as he contended, of her guilt. Again Mary demanded by her commissioners to be heard personally in her defence; and this being refused, they protested against further proceedings, and declared the conference at an end. Cecil, however, insisted that the inquiry should proceed; and having procured all the evidence which he judged necessary, he attempted to persuade the Scottish queen, as the only way of avoiding an ignominious exposure, to resign her crown. Her reply disconcerted him. "They have accused me," said she, "of the murder of my husband. It is a false and calumnious lie. It was themselves that counselled and contrived the murder, some of them were even its executioners. Give me what I am justly entitled to, copies of the letters they have produced; let me see and examine the originals, and I pledge myself, in presence of the queen, to convict them of the atrocious crime they have had the audacity to impute to me." This bold and unexpected tone embarrassed Elizabeth; and Mary having repeated her charge, insisted on having copies of the letters produced against her. The English queen evaded the request, and advised her to resign her crown. To this she declared that no persuasion would ever induce her; and under such circumstances the conferences were abruptly terminated. Murray, with his associates, received permission to return to Scotland. He carried away with him those alleged original letters, which the party whom they inculpated was never permitted to examine; and he left behind him copies, which were also concealed from Mary and her commissioners. It is from these copies, which the accused was never permitted to compare with the originals, that future authors have been obliged to infer the guilt or innocence of the queen; and certainly, if the opinion of Elizabeth is entitled to weight, it is clear that she considered the proof as defective. She and Murray shrunk from a public challenge of Mary; and however suspicious or inexplicable some of the

Scotland.
James VI.
A.D. 1668.

Commission at York.
Elizabeth's partial conduct.
A.D. 1568-1569.

Scotland. steps taken by this unfortunate princess may have been, her friends alleged that victory in the conferences at York and Westminster was on her side. Yet was she detained a captive by the very princess who had virtually declared her guiltless. All this might however have been anticipated; and no one who knew any thing of the unscrupulous policy of Elizabeth could have dreamed, that having once possession of the queen, she would ever permit her to return to her dominions. In her detention, she possessed the means of rendering Murray subservient to her wishes, of checking the Roman Catholic party, confirming the ascendancy of the protestants, and destroying the French interest and intrigues in Scotland. These were advantages with which no considerations of the individual guilt or innocence of her royal captive were likely to interfere.

Intrigues of Norfolk and Maitland. The subsequent career of Murray was bold and brief. He found himself called to a contest with a party, headed by the duke of Norfolk in England, and by Maitland and Grange in Scotland, whose object was, the restoration of the Scottish queen, and her marriage to Norfolk. The project had been encouraged by the Regent, whether at first sincerely or for selfish and ambitious purposes, is not clear; but in the end he betrayed the plot to Elizabeth, and was the main instrument in bringing this unfortunate nobleman to the scaffold.

Murray's subsequent career. The principles upon which his government was conducted were entirely protestant and English; and Elizabeth, who knew well and valued so able an assistant, cordially co-operated with him to overwhelm the queen's friends, and to extinguish all hopes of the Roman Catholic party in either country. But the task was more difficult than had been anticipated. She succeeded indeed in extinguishing the great rebellion, led by the earls of Westmoreland and Northumberland; but Murray found it impossible to prevent the intrigues of such men as Maitland, Grange, and their associates, who had known him long, and having assisted to raise him to the supreme power, were indignant to find themselves treated with severity or neglect. It was in the midst of this struggle between the regent and his former associates in ambition and guilt, that he was assassinated in the streets of Linlithgow, by Hamilton of Bothwellhaugh, who was incited to this act of revenge by a private injury, of which Murray was only the remote cause.

Murray is assassinated. A.D. 1570. His death found Scotland divided between two parties. On the one side were the Protestants who adhered to the young king, and regarded Elizabeth as their protector; on the other the queen's friends, who, being animated with the utmost rancour against their opponents, prepared instantly to appeal to the sword. Previously to this, however, they assembled a parliament at Edinburgh, and fulminated denunciations of treason against their enemies; while the protestants in their turn having chosen the earl of Lennox regent, convoked the estates at Stirling, and soon afterwards having made themselves masters of Dunbarton by a successful night attack, they took prisoner the archbishop of St. Andrews, who had shut himself up in the fortress, and executed him on the instant, without even the semblance of a trial. This outrage led to retaliation, and a civil war, remarkable for its ferocity, began to spread havoc through the country. On Mary's side were the duke of Chastelherault, the earls of Argyll, Athole, Huntly, Crawford, Rothes, and Cassilis, the lords Seton, Boyd, Gray, Livingston, Fleming, with the lairds of Buccleugh, Fernihirst, and many others; to whom we must add the able and crafty secretary Maitland, and the experienced soldier Kirkaldy of Grange. Of the king's party the nobles were neither so numerous nor so powerful. Lennox, Morton, Mar, and Glencairn, lords Lindsay, Glamis, Semple, Methven, Ochiltree, Cathcart, Ruthven, and some others, espoused this side; but if inferior in numbers, they were confident in the assistance of England, and in the support of the church, the commons, and the boroughs.

Such was the general comparative strength of each faction. Into the details of the contest we cannot enter; and indeed it had lasted but for a short time, when Lennox was slain in a skirmish at Stirling, and the earl of Mar, one of the most upright-minded and honourable noblemen in Scotland, was chosen to supply the vacant regency. To promote a reconciliation between the two factions, and to restore peace, order, and security of property, to a country distracted by intestine war, was the single purpose to which the new governor devoted himself; but he was thwarted by the ambition of Morton, and many of the higher nobles. These had so long been accustomed to derive individual advantage from public misery, that they laboured as earnestly to increase the contentions of the two parties, as Mar to remove them; and the governor, at last worn out by the struggle, and hopeless of effecting a reconciliation, sank into the grave.

He succeeded in the regency by the earl of Morton is chosen regent. His character. He was a man who has been justly described as possessing all the faults, some of the talents, but none of the good qualities of the regent Murray, of whom he was an old and tried ally. Sordid and selfish, implicitly devoted to the service of Elizabeth, whose countenance and support he felt necessary to enable him to retain his power, a venal judge, a cruel unrelenting soldier, a hypocrite in religion, and a profligate in private life, it is difficult to find a single virtue to relieve the dark monotony of his vices. Yet Morton had some of the great qualities which distinguished the house of Douglas. He was brave, decisive, politic; and he possessed that rapid power of discerning the instant to act with success, and that deep insight into human character which is commonly acquired by men of talent, bred up in scenes of civil commotion.

On his accession to the supreme power, the regent found the friends of the imprisoned queen still able to make head against him. The duke of Norfolk, who had been pardoned by Elizabeth, resumed his project of marrying Mary, and engaged in a correspondence with her. The duke of Chastelherault, and the earl of Huntly, lord Claud Hamilton, the lairds of Buccleugh and Fernihirst, with the indefatigable Maitland, and Grange, who was reputed the best soldier in Scotland, still supported her cause. Morton, however, strong in his own resources, and supported by Elizabeth, continued the war with success, and at last triumphed over opposition. Norfolk was brought to the scaffold, and the earl of Northumberland, treacherously delivered up by the Scottish regent, shared a similar fate. At last the castle of Edinburgh was invested by Sir William Drury, who joined the Scottish army with a formidable battering train. In this fortress, the single remaining hope of the queen of Scots, Kirkaldy of Grange commanded; and he held it bravely till the walls were destroyed, his guns silenced, and his provisions exhausted. Under these circumstances he surrendered, with his companion Maitland. To this step, Drury had induced him by a promise of favourable terms; but the English queen disregarded the stipulation, and handed over the prisoners to Morton. Kirkaldy and his brother were immediately executed, and Maitland only escaped the same scaffold by taking poison.

Morton now deemed himself so strong as to be independent of all parties, and his avarice and spoliations knew no bounds. He oppressed the church, of whom he had formerly affected to be the steadiest patron; and treated the young king and the nobles with so much haughtiness and severity, that he soon became an object of universal dread and hatred. James was now twelve years old, and it was not difficult for a faction of the nobles, who detested the regent, to persuade the young monarch that he ought no longer to be treated as a child. Acting by their advice, he accordingly summoned a parliament. It was numerously attended; and Morton, to the astonishment of all, the moment he learned the king's wishes, declared his willingness

Scotland. James VI. A.D. 1571. The Regent Lennox is slain.

State of Mary's party. Intrigues of Norfolk.

Fate of Kirkaldy and Maitland. A.D. 1573.

Morton's oppressive government. A.D. 1574-1577.

Scotland. This ready and implicit submission was rewarded by the passing of an act of indemnity, which included a general pardon for any alleged transgressions, and ratified his whole conduct as regent. It is in his anxiety to procure this, that we are to find the secret of his sudden relinquishment of the supreme power; and scarcely was it procured when this extraordinary man, by means of a successful intrigue with a portion of the family of Mar, found means again to become master of the king's person, and re-emerged into as great power and ascendancy as before. His usurpation, however, was this time more short lived. Atholl, Argyll, and some of the most powerful nobles, assembled their forces, and declared their resolution to liberate the sovereign from his ignominious captivity. Instead of a battle, however, the opposite factions came to a compromise, by which the veteran tyrant was shorn of a large part of his power, and the young king recovered something of his independence.

James began now to show that strong propensity to favouritism which marked his future career; and the effects of this weakness were seen in the sudden rise into power of Esmé Stewart, duke of Lennox, and captain Stewart, second son of lord Ochiltree, and afterwards the notorious earl of Arran. Of these, the first was a high-born nobleman, of graceful address, amiable feelings, and common-place understanding; but the second, of birth and connections much inferior to Lennox, was ambitious, intriguing, daring, and unprincipled, and soon managed to gain an influence over both the young king, and the duke his favourite. With these advantages, an overwhelming opposition was soon raised against Morton; and as his exactions and cruelty had made him universally odious, it was in vain that his steady friend, the English queen, interposed to save him. Her interference indeed rather accelerated his fate, and the news that she meditated an invasion, roused the spirit of the young king and of his people to instant opposition. When Elizabeth, however, received intelligence that a Scottish army was assembled, she prudently withdrew from the contest; and Morton abandoned to his fate, was arraigned as an accomplice in the king's murder, at the instance of captain Stewart, who had recently been created earl of Arran. Of his guilt there can be little doubt, and he himself, after the jury brought in their verdict, and he had received sentence of death, acknowledged that he was privy to the intended murder. But his trial was conducted, even in those days of prostituted justice, with a reckless disregard of every form of law; and all were aware that the jury, of whom many were his bitter enemies, would, under any circumstances, have found him guilty. He died as he had lived, boldly, expressing a calm contempt of death, and exhibiting all the outward marks of repentance.

The death of Morton was followed by the nominal accession of the young king to the supreme power, but by the actual transmission of that power into the hands of his favourites, Lennox and Arran. This last nobleman, owing to the weak and flexible character of Lennox, soon came to rule all, and his rapacity, profligacy, and open defiance of public opinion, completely disgusted the nation. The result was a conspiracy for his ruin, headed by the earl of Gowrie. This nobleman and his associates having contrived to make themselves masters of the king's person, at the castle of Ruthven, and having removed Lennox and Arran from all authority in the state, directed the government as they judged best for their own interests. But the character of the king, although full of many strange contradictions, began now to exhibit a greater degree of talent and energy than his opponents were aware of; and although compelled to dissemble, and showing no symptoms of discontent with this change of masters, James was really disgusted with the durance in which he was held by Gowrie and his faction. With an ability which proved the more successful, because his

adversaries were unprepared for it, he contrived to organize a party, and free himself from his servitude; but it happened unfortunately that at this crisis the earl of Arran regained his liberty, and returning to court, soon resumed his baneful influence over the fond and facile monarch. It was by his advice that the king, who had first been inclined to use his victory over the faction of Gowrie with moderation, exchanged this wise resolution for vindictive measures; and although Elizabeth strongly remonstrated against it, Gowrie ex he brought Gowrie to the scaffold, and drove his associates into banishment.

Arran was now supremely powerful; but the venality, Arran tyranny, and abuses of his government, soon became intolerable, and worked their own cure by producing a counter-revolution, in which the despotic favourite, after having first courted, and then quareled with the Scottish church, in vain attempted to recover his influence by means of the English queen, and was at last chased from court by the associated lords, who made themselves masters of the king's person. A government, upon a model which admitted the principal nobility to a share in the councils of the state, was now established; and Arran, deserted by all parties, sank into insignificance.

It was impossible that Mary, who had been detained a captive by Elizabeth, contrary to every principle of honour and justice, should not have exerted herself to regain her freedom; and the Roman Catholic party in England were not only interested in her success, but regarded her as their best security against Elizabeth and the Protestant faith. This led to a succession of intrigues, which were discovered by the penetration and activity of Elizabeth's ministers, the discovery only serving to increase the rigour of her confinement. At last the Scottish queen having been arraigned (unjustly as afterwards appeared) of an accession to the conspiracy of Babington, the object of which was the assassination of Elizabeth, and the restoration of the ancient religion, she was brought to trial before a commission, whose jurisdiction she at first peremptorily declined as an independent and sovereign princess. It was unfortunate for Mary that she did not continue in this resolution; but in the idea that a refusal might be construed into an admission of guilt, at last condescended to plead. The consequence was, what might have been expected from the nature of the evidence, the constitution of the court, and the supreme authority of Elizabeth. Mary was found guilty of having compassed divers matters tending to the death of the queen; and after many affected delays, and an atrocious attempt to induce her keeper, Paulet, to dispatch her secretly, Elizabeth signed the warrant for her execution, which was carried into effect on the 7th of February 1587. The meekness with which she received the intimation of her sentence, and the admirable and saintly fortitude with which she suffered, formed a striking contrast to the despair and agony which not long afterwards darkened the death-bed of the English queen.

It might have been expected that if any thing could have roused the king of Scots, it would have been the cruelty and injustice to which his mother had fallen a sacrifice; and for a moment there was an ebullition of indignant feeling. But Elizabeth sent him an artful apology. The blame of the execution was laid upon Davison, her secretary, an innocent and upright man, who simply obeyed her orders; and with that unscrupulous falsehood which this princess seldom hesitated to employ when necessary to carry through her designs, the unfortunate statesman was sacrificed, that his royal mistress might escape. But the English queen had still a firmer hold over the young king of Scots. He regarded the succession to her throne as his undoubted right, and dreaded to irritate her personal feelings, or alienate her Protestant subjects, by appearing to place himself at the head of the Roman Catholic party, who burned to avenge the death of their royal mistress. In vain, therefore, they

James VI.
A.D. 1578.
Morton
resigns the
regency.

Rise of
Esmé,
duke of
Lennox,
and the
earl of
Arran.

A.D. 1579.

Morton is
tried, con-
demned,
and exe-
cuted.
A.D. 1581.

The earl of
Arran at
the head of
the govern-
ment.

Raid of
Ruthven.
A.D. 1582.

Scotland.
James VI.
A.D. 1583.
Arran re-
gains his
influence.

banished,
and a new
govern-
ment
formed.

Intrigues of
the Roman
Catholics
in favour of
Mary.

Babing-
ton's con-
spiracy.

Mary's
trial and
execution.
A.D. 1587.

Elizabeth's
base con-
duct.

Scotland. looked to the king, who, after a short interval, relapsed into his usual pacific frame of mind, and celebrated his entrance upon majority, by an attempt to abolish those sanguinary feuds amongst his nobility, which had increased to an alarming height, and threatened to pull the country to pieces.

James VI. A.D. 1567. This laudable endeavour, which did not meet with the success it merited, was followed by James's marriage to the princess Anne of Denmark; an alliance which Elizabeth, with her usual jealous and capricious policy, endeavoured to prevent. But the Scottish king, with unwonted spirit and energy, sought his bride in person in her father's court, and having solemnised his marriage at Upslo, returned with her to Scotland.

The earl of Bothwell's attempt to seize the king. During his absence the kingdom had been unusually prosperous and happy; but it was soon afterwards embroiled by the intrigues and ambition of the earl of Bothwell, who, leaguely with the Roman Catholic faction, attacked the palace of Holyrood with the design of seizing the king's person, and placing himself at the head of the government. A second attempt of the same kind at Falkland was not more successful; and yet such was at this time the impotent state of the law, and the weakness of the royal authority, that these repeated treasons escaped unpunished, and Bothwell lived not only to defend but to repeat them.

State of Scotland. Scotland at this moment presented a melancholy picture. The intrigues of Philip the Second had encouraged the Roman Catholic faction, which was led by the earls of Huntly, Errol, and Angus; and James, aware of the great power possessed by the Romanists, both in Scotland and England, was fearful of treating them with severity, lest he should raise a formidable opposition to his right of succession, which must open on the death of Elizabeth. But this was not the only source of disquiet. The excessive lenity of the king had fostered the feudal quarrels among his nobles, impunity led to new excesses, and the turbulent and audacious Bothwell once more appeared upon the scene, and made repeated attempts to seize the royal person, and administer the government at his pleasure. To these sources of disquiet, were added the interference of Elizabeth, which roused the jealousy of the king, and the intolerant spirit of the protestant ministers, who, horror-struck by the discovery of the intrigues of the Roman Catholic lords, recommended their being treated with the utmost severity.

James attacks the Catholic Lords. Violence of the ministers. These combined causes transformed the kingdom into a scene of almost perpetual tumult and bloodshed; but the monarch at last becoming convinced of the treasonable purposes of the popish earls, assembled an army, and reduced them to the last extremity of distress. Bothwell, too, was driven into exile, and the country began to breathe anew, when James found himself involved in a contest with the protestant ministers. The cause of this dispute was the king's wish to lean to the side of mercy in his conduct to the popish lords. It was reported that Huntly, their leader, had been admitted to a secret interview. The clergy, alarmed to the utmost, appealed to their congregations; they defended the conduct of Black, a minister who had openly attacked the court and the queen, in a seditious harangue; they haughtily declined the authority of the privy council; and by their violence, they excited a tumult in Edinburgh, which compelled the monarch to retire to Linlithgow. Under these trying circumstances, the king acted with extraordinary energy, and jealous of so bold an interference with his prerogative, restored tranquillity to the capital, punished the insurgent citizens, compelled the ministers to fly to England, and, according to his original intentions, extended his forgiveness to the popish lords who made a recantation of their errors.

James's plan for introducing Episcopacy.

James, who had been alarmed at the late violence exhibited by the presbyterian clergy, now became intent upon

a plan for new-modelling the church; but aware, that if the measure originated in any other quarter than that of the clergy themselves, it would inevitably miscarry, he artfully prevailed on the General Assembly to second his views. The commission appointed by this ecclesiastical council were induced to complain that the church was the only body not represented; and the king, whose object it was to restore episcopacy, procured an act to be passed, by which those ministers upon whom he had conferred the vacant bishoprics and abbey were entitled to sit in parliament. When this measure came again to be debated in the General Assembly, it encountered great opposition. "Deck these intruders as you will," exclaimed one of the most zealous presbyterians, "under all their disguise I see the horns of the mitre." Yet after a long debate, a majority of the General Assembly declared in its favour; and it was resolved that ministers might lawfully accept a seat in parliament, and that fifty-one members should be chosen as representatives of the church in the supreme court of the country. When, however, the question arose regarding the spiritual jurisdiction which should belong to these persons, the General Assembly so effectually shackled and abridged their powers, that they remained wholly dependant upon this great ecclesiastical council, and exercised no separate spiritual jurisdiction. It was James's hope, that, in the course of time, they would shake off these fetters, but, in the mean time, they could claim none of the privileges belonging to the episcopal order.

When the monarch was thus employed, and his kingdom was enjoying a degree of tranquillity to which it had been long a stranger, the minds of the people were suddenly agitated by a sudden and mysterious attempt made at Perth upon the life of the king by the earl of Gowrie and his brother, Alexander Ruthven. These young men were the sons of that earl of Gowrie who had been executed for treason, and it is probable that a desire to revenge their father's death led to their miserable and ill-concerted enterprise; but much obscurity hangs over the whole transaction. It is certain that Ruthven induced the king, by a feigned story, to accompany him with a slender train from Falkland to his brother's house at Perth. Here he contrived to separate James from his attendants, and leading him into a remote apartment, threw himself upon him, seized him by the throat, and drew his dagger. The king struggled to get to the window, and calling out treason, alarmed his nobles, who rushed into the room, stabbed Ruthven to the heart, and when Gowrie attempted a rescue, put him also to death on the spot. Both these unfortunate men being slain, the utmost pains were taken to detect their associates, to unravel the plot, and to ascertain their precise object, but with so little success, that to this day the mystery is not solved.

The queen of England, now in her seventieth year, began soon after this to droop, and her constitution, hitherto uncommonly vigorous and unimpaired, was evidently breaking up. Of all this James was well aware. He had secured the friendship and good offices of Sir Robert Cecil, her chief minister, who, unknown to his mistress, carried on a secret correspondence with the Scottish king; and acting by his advice, he had employed every effort to conciliate the affections of the English people, and to acquire the support of the most powerful of the English nobility. These judicious precautions were attended with the wished-for result. James was Elizabeth's undoubted heir; and on the death of this princess, an event which took place on the 23d of March 1603, he succeeded, with the unanimous consent of the nation, to the throne of England. This great and auspicious event closes the history of Scotland as a separate kingdom.

(P. F. T.)

STATISTICS.

Statistics.

Physical
features
and geo-
logy.

The mainland of Scotland lies between 54. 38. and 58. 41. N. Lat., its extreme points being the Mull of Galloway in the south and Dunnet Head in the north. It extends from 1. 46. to 6. 14. W. Long., from Peterhead on the east to Ardnamurchan Point on the west coast. Its greatest length, nearly due north and south, in 5. W. Long., from the Mull of Galloway to Cape Wrath, is about 280 miles; its greatest breadth, from Buchanness to the coast of Applecross, above 150 miles. From the Firth of Forth to the Clyde, and from the Dornoch Firth to Loch Broom, the distance is scarcely 30 miles. The extent of sea-coast, from the numerous indentations on the western shore, is very great, or probably above 3000 miles. Its area is still very uncertain, the mainland being estimated at from 25,500 to 26,400 square miles; of which about 500 are occupied by fresh-water lakes. Including the islands, the total extent is 29,600; or in round numbers, 30,000 square miles. St Kilda, the most remote of the Hebrides, lies in 8. 35. W. Long.; Lambaness, the most northern point of Unst in Shetland, in 60. 49. N. Lat.

The physical features of this country, as of other regions of the earth, are intimately connected with its geological structure. In this respect Scotland forms three very strongly marked divisions, which are better described separately. These are, *first*, the Southern Division, or region of the older Palæozoic or Silurian formations; *second*, the Central Division, or region of newer Palæozoic, or Devonian and carboniferous formations; and *third*, the Northern Division, or region of the crystalline and metamorphic formations. The islands on the west and north form a portion, or rather a kind of appendix, to the last division. Each of these we shall notice in the order now indicated.

I. The Southern, or older Palæozoic region, extends from the border of England to an irregular line running E.N.E. from the Firth of Clyde, near Girvan, by Dalmellington, Crawfordjohn, Skirling, and the north base of the Moorfoot Hills, to the east coast near the Siccar Point. It consists predominantly of a great formation of Lower Silurian strata, broken through at intervals by felspar-porphyrries, trap-rocks, and, in Kirkcudbright, by large masses of granite and syenite. The strata have been forced up in various anticlinals and convolutions; but the lowest beds occur along a line from the vale of the Teviot to the vicinity of Dumfries; the newer deposits, chiefly near the northern margin. These strata form an extensive mountain range, known as the Southern Highlands, and crossing the island in a series of connected chains from St Abb's Head to Stranraer and Loch Ryan. Taken generally, the mountains show broad flattened forms, intersected by deep, pastoral glens, widening out into broader valleys or dales along the course of the principal rivers. The mountains are rarely rocky or precipitous, but covered by grass and moss to their summits, which seldom rise above 1500 to 2000 feet. The greatest elevations are found in Peeblesshire and Dumfriesshire, near the sources of the Tweed, Clyde, and Annan, where Dollar Law (2680 ft.), Broad Law (2754 ft.), White Comb Edge (2695 ft.), Hartfell (2638 ft.), and Ettrick Pen (2268 ft.), are some of the culminating points. Farther east, Dundreich (2004 ft.), Windlestraw Law and Blackhope Scar (2130 ft.), are among the highest summits. On the west, the Lowther Hills (2522 ft.) and Queensberry Hill (2279 ft.), between the Annan and Nith; the Black Larg (2890 ft.), and Cairns Muir of Deugh (2597 ft.), between the latter river and the Dee; and beyond the latter, Merrick Hill (2764 ft.), are worthy of note. Criffel (1867 ft.) is conspicuous from its position. The Cheviots, on the border of England, with Cheviot (2668 ft.) and Carter Fell (1502 ft.), are a parallel group, but of very distinct formation, consisting of felspar-porphry, and trap-rocks, breaking through

and elevating the lower carboniferous strata. Connecting these two chains some isolated mountains range along between the sources of the Teviot and Liddel, including the Wisp Hill (1950 ft.), the Maiden Paps, and Great Moor Fell.

The valleys are best noticed in connection with their respective rivers. Of these the most important is the Tweed, with a length of 100 miles, and draining a basin of 1800 square miles in Scotland alone. The upper part of its course is chiefly in longitudinal valleys, parallel to the Silurian mountain-ridges. Below the junction of the Lyne, it intersects the main chain by a series of transverse hollows; and receiving on the left the Leithen, Gala, and Leader; on the right, the Manor, Quair, Yarrow, and Ettrick, it enters the lower valley near Melrose. Here it is joined by the Whitadder from the north, the Teviot on the south, and flows along the fertile plains of the Merse to the sea, at Berwick. This district, with the connected portions of Roxburghshire, forms some of the most fertile land in Scotland, resting on the upper old red and carboniferous formations, broken up by craggy knolls of trap, the sites of many of those ancient keeps famed in Border story.

Farther west are the vales of the Liddel, Esk, and Annan; wild and pastoral in their higher portions; more cultivated where they traverse the carboniferous and new red or Permian strata, forming the shore of the Solway Firth. The low ground in this district is in many places covered with deep accumulations of peat (Solway Moss and Lochar Moss), concealing the remains of ancient forests, but now rapidly being converted into arable fields under the progress of modern improvements. The Nith, 58 miles long, rises on the north side of the Southern Highlands, and traversing them by a deep valley, partially filled with carboniferous and Permian deposits, has few important tributaries. Its valley, too, is comparatively narrow, but in many places beautifully wooded and fertile. The Dee, 45 miles long, has its sources in the wild granite mountains south of Loch Doon, and is joined by the Ken, where they expand into the long narrow lochs of the same names. Beyond the granite eruptions of the Cairnsmuir and Loch Doon mountains the country rapidly declines into low undulating moors, and the rivers Cree, Luce, and Stincher, have no peculiarities worthy of notice.

Loch Doon, 6 miles long by 1 broad, Loch Ken in Kirkcudbright, already mentioned, and St Mary's Loch in Selkirkshire, more celebrated for poetic associations than for its magnitude, are the only lakes in this district deserving mention. The others are mere mountain tarns; and the rarity or absence of these accumulations of water is one of the most striking contrasts between the southern and northern divisions of the country. Springs are everywhere common in the mountain districts, but rarely remarkable either for their size or other properties. The mineral springs of Moffat and Innerleithen are the only ones celebrated for their medicinal qualities.

Notwithstanding its mountainous character, this region produces very little mineral wealth. Lead ore has been mined for centuries at Leadhills in Lanarkshire and Wanlockhead in Dumfriesshire, and very recently with considerable success. The ores contain a considerable proportion of silver, which is extracted from them at Wanlockhead, and gold was formerly gathered from the alluvial deposits in that vicinity. Attempts to work lead have been made in various other places; antimony ore occurs near Langholm and New Cumnock, and copper mines have been opened in several localities in Kirkcudbright. Coal is only wrought near Canonbie, in Dumfriesshire; and lime, except in connection with the carboniferous strata in Roxburgh and Dumfries, only in some thin beds on the Stincher, in Ayrshire.

Statistics.

Statistics. II. The central or newer Palæozoic region of Scotland contains only about 5000 square miles of extent, or less than one-fifth of the mainland, but is by far the richest and most important in a political point of view. It embraces the basins of the Firths of Clyde, Forth, and Tay; the upper sources of these rivers lying in the southern and northern divisions. On the south it is bounded by the line already mentioned, and on the north by another nearly parallel line, from the mouth of the Gare Loch on the Firth of Clyde, to Stonehaven on the east coast, passing near Aberfoyle, Callander, Comrie, south of Dunkeld, Cortachy, and Fettercairn. Geologically, this region consists of the Devonian, or old red sandstone, and the carboniferous formations, broken through or covered over by extensive trap-rocks. The old red sandstone is chiefly seen on the sides of the valley, being concealed in the centre by the carboniferous beds. The most extensive mass is on the north, where it runs continuously from the Clyde and lower end of Loch Lomond, through Stirling, Perth, and Forfar shires, to the shores of Kincardineshire on the east. The lower beds, or Forfarshire flagstones, marked by their characteristic fossils (*Cephalaspis*, *Pterygotus*, &c.), are extensively quarried and exported, as the well-known Arbroath pavement. Near the mountains a coarse conglomerate or pudding-stone prevails, which, in the gorges cut by the rivers in their descent, forms some of the most picturesque scenery in Scotland, as Brack Linn, near Callander; Monzie; Craighall, on the Erich; Lintrathen, on the Isla; Cortachy, on the South Esk; and the Burn, on the North Esk. On the Tay, below Perth, higher beds of the old red occur with peculiar fossil-fishes (*Holoptychius*, &c.), as at Clashbennie and Balrudery. The carboniferous formation consists of two divisions, the Lower, including the mountain limestone, with thick masses of sandstone and shale, and the Upper or Coal Measures, containing the chief beds of workable coal. The whole formation covers an area of 1500 square miles, of which, however, less than two-thirds, or 600,000 acres, contain workable coal. The beds wrought are generally one to two or three yards in thickness; those of greater dimensions, like the Dysart main coal, seven yards thick, being made up of several beds of coal, alternating with shale. Besides the coal, clay ironstone in vast abundance, and especially the valuable black-band, occurs in most portions of the formation. Less important are the beds of fire-clay used for bricks and crucibles; and the alum shales, from which alum and other chemical products are manufactured. The annual value of the mineral products of this part of Scotland cannot be estimated at less than—

Iron, two and a half to three millions sterling.

Coal, three to three and a half do.

Lime, &c., one and a half to two do.

or, on the whole, from L.7,000,000 to L.8,000,000 sterling.

The larger masses of igneous rocks in this district are generally found forming the hills; but where they occur in the low grounds, as in East Lothian, from their varied composition, add much to the fertility of the soil. The high grounds can scarcely be designated mountains; the chief group south of the Forth being the Pentland Hills, with Carnethy (1881 ft.), the Kipp Hills (1806 ft.), and W. Cairn (1859 ft.), as their highest summits. Beyond the Clyde, Tinto Hill (2308 ft.) connects this range with Cairn Table, and other summits, in Ayrshire. North of the Forth, the Kilpatrick, Campsie, Ochil, and Sidlaw Hills, from an almost continuous range of trap-rocks, interposed between the old red sandstone and coal formation. The Kilpatrick Hills, commencing near Dumbarton, on the Clyde, are a low but picturesque group. The Campsie Fells are also little elevated (King's Seat, 1510 ft.), and more undulating and uniform in outline. The western portion of the Ochils attains greater heights, as in Dun Myat (1345 ft.), Ben

Cleugh (2352 ft.), and the King's Seat (2100 ft.); but the eastern portion along the Tay falls to 300 or 400 feet. The Sidlaws, in Forfarshire, are composed principally of lower old red, elevated by trap, with Dunsinnan Hill (1114 ft.), and Cairn Owl (1100 ft.), as remarkable points. Some of the lower trap-hills in this district, as North Berwick-Law (612 ft.), Arthur Seat (823 ft.), the Lomond Hills (1471 ft.); and the rocks on which Edinburgh, Stirling, and Dumbarton Castles are built, are conspicuous objects from their isolation.

This district is drained by three of the chief rivers of Scotland,—the Clyde, Forth, and Tay, with others of less importance. The first of these, the Clyde, is the only large river flowing to the Western Sea. Rising in the centre of the southern Highlands, and flowing first N. and N.E., till near Biggar, it then bends round the base of Tinto, and joined by the Douglas and other tributaries, runs N.W. to the Firth, below Greenock. The well-known falls occur near Lanark, where the river is changing its course, the first, that of Bonnington, being about 30 feet high; the second, Corra Linn, about 70 feet, and the third, Stonebyres, not less than 76 feet, but broken into three falls. Above the Falls the valley is often bleak and moory, but lower down becomes more fertile, richly wooded, and adorned with numerous orchards and thriving towns and villages. At Glasgow, the river becomes navigable, the shoals and other obstructions being removed by dredging, and the water straightened and confined by artificial banks. The total length of the Clyde is about 90 miles, and its basin under 1500 square miles. The Firth into which it falls is rather one of the great indentations of the western coast, than a portion of the river; but is very important as conveying commerce and wealth into the centre of the richest mineral district in the country.

The Forth rises near Ben Lomond, and is joined above Stirling by the Teith, a larger and longer stream. In their upper course, amidst the Highland mountains, they are wild and rapid rivers; but after entering this district their course is slow and winding. The total length of the Forth above Alloa is about 50 miles; of the Teith, to the same town, about 65 miles. The banks of the river are formed by low alluvial plains or *carses*, remarkable for their fertility, and producing rich crops of wheat and other grains. They have evidently been submerged by the sea till a recent geological period; and from Blairdrummond westwards are often covered by peat, a still more recent accumulation, apparently formed in some cases since the island was first invaded by the Romans. The tide flows to Stirling; but the Firth is considered as beginning at Alloa, from which it extends for 50 miles to the Isle of May. The Carse lands continue to Borrowstounness, whilst the lower shores in Fife and the Lothians comprise some of the most fertile and best cultivated land in the kingdom. The Firth, too, expanding from 2 miles wide at Queensferry to 6 at Leith, and 15 to 10 lower down, is one of the best natural harbours of refuge on the east coast of Britain, and consequently, from an early period, one of the chief seats of Scottish commerce.

The Tay, the monarch of Scottish, and in size of basin and amount of water carried to the sea, probably also of British rivers, rises in the northern region. The main stream has a length of 100 miles above Perth, or 130 miles to the opening of the Firth at Buddon-Ness. Its basin comprises about 2400 square miles, or one-eleventh of the mainland, about three-fourths belonging to the river above Perth. It is also remarkable for the number and size of its tributaries,—the Garry, Tummel, Lyon, Earn, Isla, and Erich, and the wide range of country from which they draw their waters. We shall notice the upper portion in connection with the northern district, to which it naturally belongs. Its lower basin falls chiefly in the valley of

Statistics.

Statistics. Strathmore, inclosed between the Grampians on the north, and the Ochils and Sidlaw Hills on the south. This great valley, including Strathearn, has an undulating surface, but nowhere rises far above the sea-level. It is thickly covered with alluvial matter, resting on the old red sandstone, and the soil, consequently, is highly fertile. The Carse of Gowrie, between the Sidlaws and the Firth of Tay, has long had the reputation of possessing the richest and most productive soil in Scotland, derived probably from the decomposing trap-hills which shelter it on the north. The South Esk, 40 miles long, and terminating in the wide but shallow bay of Montrose, nearly dry at low water, and the North Esk, traverse the northern part of this district. In physical features and capabilities, this tract is a mere continuation of the valley of Strathmore, the most marked peculiarity of the plains of Kincardine being the deep red tint of the soil. The precipitous character of the coast, well seen at the Red Head, and north from Bervie to Dunnottar, is interesting as proving the waste which the conglomerate and other hard beds of the red sandstone have undergone from the action of the sea.

Like the southern region, the centre of Scotland is remarkable for the rarity and small size of its lakes. Loch Leven, in Kinross, 4 miles long by 2 broad, is scarce an exception, and is best known for the picturesque ruins of its island-castle, the scene of Queen Mary's imprisonment and romantic escape (1568) previous to the battle of Langside, and her ill-fated flight into England. It produces abundance of excellent trout, the fishery being let for a considerable sum, and was long remarkable as the only Scottish lake that yielded any revenue to its proprietors. The springs in this district also have little interest. Some in the coal formation are strongly impregnated with iron; and a few near the intrusive igneous rocks contain so much mineral matter as to be used for medicinal purposes. The best known of the latter are, Airthrey, Pitcaithley, and St Bernard's, near Edinburgh.

III. The northern division, or the region of the crystalline and metamorphic rocks, comprises the whole country north and west of the boundary line of the central division, drawn from the Firth of Clyde to Stonehaven. It contains above 19,000 square miles, or fully two-thirds of the whole country; and though generally far inferior in fertility and population to the other divisions, is in many respects more interesting in its structure and physical features. The western portion is usually named the Highlands, occupied by a people chiefly of Celtic descent, and still retaining their old language, and many peculiarities of habits and modes of life. No well-defined limit separates the north Highlands from the Lowlands on the east coast. After crossing the Spey, however, near Charlestown, the boundary line between the Celtic and Lowland population almost coincides with that dividing the crystalline rocks from the districts coloured in the geological map as belonging to the old red sandstone and newer formations. We may also mention that, though named Highlands, this term is only applicable to the elevation of the mountains, the inhabited and cultivated ground along the river-valleys and sea-coasts, being usually at a lower level than many of the dales in the southern division.

The geological structure of this vast region, and the boundaries of the formations, can only be understood by reference to a geological map,¹ and we here chiefly notice the points bearing on its physical characteristics. Its southern boundary is formed by a narrow zone of clay-slate, commencing in Arran and running along the foot of the Grampians to near Stonehaven. In many places it is quarried for roofing-slates, and might be in many others, if required for the wants of the country. This rock again

appears in the north of Aberdeen and Banff shires, and on the west coast, in a thin band from Islay to Fort-William. In all these localities it is also wrought for economic purposes, particularly at Easdale and Balahulish, and is everywhere distinguished from the similar rock in the south by its distinct cleavage. The next formation to the north is the micaslate, which, commencing in the lofty cliffs of the Mull of Cantyre, forms the greater part of that curious peninsula in a series of low, rounded hills. It extends along the west coast to Loch Melfort, where it meets the trap-hills of Lorn, and thence N.E., in loftier and more picturesque ridges, through the upper part of Perthshire to Glen Prosen, in Forfarshire. There it contracts greatly, but still forms a continuous band, on the southern declivity of the Grampians, to the east coast. A less extensive mass forms the east side of Loch Linnhe and the Great Glen from Loch Etive to Fort-Augustus, including the lower parts of Glencoe, the valley of the Spean, and Glenroy, with its singular parallel roads. Other portions of micaslate occur in Banff and Aberdeenshire, and again in the north of Sutherland. It is often, especially near Loch Fyne, associated with chlorite and talc slates. It is rarely turned to any other use than as a coarse building stone and imperfect roofing slate; but its lofty mountains, with ridged and serrated summits, and its valleys fringed with natural wood and adorned with long winding lakes, form some of the finest and most romantic scenery in Scotland.

The next formation is the gneiss, covering about 10,000 square miles, or fully one-third of the whole country. One great mass, commencing on the outskirts of Ben Cruachan, stretches N.E. along the Grampians to the shores of Kincardine and Aberdeen, from Stonehaven to Fraserburgh, and north through Inverness to the higher parts of Nairn and Elgin. This tract, especially on the N.E. line, is everywhere broken by granite, in some places in mere veins, in others in mountain masses. Another equally extensive gneiss region extends on the west of the Great Glen, from Morven and the Sound of Mull, through Inverness, Ross, and Sutherland to the extreme northern coast of Scotland, between Cape Wrath and Caithness. The Long Island, or outer Hebrides, is a third corresponding mass, once perhaps equally wide-spread, though now only the scattered fragments forming these islands remain. In the two latter tracts, granite in large masses is less common than in the first, but still abounds in veins, especially in the Hebrides and on the western shore of Sutherland and Ross. In mineral character the gneiss varies greatly from coarse crystalline varieties, scarce distinguishable from true granite, to fine-grained, distinctly schistose and stratified rocks. The general dip of the beds is at moderate angles to the S.E.; but in Sutherland and Ross, particularly on the west coast, S.W. dips with a N.W. strike prevail. Different parts of this vast formation may not improbably be of diverse age. On the N.W. coast it underlies all the other formations; in the centre of Sutherland a newer gneiss has been supposed to occur; whilst in the Southern Grampians this rock is apparently superior to the mica slate. Except as a building stone the gneiss has no economic value, and in this country is singularly devoid of mineral wealth. As a general rule, too, the regions formed of this rock are far from picturesque,—wide moory straths, rounded lumpish hills, and dark, irregularly winding lakes, with treeless shores, are the characteristic features.

The other primary rocks in this region require no notice, except quartzite, found in considerable abundance, as subordinate or superior to gneiss, in the Grampians of Perth, Aberdeen, and Banff. The range of the granite has been already noticed, forming some of the highest summits of the Grampians, Ben Macdui, Cairngorm, Loch-na-Gar, and

¹ See *Geological Map of Scotland*, by Professor Nicol, Edinburgh, 1858.

Statistics. Mount Battock; but often also seen in the low grounds, as in the Moor of Rannoch and the plains of Aberdeenshire. Porphyry is the most important of the other igneous rocks, occurring in large mass near Inverary, composing the wild buttressed mountains of the dark Glencoe, and in the summit of Ben Nevis (4406 ft.) forming the culminating point of the whole British isles.

The next formation in the ascending series, is the red sandstone of the west coast, with the superposed quartzite and limestone, till lately regarded as equivalent to the old red sandstone on the east side of the island, but now as a much older formation. Fossil shells of species found also in the Lower Silurian strata of North America, occur in the limestone of Duirness; and this rock, with the quartzite, is now classed by Sir R. I. Murchison as Lower Silurian, and the inferior red sandstone as Cambrian.¹ The red sandstone, resting in nearly horizontal beds on a great water-worn plateau of gneiss, and covered in the interior by quartzite, forms a series of most peculiar and majestic mountains, almost from Cape Wrath down to Applecross and Skye. First in order, from the north, are Foinaven (3015 ft.) and Arkle, their summits of dazzling white quartzite, mistaken by Pennant for marble. The isolated conical Stack was proposed by Macculloch as favourable for repeating the Schiehallien experiment on the density of the earth, but is in too close proximity to some more gigantic neighbours. Ben More Assynt (3281 ft.) is the chief of another noble group, with Queeniag, Canisp, and Suilven as outlying members. Snilven, or the Sugar Loaf, named from its conical appearance from the sea, but in reality a long serrated ridge, is a well-known landmark on the western coasts. Coul More, Coul Beg, and Ben More Coygach, north of Loch Broom, with Ben Goolish and Kea Cloch, on the south, are also remarkable mountains. Ben Lair, Sleugach, and Ben Ey, on Loch Maree; Leagach and Ben Alligin (3015 ft.) in Gairloch, with some less known summits between Loch Torridon and Loch Carron, may complete this enumeration. Carved out, as it were, by denudation, from the solid mass of sandstone and quartzite, these mountains show the waste which the land has undergone more strikingly than any other part of the British islands.

The old red sandstone, or Devonian formation, covering most of Caithness, on the mainland, and spreading north over the Orkneys and part of Zetland, again appears south of the Scarabins and Ord, bordering the Dornoch and Moray Firths on the west. It then fills the Great Glen to Meal-fourvie and Foyers, and stretches by Culloden and the plains of Nairn and Moray to the east side of the Spey, reappearing in patches in Banff and near Aberdeen. The great conglomerate is regarded as the lowest portion; the Caithness flags, with their singular extinct fishes, and extensively quarried, are the central group; whilst the light red sandstones of Duncansby, Dunnet Head, and Hoy Head, in Orkney, are the upper division. The fine yellow sandstone of Elgin, remarkable for its numerous reptilian remains (*Telerpeton*, *Stagonolepis*, *Hyperodapedon*), is still included in this formation, though probably a newer group.

The newer secondary deposits occur in such limited extent that they exert no influence on the physical aspect of the country. The most important on the east coast are the patches of lias and oolite found in the north of Aberdeenshire, at Elgin, near Cromarty, and along the Sutherland coast from Dunrobin to Helmsdale, where, at Brora, they contain workable coal. The greensand and chalk flints found in Aberdeenshire, though curious, are of less importance. On the west coast, lias and oolite beds are widely

Statistics. dispersed round the shores of Skye, Mull, and some other of the islands, and in Morven, Arisaig, and Applecross on the mainland, but now form no continuous tract. The trap-rocks covering them in Skye, Mull, and Morven, and also wide-spread on the mainland in Lorn, show that this part of Scotland has been for a long period the seat of a powerful volcanic action. Like the connected trap formations in the north of Ireland, some portions, as those overlying the Ardtun Leaf-beds in Mull, cannot be more ancient than the Eocene tertiary.

The country formed of these various rock masses may be described generally as a great plateau, deeply cut into valleys, and crowned with mountains rising to 2000 or 3000, and occasionally even 4000 feet of elevation. The distribution of these mountains in chains or other groups is often very obscure, especially on the west side of the Great Glen. The Grampians, from Argyle to Aberdeenshire, show the most marked linear arrangement, often, however, rather indicated by the river-valleys and lakes than by the mountains themselves. In Argyle, on the west, the mountains are by no means high, but attain greater elevations near the head of Loch Long and Loch Fyne, where Ben Una, the fantastic Cobbler (2863 ft.), Ben Ima (3300 ft.), Ben Vorlich (3160 ft.), with Ben Lomond (3192 ft.), east of the lake, form a most picturesque group, as seen from many points on the Clyde. Ben Lui (3651 ft.), at the sources of the Tay; Ben More (3819 ft.), rising from Loch Dochart; and Ben Lawers (3984 ft.), near Killin, with many other hardly lower hills, belong to a higher, though less conspicuous, range, than Ben Venue (2800 ft.), Ben Ledi (3009 ft.), and Ben Vorlich (3180 ft.), which dominate over the whole valley of the Firth as far even as Edinburgh. In the southern Grampians, east of the Tay, there are few remarkable summits except Mount Battock (2554 ft.), well seen from the plains of Kincardineshire. Beyond this mountain the chain rapidly descends; and where it terminates in the German Ocean is a mere undulating moorland, over which cultivation is fast spreading. The marked elevations now belong rather to a more interior range connected with the gneiss and granite. This series, beginning with the double-peaked Ben Cruachan (3670 ft.), sinks down in the wild moor of Rannoch (1000 ft. high), bounded on the north-west by the beautifully conical Buachaille Etive (2537 ft.), but again rises in Ben Alder and Ben Vollich on Loch Erich. Schiehallien (3533 ft.), celebrated for Maskelyne's experiment, rendered possible by its isolation, is rivalled by the Ben-y-Gloe and other mountains between the Garry and Upper Dee; of which it is enough to name Cairn Gowar (3725 ft.), Ben Uarn More (3589 ft.), Ben Dearg (3550 ft.), Cairn Eelar (3356 ft.), and Scarsoch (3402 ft.). North of this is the granite group round the sources of the Dee, including Ben Macdhuì (4296 ft.), 110 feet lower than Ben Nevis, Ben Vrochan (3825 ft.), Ben-na-Buird, Ben Avon (3968 ft.), and Cairn Gorm (4095 ft.). A similar granite group, but separated by the valley of the Dee, attains its greatest elevation in the "dark Loch-na-Gar" (3800 ft.), with its rugged corry and lake, and is connected through Mount Keen (3180 ft.) with the Eastern Grampians, already noticed.

North of these mountains, in Aberdeen and Banff, there are no hills deserving notice from their elevation. Ben-nachie (1440 ft.), on the borders of the high ground, and conspicuous through the whole of Buchan, the Knock Hill on the coast, and Ben Rinn (2747 ft.) on the Spey, are the best known. West of the Spey, the Monadhliath Mountains are wild, but tame in outline; and we find no marked

¹ See for the history of this change, and the relation of these strata to the central gneiss of Sutherland, which is still under discussion, papers by Sir R. I. Murchison and Professor Nicol in the *Journal of the Geological Society* and *Proceedings of the British Association* for 1855, &c. Also Murchison's *Siluria*, 2d edition, and Nicol's *Geol. Map of Scotland*, in which the red sandstone of the west coast was first distinguished from the Old Red or Devonian.

Statistics.

summits till we reach the Great Glen. This singular line of depression now regulates the direction of the mountain-ridges, though the massive Ben Nevis (4406 ft.), with its dependants, and the rugged quartzite ridges on Loch Leven and Glencoe, form almost isolated groups.

Beyond the Glenmore-na' Albin, or great valley of the Caledonian canal, though a direction parallel to its course still prevails in the ridges, it is more difficult to trace out. It seems to have been obscured by subsequent geological revolutions; and the most marked valleys and depressions run from east to west. South of Loch Arkaig and Arisaig the country, though wild, is not remarkable for elevation; but the region north is a mass of mountains, with scarce an intervening valley, rivalling those of any other part of Scotland. Scur Ouran, Ben Line, Ben Serian, Ben Attow (4000 ft.), Scur-na-Cairnan, Mam Suil (3861 ft.), and Scur-na-Lapich (3772 ft.), are a few among many lofty but almost unknown summits. Scur-na-Vertach and Scur Vullin lead us on to Ben Wyvis (3422 ft.), more marked from its proximity to the east coast than for its height or beauty of form. The Dirrie More, with Ben Derig (3550 ft.), are the last group worth noting in central Ross. The interior of Sutherland, too, is a flat undulating table-land; the most marked mountains lying towards the eastern and western shores. The quartzite hills on the latter were already noticed; and we shall only name Ben Leod, at the upper end of Loch Shin, Ben Hee (2858 ft.), and Ben Hope (3061 ft.), as an inner range; and Ben Laoghall, south of the Kyle of Tongue, as a singularly picturesque syenitic mass. Ben Clibrig (3157 ft.) is the most noted of the eastern mountains; Ben Blragie, Ben Horn, and others, being conspicuous only from their position on the coast. So, too, the Ord, the Scarabins (2054 ft.), and other hills on the border of Caithness, are prominent chiefly from contrast with the low plains on the north. No eminence of note breaks the monotony of these plains of undulating flagstones, deeply encumbered with arctic drift. The characteristic scenery of Caithness must, however, be sought in the long line of sea-worn cliffs and bold headlands, crowned by the ruined keeps of the northern vikings, whilst the bleak moors and stagnating waters of the interior are fast yielding to the industry of their descendants.

In the western isles there are a few mountains rivalling those on the mainland, and well known from their position. Such are the Paps (North, 2556 ft.), rising from the quartz ridges of Jura; Ben More (3168 ft.), the chief among the dark trap mountains of Mull; Ben More (2130 ft.), in Rum; the jagged and gloomy Cuchullins, in Skye, with the regular conical Red Hills in the same vicinity, and Suid Thum (2000 ft.); the fractured Storr (2341 ft.); and many more in the north of that island. In the outer Hebrides, Mount Heckla (2940 ft.) in South Uist, and some mountains in Harris Forest, are alone noticeable; the greater part of Lewis being a mere table-land of mingled moor and lochs.

The most important river in this division is the Tay, draining the southern declivities of the Grampians, but already noticed. The Dee, 70 miles long, on the north side of this chain, is a marked contrast to the Tay, in its direct course and its few short tributaries. The Don, Ythan, and Doveran drain the low peninsula of Buchan east of the Spey. This river, 96 miles long, with a basin of 1300 square miles, is the largest flowing to the north sea; and, like its neighbour the Findhorn, is a wild and rapid stream, especially in its upper and mountain portion. North of the Moray Firth there are no important rivers, the Beaully and Conan, each about 40 miles long, and the Oikel, 30 miles long, being the largest on the east coast; the Thurso river and the Naver, on the north. On the west coast, the Lochy, draining the Great Glen, with its main branch, the Spean, alone deserve mention.

One of the marked features of this region is the number

and picturesque features of its lakes. Foremost among them is Loch Lomond, about 20 miles long, and 5 miles broad at the lower end, but narrowing above Luss to a mile or less. In the north, its depth exceeds 100 fathoms; but it is shallower in the south, where its surface is studded with numerous richly-wooded islands. Loch Katterin and Loch Achray are well known from the "Lady of the Lake," though scarce distinguished from many yet unsung. Loch Awe, 25 miles long, chiefly known for the beauty of its northern extremity, but more remarkable for the deep transverse gorge through which its waters flow to Loch Etive; and Loch Tay, with its winding wooded shores, are the largest lakes in this portion of the Highlands. In the wild moor and mountain region to the north-west there are many lakes; as Loch Lydoch, Loch Rannoch, Loch Ericht, and Loch Laggan, which, in other situations, would attract more notice. Of the chain of lakes in the valley of the Caledonian Canal, perhaps only separated from each other by detrital matter, Loch Lochy and Loch Ness are the chief; the latter above 20 miles long, and, in part, more than 800 feet deep. It is enough to name Loch Arkaig and Loch Morar, in Inverness; Loch Leuchart and Loch Fannich, in Ross. But Loch Maree, in the latter county, 12 miles long and about 3 wide, though little known, is surpassed by no Scottish lake in picturesque scenery—in the beauty of the labyrinth of wooded islands in the middle, and the magnificence of the rugged mountains at the upper end. Of the innumerable lakes in Western Sutherland, Loch Assynt alone deserves notice for its beauty, though Loch More, Loch Hope, Loch Laoghal, and Loch Naver may be named. Loch Shin, 16 miles long and about a mile broad, with low moory banks, is nearly devoid of beauty; but remarkable as forming, with Lochs Griaam, Merkland, More, and Stack, a chain of lakes from the Laxford to the Dornoch Firth, rivalling those of the Glenmore in number, continuity, and slight elevation above the sea-level.

The most marked and characteristic feature of this northern region is, however, the number and extent of its sea-lochs or firths (*fiords* of the Norsemen). Of these the Moray Firth is the most extensive on the east coast; but its interior, including the Beaully Firth, is shallow and encumbered with banks of mud and sand. Its shores, however, are rich and fertile; and the scenery, with the fine mountain outlines in the back-ground, highly beautiful. Cromarty Firth, to the north, even exceeds it in the richness and cultivation of its shores, and the beauty of its more distant landscapes, while as a harbour of refuge it scarcely can be surpassed. The bold headlands of the Sutors mark the entrance in the darkest night, and within there is depth of water and room sufficient for the largest of fleets. The Dornoch Firth is, again, encumbered with shoals in the upper part; and the Fleet, even far below the Mound, almost changed into marshland. On the north coast, Loch Eriboll is the chief indentation, with good anchorage, though open to the north. Rounding Cape Wrath, we find Loch Laxford, still meriting its Norse name from the abundance of its salmon; Badcoull Bay, with innumerable picturesque islands, like a half-submerged portion of the mainland; and the Kyle Sku, with its deep lonely arms, still a favourite resort of the herring. Farther south are the great inlets of the two Lochs Broom, with innumerable islets at their mouth, and deep and safe anchorage within. Loch Greinord is a wide exposed bay, with wild and rocky shores. Loch Ewe, a capacious and safe harbour, less used, however, than the more open Gairloch. Loch Torridon is one of the most magnificent of these Highland lochs, but almost unvisited and thinly peopled since the decline of the western herring fishery. It is divided into three spacious basins; the two interior ones with narrow entrances, and shut in by lofty mountains. Loch Carron, with Loch

Statistics.

Statistics. Kishorn branching from it on the north, is again a very deep inlet, with more than usual population and cultivation on its shores. Loch Alsh, separating Skye from the mainland, is a safe harbour, with a double opening through the two Kyles; whilst Loch Duich, its southern arm, is celebrated for romantic beauty even on this coast. Loch Hourn is another deep inlet, narrow, rocky, and adorned with natural wood in the upper part, but almost unvisited; and, like the wider but less picturesque Loch Nevis, formerly a great resort of the herring. Loch Sunart, a splendid inlet, 30 miles deep, leads only to the Strontian mines, but, it is said, still shows on its shores some remnants of the old Caledonian oak-forests. Loch Linnhe surpasses in extent and utility any of the western lochs yet named. Its branches, Loch Eil, Loch Leven, Loch Creran, and Loch Etive, are themselves noble bays; and the latter remarkable for the rich beauty of its lower reaches and the rugged grandeur of its upper half, below the granite summits of Cruachan. Among the many lochs between this and Cantyre we need only mention Loch Craignish for the beauty of its wooded islets, and Loch Tarbert, almost separating that peninsula from the mainland. The Firth of Clyde is the last and noblest of these remarkable inlets. Next to the river itself, Loch Fyne, 40 miles long, and still a favourite resort of the herring, and Loch Long, are the more important of its many branches.

Climate.

The climate of Scotland is remarkably equable throughout the year, as the heats of summer and the colds of winter are alike mitigated by winds from the adjacent seas. The mean temperature of the year is about 47°, and the thermometer rarely rises above 80° in summer, and still more rarely does it sink to zero in winter. Such an intense cold as this only occurs once or twice in the course of twenty years in land-locked inland situations, where radiation takes place freely. The thermometer never sinks below 20°, when the wind is blowing with much strength; and it is seldom that it snows when much below 32°. Owing to the physical features of the country, the elements of climate over its surface vary very considerably. The western counties, at equal elevations, have a higher mean temperature than the eastern. This is chiefly due, however, to the higher temperature during the winter in the west, and to the more cloudy state of the sky, which hinders terrestrial radiation. On the other hand, this cloudy state of the sky intercepts the rays of the sun during summer, which renders the heats more moderate, and the climate less suited for the ripening of fruit and grain. This state of things will be rendered more apparent by comparing the mean maximum and minimum temperatures at Rothesay, in Bute, and at Dunino, in Fife:—

Districts.	SPRING.		SUMMER.		AUTUMN.		WINTER.	
	Mean max. temp.	Mean min. temp.	Mean max. temp.	Mean min. temp.	Mean max. temp.	Mean min. temp.	Mean max. temp.	Mean min. temp.
Rothesay.....	52·30	41·0	64·35	51·68	52·97	44·17	42·76	36·54
Dunino.....	50·30	36·8	64·79	49·53	54·22	41·70	39·62	32·02

The relative intensity of solar and terrestrial radiation is pretty well brought out in these figures, when it is remembered that Dunino is about 300 feet above the level of the sea, and situated in an open and unsheltered district. So, also, the range of the thermometer being greater in the east, it follows that the evaporative or drying powers of the air is greater—a fact well known from other considerations. Besides this, much more rain falls on the west coast, in consequence of the moisture which the south-west winds bring from the ocean.

The prevailing winds in Scotland are from a westerly quarter. Observations show that the wind, on an average, blows from between the south-west and north-west points of the compass more than two-thirds of the whole year.

Statistics. The wind never remains long either due south or due west. During the westerly gales the wind usually begins to blow from the south-east or south-west, and veers round to west and north-west. These winds, in passing over the hills, let fall a great deal of rain, which renders the climate in these districts exceedingly moist. Nearly a hundred inches of rain fall annually in some of the mountainous parts; whereas, along the southern shores of the Firth of Forth, the annual fall is considerably under 30 inches. In Rothesay, the amount is about 40 inches yearly; while at Musselburgh it is only 24 inches. So long as the south-west winds continue to blow, in winter, the temperature remains high, and the pastures continue green. When the wind goes round to the north, in winter, the temperature is lowered and frost sets in; and continues until it goes round again to the south-west. During rainy periods the winds usually blow from an easterly quarter, and the barometer falls considerably. The rainy east winds, with low barometer, however, have invariably an upper current from the south-west, which brings the moisture to maintain the rains. In the latter part of spring and beginning of summer, east winds often prevail, and have somewhat of a periodical character. They are then usually cold and dry, and accompanied with considerable atmospheric pressure.

The flora of Great Britain has been divided geographically by H. C. Watson, into—1. Agrarian, including those plants which are found within the limits of *Pteris aquilina* or the common bracken, the elevation or climate of which would not forbid successful corn cultivation. In the Highlands the region may be said to extend as high, at least, as 1200 feet. 2. Arctic, including the plants above these limits, the region being characterized by the absence of corn cultivation. The agrarian region has been subdivided into three climatic zones. 1. Super-agrarian, characterized by the presence of *Clematis Vitalba* or traveller's joy, *Rubia peregrina* or wild madder, and *Cyperus longus* or large galingale. 2. Mid-agrarian, in which *Rhamnus catharticus* or buckthorn occurs without *Clematis*. 3. Super-agrarian, characterized by the presence of *Pteris aquilina* or bracken, without *Rhamnus*. The Arctic region has also been subdivided into three zones—1. Super-arctic, in which *Erica tetralix* or cross-leaved heath, occurs without *Pteris*. 2. Mid-arctic, in which *Calluna vulgaris* or common heather is seen without *Erica*. 3. Super-arctic, indicated by the presence of *Salix herbacea* or the dwarf willow, without *Calluna*.

In Scotland, the super- and mid-agrarian zones are not truly represented. We commence with the super-agrarian, and proceed as far as the super-arctic. In the region of the plains, the common weeds and wild-flowers of Britain are seen with ordinary trees, such as the oak and the ash. An upland region succeeds this, in which certain northern forms occur, such as *Trientalis europæa*, *Linnæa borealis*, *Corallorhiza innata*, *Goodyera repens*, *Vaccinium Vitis-idaea*, *Arctostaphylos Uva-ursi*, and *Lobelia Dortmanna*. Some trees, such as *Pinus sylvestris* or Scotch fir, *Betula alba* or common birch, and *Pyrus aucuparia* or mountain ash, extend into a sub-alpine region. This region reaches to about 2400 feet, and extends beyond the limit of trees. It is characterized by such plants as *Thalictrum alpinum*, *Arabis petræa*, *Juncus trifidus*, and *Gnaphalium supinum*. Beyond this a true alpine region is seen, containing such plants as *Draba rupestris*, *Alsine rubella*, *Astragalus alpinus*, *Saxifraga cernua*, and *S. rivularis*, *Erigeron alpinus*, *Veronica alpina*, *Luzula arcuata*, *Luzula spicata*, *Sibbaldia procumbens*, *Gentiana nivalis*, *Azalea procumbens*, and various alpine willows, grasses, ferns, and cryptogamic plants.

There are many plants in Scotland which are restricted to very limited localities. Thus, *Oxytropis campestris* is found only on one rock in Clova, and nowhere else in Bri-

Statistics. tain. The flora of the eastern parts of Scotland differs considerably from that of the western districts.

The best districts in Scotland for alpine species are the Grampian range, more particularly in Clova, Glen Isla, Braemar, the Breadalbane Mountains near Loch Tay, and Loch Lomond—the mountains ranging from 3000 to 4400 feet above the level of the sea. On the summit of Ben-na-Muic Dhui, which is about 100 feet lower than Ben Nevis, we meet with *Luzula arcuata*, *L. spicata*, *Carex rigida*, *Silene acaulis*, *Festuca vivipara*, *Salix herbacea*, *Saxifraga stellaris*, *Juncus trifidus*, *Empetrum nigrum*, *Aira alpina*, *Lycopodium selago*, and some mosses and lichens. Close to the summit of Ben Lawers, *Saxifraga cernua* and *Draba rupestris* occur.

The number of flowering plants and ferns in Scotland amounts to about 1200. They belong to the following types, as given by Watson:—1. British type, including species commonly distributed over Great Britain, such as the alder, hazel, dog-rose, daisy, heather, chickweed, dandelion, nettle, male-fern. 2. Scottish type, comprising such species as the globe-flower, crowberry, *Trientalis europæa*, *Primula farinosa*, *Haloscias scoticum*, and *Mertensia maritima*. To this type are referred some very local plants, as *Arenaria norvegica*, *Primula scotica*, and *Ajuga pyramidalis*. 3. Highland type, seen in the plants of the Scottish Highlands, as already noticed. 4. Atlantic type, species chiefly confined to the western district of Scotland, as *Sinapis Monensis*, *Cotyledon Umbilicus*, and *Euphorbia portlandica*. 5. Local type, such as *Eriocaulon septangulare*, found in the Isle of Skye.

Zoology.

The animal kingdom of Scotland differs little from that of England, there being comparatively few species of animals that are not common to both countries. Several of the wild

Statistics. animals that were common in Scotland, even within the historic period, as the bear, wolf, and beaver, have become extinct. In 1057 a Gordon, for his valour in killing a bear, was authorized to carry three bears' heads upon his banner; and so late as 1680 the last wolf in Scotland is said to have been killed by Sir Ewen Cameron of Lochiel. Of the native wild cattle (*Bos urus*) there are in Scotland now only a few preserved in the Duke of Hamilton's park, near Hamilton. Of land quadrupeds there are only about 37 species indigenous to Scotland, among which are the red, fallow, and roe deer, the hare, rabbit, fox, badger, otter, wild-cat, weasel, and hedgehog. Some of these exist in great numbers, but others are becoming scarce. The birds of Scotland number about 270 species, about equally divided between land and water birds. Aquatic birds in great numbers frequent the coast; while, inland, the pheasant, ptarmigan, black-cock, grouse, and partridge abound. The golden eagle and other birds of prey are found in the lofty rocky districts. Attempts have recently been made by the Marquis of Breadalbane and others to re-introduce the capercaillie, or cock of the wood, which was formerly very common in the country, but which appears to have been exterminated about 1760. In the order of reptiles Scotland is fortunately very deficient. The coasts and rivers abound in fish of various kinds. Whales are occasionally seen on the coast, but they were formerly much more common than at present. Shell-fish are plentiful and in great variety. In several of the rivers a species of mussel occurs in which are sometimes found pearls of considerable size.

As regards the agriculture of Scotland, our space only admits of our giving the merest outline of it, in the form of a few remarks on the statistics collected by the Highland and Agricultural Society of Scotland, and given below.

Table of Acreage of principal Crops (1857).

COUNTIES.	Number of Occupants.	Total Acreage under a Rotation of Crops.	Wheat.	Barley.	Oats.	Rye.	Bere.	Beans.	Pease.	Vetches Tares.	Turnips.	Potatoes.	Summer Fallow.	Grass and Hay under Rotation.
1. Aberdeen	7,348	488,183½	8,962	9,534	165,275	687½	6,121	366½	255	2,102½	82,316½	7,090	582½	204,137½
2. *Argyle	1,584	69,773½	620½	1,442½	24,001	371½	1,587½	734½	90	135½	6,832½	5,569½	619½	27,517½
3. Argyr	3,300	259,911½	15,692½	884½	62,818½	649½	284½	3,065½	18	424½	17,796½	7,075½	676	148,504½
4. Banff	1,701	114,760½	1,883½	4,440½	41,373½	49½	788½	322½	92½	675	18,549½	2,028½	224	44,148
5. Berwick	746	146,815½	12,404½	15,298½	30,444½	47½	34½	2,275½	489½	1,128½	27,300½	2,117½	1,184½	53,517½
6. Bute	139	12,273½	853½	211½	2,756½	35½	...	3	...	28½	1,446½	477½	3½	6,420
7. *Arran	147	6,336½	217	11½	1,717½	20½	152½	113½	26½	8½	447½	371½	26	3,185½
8. Caithness	881	57,591½	380½	338½	22,153½	59½	2,480	17½	17½	367	8,820	1,571½	112½	21,234½
9. Clackmannan	218	17,856½	2,343½	1,777½	3,592½	...	...	1,341½	...	172½	1,950½	358½	36½	5,994½
10. Dumfries	593	40,277½	2,141	1,077½	10,027½	1½	2½	632	6½	156	2,622	2,500	127½	20,691½
11. Edinburgh	1,955	167,839½	3,899½	2,888½	51,328	152½	49½	496	25½	206½	21,529½	5,967½	434½	79,682½
12. Elgin	850	102,657½	10,037	11,810	22,029½	6½	83½	1,850½	111½	1,271½	15,274½	5,801	541	33,282½
13. Fife	1,146	82,401	8,749	9,522½	17,213½	766½	481½	153½	181½	409	12,737½	3,190	284½	28,560½
14. Forfar	1,927	220,832½	29,340½	26,670	42,219	977	46½	3,670½	313½	1,537½	30,645½	16,349½	2,760	65,593½
15. Haddington	2,109	223,245½	20,371	22,947½	51,104½	159½	335½	1,175½	138½	1,295	34,693½	12,963	473½	77,401½
16. *Inverness	469	102,445½	16,527½	13,313½	15,990	7	14½	4,635½	159	868½	17,341	5,382½	1,138½	26,435½
17. Kincardine	734	42,920	1,980½	2,341½	13,749½	266	917½	401	119	226½	5,842½	3,070½	277	14,042½
18. Kinross	1,374	102,040½	4,084	8,802½	28,174½	207½	666½	642½	45½	371½	17,691	2,555½	135½	38,579½
19. Kirkcudbright	307	33,122½	1,521½	2,645½	8,083½	22½	5½	80½	8½	240½	4,617½	933	180½	14,774½
20. Lanark	1,377	121,447½	2,178½	1,590	34,891½	43	35½	377½	2	113	15,414	2,921½	192½	63,314
21. Linlithgow	2,931	208,596	8,363½	2,142½	57,041½	103½	343½	3,097½	178½	1,774½	11,934	8,253½	1,576½	112,972½
22. Nairn	443	50,547	3,737½	4,653½	11,990½	17	14	1,700½	13	452½	5,246½	1,666½	816½	20,075½
23. *Orkney	426	30,311½	2,062	3,182½	7,346½	356	87	9½	138½	125½	4,678½	1,407½	90	10,810
24. *Perth	891	38,293½	58½	143½	13,288½	206½	5,533½	10½	6	105½	4,845½	2,329½	202½	11,309½
25. *Zetland	40	1,026½	3	3½	349½	...	91½	...	...	3½	124½	64½	9	371½
26. Peebles	305	35,150½	86½	2,368½	9,922½	77½	28	44	152½	257½	5,472	776	28½	15,984½
27. *Renfrew	3,616	267,397	25,638	18,802½	64,084½	77½	65½	3,949½	301	1,241½	33,313½	17,482½	1,840½	99,656½
28. Roxburgh	1,181	75,151½	4,764½	417½	17,097½	74	106½	1,232½	8½	205½	3,470	5,729½	221	41,598½
29. *Ross & Cromarty	865	72,851½	9,715½	6,435	16,256½	212½	289	436½	360½	911	12,228	4,471½	549½	20,868½
30. Selkirk	983	124,479½	8,558½	12,107½	28,428½	44	21½	1,258½	398½	650½	23,993½	1,590½	476½	46,669½
31. Stirling	172	14,441	261½	949½	4,162	18½	5	18	11½	75	2,624½	222	65	6,012
32. *Sutherland	1,419	93,291½	5,312½	6,953½	23,133	18½	36	4,680½	2	637½	6,158½	3,881	1,598½	40,311½
33. Wigtown	137	9,960½	431½	1,127½	2,365½	50½	97½	...	5½	41½	1,820½	332	113	3,558½
Total	1,118	122,343½	9,971½	1,553½	34,254½	293½	214½	768½	10	200	16,913	3,317	714	52,591½

* In the counties marked with an asterisk, there are no returns from occupants whose rent is below L.20; in the other counties, all at and above a rent of L.10 are included.

Note.—The arable acreage occupied by small tenants not included was, in 1854, returned at 220,000 acres, and forms an addition to the total acreage.

Table of Proportional Acreage of the Crops in each County (1857).

797

Statistics.

Statistics.

COUNTIES.	White Crops, &c.							Green Crops and Fallow.							Grass.
	Wheat.	Barley.	Oats.	Rye and Bere.	Flax.	Vetches, Turnip-seed, and any other Crop.	Total percentage of White Crops.	Beans and Pease.	Turnips.	Potatoes.	Man-gold.	Carrots, Cab-bage, & Rape.	Summer Fallow.	Total percentage of green Crops and Fallow.	Grass and Hay under Rotation.
1. Aberdeen.....	1-836	1-953	33-855	1-395	008	536	39-583	127	16-862	1-452	003	038	119	18-601	41-816
2. Argyle.....	889	2-068	34-398	2-808	018	288	40-469	1-182	9-792	7-983	059	189	888	20-093	39-438
3. Ayr.....	6-038	340	24-169	359	004	209	31-119	1-187	6-847	2-722	402	326	260	11-744	57-137
4. Banff.....	1-641	3-869	36-052	730	016	705	43-013	362	16-164	1-768	007	021	195	18-517	38-470
5. Berwick.....	8-449	10-420	20-736	056	001	865	40-527	1-884	18-596	1-442	079	213	807	23-021	36-452
6. Bute.....	6-952	1-723	22-455	287	...	419	31-836	031	11-782	3-891	086	035	030	15-855	52-309
Arran.....	3-425	181	27-106	2-738	...	134	33-584	2-213	7-062	5-867	362	225	413	16-142	50-274
7. Caithness.....	661	587	38-467	4-409	...	687	44-811	033	15-315	2-729	005	040	195	18-317	36-872
8. Clackmannan.....	13-124	9-954	20-119	...	...	988	44-185	7-514	10-925	2-009	034	045	1-718	22-245	33-570
9. Dumbarton.....	5-316	2-676	24-895	009	522	394	33-812	1-586	6-509	6-208	075	120	317	14-815	51-373
10. Dumfries.....	2-323	1-721	30-582	120	005	169	34-920	311	12-828	3-555	058	594	259	17-605	47-475
11. Edinburgh.....	9-777	11-504	21-460	087	...	1-506	44-334	1-911	14-879	5-651	064	213	527	23-245	32-421
12. Elgin.....	10-618	11-557	20-889	1-514	001	624	45-203	406	15-458	3-871	015	042	345	20-137	34-660
13. Fife.....	13-286	12-077	19-118	463	171	779	45-894	1-804	13-877	7-404	023	045	1-250	24-403	29-703
14. Forfar.....	9-125	10-279	22-892	222	001	609	43-128	588	15-541	5-807	004	049	212	22-201	34-671
15. Haddington.....	16-133	12-996	15-608	021	...	1-165	45-923	4-680	16-927	5-254	115	184	1-112	28-272	25-805
16. Inverness.....	4-614	5-455	32-035	2-758	...	562	45-424	371	13-613	7-154	028	047	645	21-858	32-718
17. Kincardine.....	4-002	8-627	27-611	856	011	378	41-485	675	17-337	2-505	011	046	133	20-707	37-808
18. Kinross.....	4-594	7-987	24-254	084	001	863	37-783	269	13-940	2-817	005	037	545	17-613	44-604
19. Kirkcudbright.....	1-794	1-309	28-730	063	001	152	32-049	313	12-692	2-406	071	178	159	15-819	52-132
20. Lanark.....	4-009	1-027	27-345	214	148	908	33-651	1-570	5-721	3-957	042	144	756	12-190	54-159
21. Linlithgow.....	7-394	9-206	23-721	061	140	1-004	41-526	3-390	10-379	3-297	048	028	1-616	18-758	39-716
22. Nairn.....	6-803	10-499	24-238	1-461	...	452	43-453	488	15-435	4-644	008	012	297	20-884	35-663
Orkney.....	152	374	34-702	14-990	004	429	50-651	043	12-654	6-083	102	405	529	19-816	29-533
Zetland.....	292	365	34-023	8-914	...	365	43-959	...	12-129	6-259	...	585	877	19-850	36-191
24. Peebles.....	245	6-738	28-227	080	...	766	36-056	559	15-567	2-208	007	048	081	18-470	45-474
25. Perth.....	9-588	7-032	23-966	274	006	548	41-414	1-589	12-459	6-538	012	031	688	21-317	37-269
26. Renfrew.....	6-340	5-555	22-751	240	012	312	30-210	1-651	4-617	7-624	102	150	294	14-438	55-352
27. Ross & Cromarty.....	13-336	8-833	22-314	688	001	1-321	46-493	1-094	16-785	6-138	040	050	754	24-861	28-646
28. Roxburgh.....	6-876	9-726	22-837	053	...	591	40-083	1-332	19-275	1-278	014	144	383	22-426	37-491
29. Selkirk.....	1-811	6-575	28-821	038	...	549	37-794	204	18-176	1-537	...	208	450	20-575	41-631
30. Stirling.....	5-695	7-454	24-796	058	469	732	39-204	5-020	6-602	4-160	024	066	1-714	17-586	43-210
31. Sutherland.....	4-335	11-322	23-746	1-483	...	504	41-390	058	18-277	3-333	...	083	1-134	22-885	35-725
32. Wigton.....	8-150	1-269	27-998	420	001	359	38-197	636	13-824	2-712	574	486	584	18-816	42-987

Table of Estimated Gross Produce of the principal Crops per County (1857).

COUNTIES.	Wheat.	Barley.	Oats.	Bere.	Beans and Pease.	Turnips.	Potatoes.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1. Aberdeen.....	217,328	305,088	5,464,404	213,087	18,987	1,155,514	17,370
2. Argyle.....	19,778	45,897	838,535	50,998	21,179	109,657	25,551
3. Ayr.....	451,159	29,567	2,606,978	9,842	79,792	282,074	30,159
4. Banff.....	43,488	129,059	1,254,134	23,753	8,777	204,743	3,651
5. Berwick.....	335,703	504,842	1,194,956	1,057	68,440	393,131	8,840
6. Bute.....	25,704	7,429	102,661	...	89	23,280	1,946
Arran.....	6,184	529	57,214	6,300	2,445	6,612	1,161
7. Caithness.....	10,582	10,633	634,143	65,100	...	110,470	4,518
8. Clackmannan.....	68,547	62,212	135,626	...	33,879	33,553	1,094
9. Dumbarton.....	67,976	34,757	350,953	90	18,044	38,543	11,877
10. Dumfries.....	101,387	82,676	1,674,576	1,540	14,530	274,773	19,245
11. Edinburgh.....	300,482	424,422	776,548	2,390	49,908	248,397	15,372
12. Elgin.....	236,223	333,296	542,217	13,475	8,697	140,112	4,785
13. Fife.....	814,192	843,438	1,572,657	1,121	89,883	453,936	42,304
14. Forfar.....	542,378	745,793	1,916,428	10,267	34,486	461,860	35,324
15. Haddington.....	440,051	510,896	725,546	560	92,289	263,583	11,572
16. Inverness.....	47,526	67,896	397,869	20,362	3,065	70,624	7,253
17. Kincardine.....	122,009	297,093	1,042,465	23,369	23,452	250,327	7,539
18. Kinross.....	39,565	82,010	295,733	172	823	70,182	1,399
19. Kirkcudbright.....	55,422	47,103	1,125,259	936	11,305	216,759	9,897
20. Lanark.....	313,099	79,014	2,103,405	12,185	87,018	203,324	36,830
21. Linlithgow.....	114,928	157,055	407,668	234	41,338	77,644	3,833
22. Nairn.....	62,375	102,635	231,422	2,501	3,034	52,633	1,971
Orkney.....	1,292	4,405	411,935	165,313	330	57,361	9,637
Zetland.....	...	...	8,207	2,447	...	2,485	212
24. Peebles.....	2,366	78,744	314,403	687	4,053	91,382	1,930
25. Perth.....	663,383	584,045	2,254,973	20,271	92,985	433,078	45,017
26. Renfrew.....	169,446	15,073	633,685	3,674	39,781	55,606	31,942
27. Ross and Cromarty.....	259,282	211,148	540,528	8,832	15,840	147,347	8,831
28. Roxburgh.....	221,467	425,267	1,105,138	646	38,847	359,602	5,388
29. Selkirk.....	7,649	34,182	158,156	152	509	43,964	521
30. Stirling.....	150,085	227,292	727,243	965	114,733	108,009	11,060
31. Sutherland.....	9,660	32,775	74,653	2,602	46	20,162	705
32. Wigton.....	234,330	48,158	1,070,445	6,850	19,176	229,382	11,734
Total.....	6,154,986	6,564,429	32,750,763	671,778	1,037,760	6,690,109	430,468

SCOTLAND.

Stock (1857).

Horses.					Cattle.				Sheep.				Swine.	Total Stock.
COUNTIES.	Horses for Agricultural purposes above 3 years old.	Horses for Agricultural purposes under 3 years old.	All other Horses.	Total Horses.	Milk Cows.	Other Cattle.	Calves.	Total Cattle.	Sheep of all Ages for Breeding.	Sheep of all Ages for Feeding.	Lambs.	Total Sheep.		
1. Aberdeen.....	16,836	3,965	2,619	23,420	36,864	76,412	31,808	145,084	33,001	46,949	25,741	105,691	10,184	284,379
2. Argyle.....	3,799	1,789	1,013	6,601	19,440	29,352	12,751	61,543	407,957	165,304	253,852	827,113	3,230	898,487
3. Ayr.....	6,954	1,998	944	9,896	38,477	29,055	13,878	81,410	123,115	26,426	90,070	239,611	12,303	343,220
4. Banff.....	4,564	1,242	667	6,473	9,080	17,639	7,955	34,674	15,858	7,078	10,570	33,506	3,292	77,945
5. Berwick.....	4,301	1,138	950	6,389	3,741	8,559	3,965	16,265	85,738	59,051	87,876	232,665	5,020	260,339
6. {Bute.....	393	236	38	667	1,559	1,893	898	4,350	3,832	2,183	2,575	8,590	423	14,030
{Arran.....	311	73	42	426	1,162	1,332	558	3,052	13,605	3,475	9,343	26,423	303	30,204
7. Caithness.....	2,737	615	374	3,726	5,173	8,756	4,267	18,196	32,027	17,878	22,825	72,730	1,755	96,407
8. Clackmannan.....	768	227	147	1,142	1,118	2,896	840	4,854	6,143	2,709	5,842	14,694	1,321	22,011
9. Dumbarton....	1,346	480	292	2,118	5,159	5,495	2,047	12,701	27,491	10,132	21,060	58,683	939	74,441
10. Dumfries.....	5,306	1,971	1,287	8,564	13,877	23,369	9,034	46,280	244,100	42,746	184,007	470,853	14,370	540,067
11. Edinburgh....	3,472	688	920	5,080	5,171	7,942	2,359	15,472	54,259	21,693	41,165	117,117	6,245	143,914
12. Elgin.....	3,567	831	626	5,024	5,985	12,031	5,215	23,231	25,315	12,947	18,074	56,336	4,325	88,916
13. Fife.....	8,613	2,446	1,541	12,600	9,017	22,020	7,629	38,666	12,204	31,680	12,144	56,028	9,527	116,821
14. Forfar.....	7,654	1,803	1,253	10,710	12,151	28,296	10,383	50,830	26,430	50,372	21,370	98,172	7,481	167,193
15. Haddington...	3,395	536	768	4,699	2,124	5,381	1,444	8,949	29,528	32,534	30,698	92,760	6,218	112,626
16. Inverness.....	2,437	702	602	3,741	8,141	9,852	5,216	23,209	284,935	154,819	167,860	607,614	1,706	636,270
17. Kincardine....	3,399	620	534	4,553	6,875	14,794	6,511	28,180	6,542	13,700	4,868	25,110	3,656	61,499
18. Kinross.....	1,069	474	166	1,709	1,546	4,597	1,980	8,123	7,746	8,314	6,094	22,154	997	32,983
19. Kirkcudbright	3,783	1,434	802	6,019	9,183	23,171	6,745	39,099	131,073	47,566	105,881	284,520	7,203	336,841
20. Lanark.....	5,723	1,480	1,380	8,583	29,971	20,540	8,597	59,108	90,747	18,305	65,194	174,746	8,006	250,443
21. Linlithgow....	1,666	488	379	2,533	3,482	5,566	1,718	10,766	4,072	7,281	4,629	15,982	2,232	31,513
22. Nairn.....	1,399	350	183	1,932	2,422	4,648	1,895	8,965	16,875	7,896	11,214	35,985	1,420	48,302
23. {Orkney.....	2,655	836	250	3,741	4,752	6,655	3,480	14,887	6,266	1,728	5,592	13,586	2,749	34,963
{Zetland.....	72	11	403	486	286	653	155	1,094	3,136	1,028	2,322	6,486	57	8,123
24. Peebles.....	953	284	182	1,419	2,537	3,038	1,648	7,223	90,927	17,877	64,936	173,740	1,400	183,782
25. Perth.....	11,148	2,999	1,806	15,953	21,871	40,587	18,258	80,716	245,118	135,988	163,636	544,742	9,369	650,780
26. Renfrew.....	2,352	779	504	3,635	11,533	7,779	3,086	22,398	9,840	4,632	8,005	22,477	1,761	50,271
27. Ross & Crom'..	3,378	840	541	4,759	5,110	8,552	3,948	17,610	129,206	94,864	80,374	304,444	4,568	331,381
28. Roxburgh.....	3,749	692	1,029	5,470	4,361	8,415	3,416	16,192	222,071	41,186	173,795	437,058	4,376	463,096
29. Selkirk.....	486	112	165	763	828	1,165	456	2,449	81,275	3,293	61,164	145,732	474	149,418
30. Stirling.....	3,543	1,171	653	5,367	8,636	14,934	5,143	28,713	34,690	15,491	28,466	78,647	2,710	115,437
31. Sutherland....	533	137	216	886	1,197	2,039	553	3,789	91,388	61,298	49,865	202,551	473	207,699
32. Wigtown.....	4,110	1,500	715	6,325	11,083	17,914	7,362	36,359	35,767	12,859	27,996	76,622	6,261	125,567
Total.....	126,471	34,947	23,991	185,409	303,912	475,327	195,198	974,437	2,632,283	1,181,782	1,869,103	5,683,168	146,354	6,989,368

Scotland having a humid atmosphere, the greater part of its surface is better suited for the growth of grass and green crops than for wheat, which only comes to perfection in situations of no great height; indeed, an elevation of a few feet is often attended with striking effects on vegetation. Its rocks present the geologist with a well developed series of formations, from the primitive granite to the coal measures, over which vast beds of drift occur. These have produced a great variety of soils, and led to great differences in the systems of management.

In the rich and level plains, such as the Lothians and Stirlingshire, all the cereals, as well as beans, come to great perfection. In these and similar districts where the climate is dry, the land appears to be worth more in crop than under pasture. The following rotation is most common:—1, oats; 2, beans or potatoes; 3, wheat; 4, turnips; 5, wheat or barley; 6, grass. This system, it will be observed, does not admit of many cattle or sheep being reared, as the extent of land under grass is small, and few stock can thus be kept in summer, after supplying the working horses with grass and hay. The turnip crop renders food for stock much more plentiful in winter, and hence the cattle and sheep reared in the pastoral districts find their way to these arable districts in autumn. The whole system of cultivation in them is generally of a very perfect character. The grain is usually sown by the drill, and the crop thrashed and much of it reaped by machinery. Guano and other light manures are liberally applied to the crops.

In Aberdeenshire and other counties, more especially in the higher districts, a different system prevails. There

the soil and climate being more genial to the growth of grass, the land lies longer in pasture. The rotation is also a six course—1, oats; 2, turnips; 3, oats, barley, or bere; 4, grass; 5, grass; 6, grass. This rotation is more economical in manure and labour, but requires a considerable capital for the rearing and feeding of stock. There is no finer class of animals sent to the London market than the Aberdeen polled stock, or the other native breeds crossed with the shorthorn. This being the best grazing district in Scotland, cattle are usually preferred to sheep. Rearing and feeding of cattle are carried on, as the most profitable way of consuming the grass and green crops.

On the steeper lands that have been brought under cultivation along the flanks of the Lammermuir, Cheviot, and other hills, arable farming and the rearing of sheep are combined. Such land is less suited, from its hilly nature, to the breeding of cattle. Leicester tups are put to the Cheviot ewes in November, and a cross is obtained, highly esteemed for its early maturity and fattening qualities. This description of stock is always in great request with the farmers in the more purely arable districts, where it is not found so suitable to breed sheep in any great numbers, owing to the deficiency of grass-lands. These sheep being fed on turnips throughout the winter, and frequently obtaining an allowance of cake or corn, are ready for the butcher in the end of May or beginning of June.

Berwickshire presents us with a good specimen of a well-formed system of farming. The soil in general is of medium quality, and the farms are large. The five course rotation, of—1, oats; 2, turnip; 3, barley or wheat; 4,

Statistics.

grass; 5, grass—is, as a whole, more regularly followed than in any other county in Scotland. Thus, by the statistics, it is seen that the oat crop occupies fully one-fifth of the whole acreage under rotation; turnips, one-fifth; wheat and barley together, make up another fifth; grass, nearly two-fifths. For various reasons, the extent of land under potatoes does not exceed one-thirteenth of the extent of land under turnips. The bean crop occupies only a little more.

On the other hand, where there are larger portions of rich lands, as in the counties of Haddington, Stirling, Fife, and Perth, the proportional extent of beans and potatoes is increased. These two crops being also good preparatives for wheat, its average will be found to increase in like proportions. On the other hand, it is singular enough that the extent in turnips is less in the western counties than in the eastern. Banff, with less than half the extent of land under rotation of Ayrshire, has a greater extent under turnips. In all the western counties, the potato, on medium quality of land, occupies a larger breadth than in the eastern. In the west, the farms are usually smaller, and the dairy furnishes more employment for the tenants and their families. The necessity for raising turnips, which is an expensive crop, is not so much felt, as in the corn districts where cattle and sheep are fattened. The larger proportion, too, of wheat and barley grown in the east enables the cultivators to grow a greater extent of turnips.

The larger part of the surface of Scotland, being mountainous, is really capable of comparatively little improvement. Heaths and natural grasses occupy the soil, and yield a scanty herbage for sheep or cattle. There the art of man has been in a great measure confined to the improving of the breeds of stock, and in distributing the most suitable over the different kinds of pasture-grounds. Much skill has been displayed in this matter, with valuable results. In the wildest regions of the West Highlands, as well as in the highest and most stormy ground in the north, the black-faced Highland sheep is found to be best suited to withstand the deteriorating

influences of the climate. The Cheviot sheep is only slightly inferior to the black-faced sheep for the mountains, and has already been largely introduced into the North Highlands. Both these hardy animals usually receive no other food than what they find on the hills, and are often subjected to great privations during deep snows in winter. Wide as these hilly and pastoral districts stretch, they are no larger than is required to breed animals for the consumption of turnips in the arable districts.

The rapid progress of Scottish agriculture is, no doubt, to be greatly attributed to granting of leases of nineteen years by proprietors. This period generally enables the tenants to reap the rewards of the improvements made on the farms they occupy. In some cases, the restrictions in leases may have had the effect of cramping the tenants' energies; but, as a rule, the system has wrought admirably. Since the middle of the last century the farms have been greatly consolidated in most of the counties. By the greater economy of labour that the large-farm system introduced, the strictly rural population has become less numerous. The higher wages in the towns have attracted large numbers. This revolution, brought about by the introduction of better cultivation, has not been without its disadvantages in a moral point of view. For it can hardly be disguised that the social condition of the agricultural labourers has not kept pace with the improvement in the art. A reform in this condition of things is being gradually brought about, as is apparent from the better class of cottages that is in course of being erected over the land.

The population of Scotland, at the time of the Union in 1707, is not supposed to have exceeded 1,050,000. It was first ascertained, with tolerable precision, in 1755, from returns furnished by the clergy to Dr Webster, the omissions and deficiencies being supplied from the most approved data; and was found to be 1,265,380. The first government census was taken in 1801, and the following table gives the population, and rate of increase in each county, since that time:—

COUNTIES	Area in Square Miles.	Pop. 1801.	Increase per Cent.	1811.	Increase per Cent.	1821.	Increase per Cent.	1831.	Increase per Cent.	1841.	Increase per Cent.	1851.	Increase per Cent. from 1801 to 1851.
Aberdeen	1,970	121,065	10	133,871	16	155,049	15	177,657	8	192,387	10	212,032	75
Argyle	3,255	81,277	6	86,541	12	97,316	4	100,973	-4	97,371	-9	89,298	10
Ayr	1,016	84,207	23	103,839	23	127,299	14	145,055	13	164,356	15	189,858	125
Banff	686	37,216	3	38,433	14	43,663	11	48,337	3	49,679	9	54,171	45
Berwick	483	30,206	2	30,893	8	33,385	2	34,048	1	34,438	5	36,297	20
Bute	171	11,791	2	12,033	15	13,797	3	14,151	11	15,740	5	16,608	41
Caithness	712	22,609	4	23,419	25	29,181	18	34,529	5	36,343	6	38,709	71
Clackmannan	46	10,858	10	12,010	10	13,263	11	14,729	30	19,155	20	22,951	111
Dumbarton	297	20,710	16	24,189	13	27,317	22	33,211	33	44,296	1	45,103	117
Dumfries	1,129	54,597	15	62,960	13	70,878	4	73,770	-1	72,830	7	78,123	43
Edinburgh	319	122,597	21	148,607	29	191,514	15	219,345	2	225,454	15	259,435	111
Elgin or Moray	531	27,760	1	27,967	12	31,398	10	34,498	1	35,012	11	38,959	40
Fife	503	93,743	8	101,272	13	114,556	12	128,839	9	140,140	10	153,546	64
Forfar	889	99,053	8	107,187	6	113,355	23	139,606	22	170,453	12	191,264	93
Haddington	291	29,986	3	31,050	13	35,127	3	36,145	-1	35,886	1	36,386	21
Inverness	4,256	72,672	7	77,671	16	89,961	5	94,797	3	97,799	-2	96,500	33
Kincardine	394	26,349	4	27,439	6	29,118	8	31,431	5	33,075	5	34,598	31
Kinross	77	6,725	8	7,245	7	7,762	17	9,072	-3	8,763	2	8,924	33
Kirkcudbright	954	29,211	15	33,684	15	38,903	4	40,590	1	41,119	5	43,121	48
Lanark	987	147,692	29	191,291	28	244,387	30	316,719	34	426,972	24	530,169	258
Linlithgow	101	17,844	9	19,451	17	22,685	3	23,291	15	26,872	12	30,135	68
Nairn	215	8,322	2	8,496	9	9,268	1	9,354	-1	9,217	8	9,956	19
Orkney and Shetland ..	1,545	46,824	-1	46,153	15	53,124	10	58,239	5	61,065	2	62,533	33
Peebles	354	8,735	13	9,935	1	10,046	5	10,578	-1	10,499	2	10,738	23
Perth	2,835	125,583	7	134,390	3	138,247	3	142,166	-3	137,457	1	138,660	10
Renfrew	234	78,501	18	93,172	20	112,175	19	133,443	16	155,072	4	161,091	105
Ross and Cromarty	3,151	56,318	8	60,853	13	68,762	9	74,820	5	78,685	5	82,707	47
Roxburgh	720	33,721	10	37,230	10	40,892	7	43,663	5	46,025	12	51,642	53
Selkirk	266	5,388	9	5,889	13	6,637	3	6,833	17	7,990	23	9,809	82
Stirling	462	50,825	14	58,174	12	65,376	11	72,621	13	82,057	5	86,237	69
Sutherland	1,886	23,117	2	23,629	1	23,840	7	25,518	-3	24,782	4	25,793	12
Wigtown	511	22,918	17	26,819	24	33,240	6	36,258	8	39,195	11	43,389	89
Total	31,324	1,608,420	12	1,805,864	16	2,091,521	13	2,364,386	11	2,620,184	10	2,888,742	79

Statistics.

Statistics.

The rate of increase for the whole of Scotland during fifty years, from 1801, is 79 per cent., whereas for England and Wales it is as high as 101 per cent. The county in which the greatest increase has taken place is Lanark, where it reaches 258 per cent. The neighbouring counties of Ayr and Dumbarton follow, having 125 and 117 respectively. Edinburgh and Clackmannan have each 111, and Renfrew 105. On the other hand, the smallest increase has taken place in Argyle and Perth, having each only 10 per cent.; Sutherland only 12; Nairn, 19; Berwick, 20; Haddington, 21; Peebles, 23; Kincardine, 31; Inverness, Kinross, and Orkney and Shetland, 33; Elgin, 40; Bute, 41; Dumfries, 43; Banff, 45; and Ross and Cromarty, 47. This small increase has, in too many instances, arisen from the system of "clearings," by which the cottar or small farmer is driven from his home to seek refuge in our large towns, or in a foreign country, in order to make room for sheep and deer. The population of Scotland in 1858 is estimated at 3,093,870.

The progress of the population in the seven largest towns of Scotland during the half century preceding 1851, will be seen from the following table:—

Name.	1801.	1811.	1821.	1831.	1841.	1851.
Edinburgh } with Leith }	81,404	101,492	136,351	159,732	164,174	191,221
Glasgow.....	77,058	103,224	140,432	193,030	261,004	329,097
Aberdeen	26,992	34,640	43,821	56,681	63,288	71,973
Dundee	27,396	31,058	32,126	48,026	64,629	78,931
Paisley	25,058	29,461	38,102	46,222	48,263	47,952
Greenock	17,190	18,750	21,719	27,082	36,169	36,689
Perth	16,388	16,564	18,197	19,238	20,407	23,835

In 1851, there were 1,375,479 males, and 1,513,263 females in Scotland, being an excess of 137,784 of the latter over the former. This excess is considerably greater in Scotland than in England; there being in England and Wales 102 females to 100 males; and in Scotland, 107 females to 100 males. This disparity between the two countries is greater after the age of 20; there being in England and Wales 115 females to 100 males, and in Scotland 130 females to 100 males, of the age of 20 and upwards. Under the age of 20 the number of males exceeds that of females, and that to a greater extent in Scotland than in England. The excess of females at the ages above 20 is ascribed, partly to the fact that the mortality of females is less than that of males, and also to the circumstance that so many young Scotchmen cross the Tweed, or emigrate to foreign countries before marriage. Under the age of 20 there are only 97,595 females to 100,000 males; between the ages of 20 and 40 there are 111,638; between 40 and 60, 117,016; between 60 and 80, 134,649; and above 80, 158,629 females to 100,000 males.

The proportion of those who enter the married state in Scotland is much smaller than in England. Of males, of the age of 20 and upwards, 30 per cent. in England and 35 per cent. in Scotland were bachelors; and of females of the same age, 28 per cent. in England and 36 per cent. in Scotland were spinsters. In England, too, the proportion of early marriages is greater than in Scotland. Of young men, from 20 to 25 years of age, 20 per cent. in England and 16 per cent. in Scotland were married; while of women, of the same age, 31 per cent. in England, and only 25 per cent. in Scotland, were married. Of the male population of Scotland, of 20 years of age and upwards, 35·3 per cent. were bachelors, 58 husbands, and 6·6 widowers; of females, of the same age, 36·1 were spinsters, 49·1 wives, and 14·8 widows. The total number of husbands was 410,349; of wives, 422,296. There are proportionally fewer widowers, and more widows, in Scotland than in England; which, perhaps, may be accounted for by widowers marrying again

more, and widows less, frequently in Scotland than in England.

The number of blind, as ascertained by the census of 1851, was 3010, or 1 to every 960 of the population; of deaf and dumb, 2155, or 1 to every 1340 of the population. There were also inmates of prisons, 2993; of workhouses, 5438; of lunatic asylums, 2353; and of hospitals for the sick, 1192.

The following table gives the number and proportion, to the estimated population, of births, deaths, and marriages in Scotland, during the years 1855–58:—

Year.	Births.			Deaths.			Marriages.		
	Number	Per cent.	Ratio.	Number.	Per cent.	Ratio.	Number	Per cent.	Ratio.
1855	93,599	3·11	1 in 32	62,249	2·07	1 in 48	19,690	0·65	1 in 152
1856	101,748	3·35	1 in 29	58,456	1·92	1 in 52	20,487	0·67	1 in 148
1857	103,629	3·38	1 in 29	61,925	2·02	1 in 49	21,314	0·69	1 in 143
1858	104,195	3·37	1 in 29	63,532	2·05	1 in 48	19,603	0·63	1 in 157

The proportion of births, deaths, and marriages is lowest in the rural districts, higher in the small towns, and highest in the great towns. Thus, in 1858, in the eight principal towns of Scotland, the proportion of marriages was 77 to every 10,000 persons of the estimated population; in the smaller towns the proportion was 66; while in the rural districts the proportion was only 53. Of births, in the same way, the proportion in the eight principal towns was 369 to every 10,000 persons; in the smaller towns, 358; while in the country districts it was only 307. We see in this a wise provision of nature, that as the consumpt of life is greater in the towns, and this somewhat in proportion to their size, so, to secure a continuance of the species in these less healthy localities, a greater number of marriages and births occur there.

Of the 104,195 births in 1858, 53,826 were males, and 50,369 females, being in the proportion of 100 males to every 93½ females; a proportion of males higher than in any of the three previous years. The number of illegitimate births was 9256, giving a proportion of 8·8 per cent. of the births as illegitimate, or 1 illegitimate in every 11·2 births. This is a higher proportion by rather more than 2 per cent. than in England. In the eight principal towns of Scotland, 8·4 per cent. of the births were illegitimate; in the smaller towns, 8·6 per cent.; and in the rural districts, 9·3. Of the counties, Banff exhibits the highest proportion of illegitimate births, being no less than 16·1 per cent.; next follow Aberdeen, 14·9; Dumfries, 14·4; Kirkcudbright, 13·8; Kincardine, 13·1; while in the great manufacturing and mining county of Lanark, the proportion was only 7·1 per cent., and in Renfrew only 6·8.

The mean annual mortality in Scotland for the past four years has been at the rate of 203 deaths in every 10,000 persons; that of England, for the same period, 219 deaths in the same population. In the eight largest towns there were, in 1858, 265 deaths to every 10,000 of the population; in the smaller towns, 217; and in the rural districts only 164. Of the 63,532 persons who died during 1858, 31,660 were males, and 31,872 females; from which it appears that the males die in the proportion of 241 in every 10,000 of the estimated male population, and the females in the proportion of only 196 in a like number of females.

The Reformation in Scotland began at an early period, Religion. but it was not until 1560 that Popery was abolished by act of Parliament, and the Protestant religion established in its stead. The history and constitution of the prevailing sects in Scotland have already been so fully treated of in the article PRESBYTERIANISM, that it is unnecessary to do more here than give some statistics of the different bodies, founded on the census of 1851. The three prevailing sects are the Established, the Free, and the United Pres-

Statistics.

Statistics. byterian Churches. The proportion of adherents belonging to each are estimated as follows:—

Established Church.....	34 per cent.
Free Church.....	32 „ „
United Presbyterian Church.....	18 „ „
All other Churches.....	16 „ „

It is to be borne in mind, however, that a number of the clergy refused returns of the attendance at their places of worship, and the deficiencies were made up by assigning to such congregations the average of the attendance at the other places of worship of the same sect. There were 481 churches from which no returns were obtained, of which 279 belonged to the Established Church, 65 to the Free Church, and 38 to the United Presbyterian. The refusals, doubtless, in most cases, arose from the smallness of the congregations, and to allow for such an average of the number attending the other places of worship of the same sect, is manifestly to place them in too favourable a light. The great majority of these refusals being in the Established Church, the probability therefore is, that the number of her adherents is rather overestimated than otherwise. The Established Church may hence be said to possess only one-third of the worshippers of Scotland, and to barely exceed the Free Church. Taking the different counties, and including only the places of worship from which returns were made, we find that the Established Church had the majority of worshippers in 14 counties—Ayr, Banff, Berwick, Dumbarton, Dumfries, Fife, Forfar, Haddington, Kincardine, Kirkcudbright, Orkney and Shetland, Peebles, Stirling, and Wigton; the Free Church in 12 counties—Aberdeen, Argyle, Bute, Caithness, Edinburgh, Elgin, Inverness, Nairn, Perth, Renfrew, Ross and Cromarty, and Sutherland; and the United Presbyterian Church in 6 counties—Clackmannan, Kinross, Lanark, Linlithgow, Roxburgh, and Selkirk. The following table gives the number of places of worship and sittings, and the attendance at each of the three diets on Sunday, 30th March 1851:—

Denominations.	Places of Worship.	Sittings.	Attendance.		
			Morning.	Afternoon.	Evening.
Established	1183	767,080	351,454	184,192	30,763
Free	889	495,335	292,308	198,583	64,811
United Pres- byterian...	465	288,100	159,191	146,411	30,810
Other Deno- minations.	858	284,282	140,998	90,677	62,490
Total.....	3395	1,834,805	943,951	619,863	188,874

At the morning service little more than one half of the sittings were occupied, and in the afternoon little more than one-third. The proportion of unoccupied sittings is largest in the Established Church, and smallest in the Free Church, although even the latter cannot boast of having her pews much more than half filled. The proportion of attendants to population is less than a third in the forenoon, and rather more than a fifth in the afternoon. There are sittings provided for $63\frac{1}{2}$ per cent. of the entire population, a number considerably greater than can possibly be used. Were all the population capable of attending public worship to do so, it is estimated that not more than 58 per cent. would be required, so that the accommodation is $5\frac{1}{2}$ per cent. above what can possibly be required.

From 2914 places of worship returns more or less complete were obtained. Of these 2694 were separate buildings, and 220 were not separate buildings. The following table gives the number of places of worship belonging to other sects in Scotland, with their sittings and attendance on the 30th of March 1851:—

VOL. XIX.

Denominations.	Places of Worship.	Sittings.	Morning.	Afternoon.	Evening.
Independents.....	192	76,342	26,392	24,866	17,273
Episcopal	134	40,022	26,966	11,578	5,360
Roman Catholics	117	52,766	43,878	21,032	14,813
Baptists	119	26,086	9,208	7,735	4,015
Reformed Presbyterians....	39	16,969	8,739	7,460	2,180
Original Secession	36	16,424	6,562	5,724	1,629
Relief	2	1,020	220	250	275
Society of Friends	7	2,152	196	142	...
Unitarians.....	5	2,437	863	130	855
Moravians	1	200	16	...	55
Wesleyans—					
Original Connection.....	70	19,951	8,409	2,669	8,610
Primitive Methodists	10	1,890	327	404	715
Independent Methodists ..	1	600	190	150	180
Wesleyan Reformers	1	...	11	...	11
Glassites.....	6	1,068	429	554	100
New Church	5	710	211	67	120
Campbellites	1	80	11	14	...
Evangelical Union	28	10,319	3,895	4,504	2,171
Various	9	2,175	919	99	522
Common	2	360	...	...	...
Unsectarian	1	320	200	220	...
City Mission	7	1,365	70	40	686
Christians	7	1,131	417	236	280
Christian Disciples.....	15	2,471	539	530	201
Christian Reformation.....	1	50	...	11	...
Reformed Christians	1	...	8	8	8
Free Christian Brethren ...	1	340	180	261	...
Primitive Christians.....	2	210	57	74	...
Protestants	4	1,210	230	400	935
Reformation	1	250	10	18	...
Reformed Protestants	1	725	130	...	105
Separatists.....	1	...	11	...	...
Christian Chartists	1	220	100	80	...
Denomination not stated....	6	495	...	70	316
Cath. and Apos. Church ...	3	675	272	126	190
Mormons or L. D. Saints... 20	3,182	1,304	1,225	878	...
Jews	1	67	28	...	7

The subject of education engaged the attention of the Education, Scottish Parliament as early as the year 1494. At that time the schools were generally attached to some religious establishment. After the Reformation the Protestant Church zealously took up the cause of education, and many acts of the General Assembly were passed in favour of it. The government, however, cannot be said to have interfered till 1616, when the privy council enacted, "That in every parish of this kingdom, where convenient means may be had for entertaining a school, a school shall be established, and a fit person appointed to teach the same, upon the expense of the parishioners, according to the quality and quantity of the parish;" but it was not till seventeen years thereafter that this act of council was ratified by Parliament. The then disturbed state of the country prevented the act from becoming operative; and it was not till some time after the Revolution, namely in 1695, that the celebrated statute of William and Mary was passed, which forms the foundation of the present parochial system. It enacts, "That there be a school founded and a schoolmaster appointed in every parish (not already provided) by advice of the presbyteries; and to this purpose that the heritors do in every congregation meet among themselves and provide a commodious house for a school, and modify a stipend to the schoolmaster, which shall not be under 100 merks (L.5, 11s. 14d.), nor above 200 merks (L.11, 2s. 23d.), to be paid yearly, at two terms." The provisions of this act were immediately carried into effect in most parishes, and now the system is in universal operation throughout Scotland. The schoolmasters' salary continued as fixed by the statute of William and Mary till 1803, when it was enacted, "That from and after the term of Martinmas next, the

Statistics. salary of each parochial schoolmaster, in every parish in Scotland, shall not be under the sum of 300 merks Scots (L.16, 13s. 4d.), *per annum*, nor above the sum of 400 merks (L.22, 4s. 5½d.), except in the cases hereinafter-mentioned." The exceptions have regard to cases where it is necessary to have two or more parochial schoolmasters in one parish. The heritors have also to provide a commodious house for a school, a dwelling-house of at least two apartments, and at least a quarter of an acre Scots of ground for a garden. The act provided for the augmentation of the salary at the end of every twenty-five years, according to the value of the chalders of oatmeal, which, at the date of the passing of the act, was estimated at 200 merks Scots. In 1828, therefore, the salary of each parochial schoolmaster was raised upwards of a third, the *maximum* being L.34, 4s. 4½d., and the *minimum* L.25, 13s. 3½d. The inadequacy of this provision has of late been universally admitted. When, in 1853, a new average fell to be introduced, an education bill providing, among other things, for raising the status of the schoolmasters was expected speedily to become law, and the old rates were therefore continued from year to year in expectation of that taking place, till 1857, when an act was passed providing for fixing the average, on or before 1st July 1859, in terms of the act passed in 1803. Besides the statutory allowance, schoolmasters receive fees from their pupils, according to a scale fixed by the minister and heritors. The fees are generally very low, sometimes not more than 1s. or 1s. 6d. per quarter for English; and the schoolmaster is further bound to teach gratuitously "such poor children of the parish as shall be recommended by the heritors and minister at any parochial meeting." Frequently the parish schoolmaster adds to his salary by acting as session-clerk, precentor, &c.; and in many cases benevolent individuals have left sums for the better endowment of parish schools. The late James Dick, Esq., of London, bequeathed the sum of L.118,787 to augment the salaries of parochial schoolmasters in the counties of Aberdeen, Banff, and Moray. The choice of the schoolmaster is vested in the minister and heritors, and the person elected must be found qualified by the presbytery as to morals, religion, and literature.

Besides the parish schools, there are a number of other elementary schools supported by Christian bodies or societies. As early as 1701 a few private individuals in Edinburgh formed themselves into an association, under the title of "The Society in Scotland for Propagating Christian Knowledge," and established a number of schools throughout the country, chiefly in the Highlands and islands. The number of schools so established and maintained at present (1859) is 231, at an annual expenditure of upwards of L.3000. In 1824, the General Assembly appointed a committee to inquire into the state of education, and take steps for its improvement. This led to the establishment of a number of new schools; and these at present amount to 181, with 20,525 scholars. On the Disruption, the Free Church established a number of schools in connection with their places of worship. The number of these in 1859 was 617 (*viz.*, 455 congregational; 127 side; 28 missionary; 5 grammar; and 2 normal schools), with 647 teachers, and 62,205 scholars. There are also, throughout Scotland, a large number of private schools supported entirely by the school fees. In the cities and larger towns there are grammar or high schools and academies for communicating the higher branches of instruction; and there are 5 normal schools for the training of teachers, 2 connected with the Established Church, 2 with the Free Church, and 1 with the Episcopal Church. There are also the universities of Edinburgh, Glasgow, Aberdeen, and St Andrews, an account of which will be found in the article UNIVERSITIES.

Since 1839 the Privy Council has annually granted certain sums to aid in the establishment and support of schools,

under certain conditions. The following table shows the number of school-houses built, enlarged, or improved, with aid from such grants, the amount so granted, the amount subscribed by the promoters, the total amount expended, and the number of children for whom accommodation has thus been provided from 1839 to 31st December 1858:—

Denominations.	School-houses.	Amount of Grants.	Amount Subscribed.	Total Expended.	Accommodation provided.
		L.	L.	L.	
Established Church schools.....	237	36,649	75,325	111,974	23,361
Free Church, and others not connected with the Establishment.....	224	24,473	49,490	73,963	19,747
Episcopal Church schs.	9	2,577	4,554	7,131	1,247
Total.....	470	63,699	129,369	193,068	44,355

The whole expenditure for Scotland from the beginning of the grants in 1839 to the end of the year 1858 was, on schools connected with the Established Church, L.232,961; on schools connected with the Free Church, L.185,877; and on schools connected with the Episcopal Church, L.18,903. The expenditure for the year 1858 was, on schools connected with the Established Church, L.46,774, (being an increase on the previous year of L.9949); on schools connected with the Free Church, L.31,609, (being an increase on the previous year of L.3194); on schools connected with the Episcopal Church, L.5536, (being an increase on the previous year of L.661).

According to the census of 1851, there were then in Scotland, in all, 5242 day schools, of which 3349 were public, and 1893 private day schools. The number of scholars attending the former was 280,045 (161,754 males, and 118,291 females); attending the latter, 88,472 (43,594 males, and 44,878 females). The total, 368,517, gives a proportion to the population of 12·76 per cent., or one scholar to every 7·84 inhabitants. Making a fair allowance for deficient returns, it seems probable that about 14 per cent., or one in every seven, of the people of Scotland are at school. As compared with the other side of the Tweed, this is not an unfavourable result, the total number of day-scholars at school in England and Wales being 2,144,378, out of a population of 17,927,609, or in the proportion of one to every 8½ of the whole population. The number returned as scholars in the householders' schedule, under the head occupation, was 426,566. The public day schools are arranged by the compilers of the census in four groups, according to the sources from which they are maintained. Class 1 is designed to represent the number of schools which depend for their support upon the public taxes, whether national or local, and in this class all parochial and burgh schools are included. Class 2 was intended to show the number of schools sustained *chiefly* by *permanent endowment*, but it was found that, in the returns, the word "endowment" was used to signify not merely funds assigned in perpetuity for education, but also the aid afforded by the educational societies and the contributions of the heritors; so that this class, in reality, represents the number (exclusive of parochial and burgh schools), which derive the principal portion of their sustenance from "endowments," as understood by the parties who made the return. Class 3 shows the action of religious bodies in the matter of education, so far as they act denominationally; while class 4 displays the influence of general philanthropy, apart from any sectarian organization. The following table exhibits the results according to this mode of classification.

Statistics.

Description.	Schools.	Scholars.		
		Both Sexes.	Males.	Females.
<i>Classification of Public Schools.</i>				
Class I.—Supported by General or Local taxation...	1039	88,900	58,007	30,803
Class II.—Supported by Endowments.....	491	39,537	22,100	17,437
Class III.—Supported by Religious Bodies.....	1385	114,739	62,715	52,024
Class IV.—Other Public Schools.....	434	36,869	18,932	17,937
<i>Class I.</i>				
Burgh Schools.....	88	11,484	8,208	3,276
Parochial Schools.....	937	75,955	48,765	27,190
Government Schools of Design.....	3	598	517	81
Military Schools.....	5	212	136	76
Prison School.....	1	143	71	72
Workhouse Schools.....	2	157	103	54
Other Government Schools...	3	351	207	144
<i>Class II.</i>				
Endowed Schools.....	491	39,537	22,100	17,437
<i>Class III.</i>				
Established Church.....	537	36,995	19,034	17,961
Reformed Presb. Church..	2	355	184	171
United Presb. Church.....	61	5,807	3,173	2,634
Free Church.....	712	62,660	35,848	26,812
Episcopal Church.....	36	2,658	1,493	1,165
Independents.....	4	424	219	205
Baptists.....	1	167	96	71
Roman Catholics.....	32	5,673	2,668	3,005
<i>Class IV.</i>				
Ragged Schools (<i>exclusive of 4 supported by religious bodies</i>).....	17	1,491	910	581
Orphan Schools.....	3	216	128	88
Blind School.....	1	24	13	11
Deaf and Dumb Schools.....	2	89	61	28
Benevolent Society's School...	1	92	62	30
Dumfries Education Society's School.....	1	147	107	40
Friend Society's School.....	1	100	60	40
Gaelic Society's Schools.....	6	441	255	186
Industrial Schools.....	5	301	146	155
Factory Schools.....	12	1,130	498	632
Colliery Schools.....	20	2,101	1,124	977
Iron Works Schools.....	24	4,177	2,302	1,875
Trades' Schools.....	5	499	279	220
Seamen's Friend Society.....	1	200	120	80
New Janark Institution.....	1	319	150	169
House of Refuge.....	1	55	35	20
Other Subscription Schools, of no specific character...	333	25,487	12,682	12,805
Total Public Day Schools	3349	280,045	161,754	118,291

Returns of income for the year 1850 were received from 2511 public day schools, having 210,363 scholars. The total income was L.173,436, of which L.62,089 were permanent endowments, L.21,824 voluntary contributions; L.6643 grants from government; L.64,471 payments by scholars; L.18,409 other sources. Of 1662 endowed schools, 59 had endowments of less than L.5; 140 of L.5 and less than L.10; 381 of L.10 and less than L.20; 922 of L.20 and less than L.50; 33 of L.50 and less than L.100; 10 of L.100 and less than L.200; 9 of L.200 and less than L.500; 2 of L.500 and less than L.1000; 2 of L.1000 and less than L.2000; 2 of L.2000 and upwards. The endowments of 102 were not stated.

Returns were made as to the remuneration of 1695 masters, and 295 mistresses of public day schools. The total aggregate amount of the remuneration of masters was L.78,393, of which L.41,423 arose from salary, and L.36,970

from school fees. The average remuneration per master was L.46. Of 691 masters in schools of class I., the average remuneration was L.55; of 232 in schools of class II., L.39; of 736 in schools of class III., L.39; and of 136 in schools of class IV., L.45. The number of masters allowed a residence was 1110. The total aggregate amount of remuneration of mistresses was L.6288, of which L.4089 arose from salary, and L.2199 from school fees. The average remuneration per mistress was L.21. The number of mistresses allowed a residence was 137. Information as to teachers was received from 2818 public day schools, having 142,637 male, and 103,813 female scholars. The total number of male teachers was 4821, of whom 2903 were masters, 553 paid monitors and pupil teachers, and 1365 unpaid teachers. The total number of female teachers was 1792, of whom 894 were mistresses, 241 paid monitors and pupil teachers, and 657 unpaid teachers.

Besides the day schools, there were 438 adult evening schools, with 9500 males, and 5571 female scholars. The number of teachers was 629, of whom 526 were males, and 103 females. In 44 of these schools instruction was free. Of 10,327 adult evening scholars, 4386 were artisans; 2397 factory operatives; 561 agricultural labourers; 553 domestic servants; 349 weavers; 343 coal and iron operatives; 287 bleachers; 278 warehousemen; 385 miners; and 166 clerks. There were also found to be 221 mechanics', literary, and similar institutions in the country.

The number of Sunday schools was 3803, with 292,549 scholars (135,435 males, and 157,114 females), being 10.1 per cent. of the population. Of these schools, 1095 belonged to the Established Church; 1243 to the Free Church; and 558 to the United Presbyterian Church. There were 25,411 teachers, of whom 14,181 were males, and 11,230 females; 152 were paid, and 25,259 unpaid.

The following table exhibits the state of crime in Scotland in 1855, 1856, and 1857, as well as in each of the four quinquennial periods immediately preceding:—

	Average of 1836-40.	Average of 1841-45.	Average of 1846-50.	Average of 1851-55.	Year 1855.	Year 1856.	Year 1857.
Committed for trial or bailed } males ...	2516	2685	3248	2812	2568	2591	2743
} females..	834	1010	1240	1069	1062	1122	1097
Tried	2789	3082	3689	3190	2961	2296	3169
Convicted, outlawed, or found insane	2563	2791	3370	2947	2728	2762	2937
Conviction aggravated by previous convictions...	506	641	977	854	852	926	853
Sentenced to death	2 $\frac{3}{8}$	1 $\frac{3}{8}$	2 $\frac{3}{8}$	2 $\frac{3}{8}$	2	3	3
Executed	1 $\frac{3}{8}$	1	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1	...	3
<i>Offences.</i>							
Against person	751	835	1088	1014	972	1046	1140
Against property with violence	530	537	703	532	377	380	408
Against property without violence	1676	1883	2182	1916	1836	1942	1943
Against property (malicious)	47	64	73	62	78	79	53
Forgery, &c.	120	137	146	109	124	85	89
Other offences	266	239	295	247	243	181	207
<i>Age and Education of Criminals.</i>							
Of or under 16 } males ...	461	496	512	450	470	412	433
} females..	94	115	126	109	154	117	134
Could neither read nor write } males ...	431	485	615	539	474	456	557
} females..	237	268	309	317	293	260	316
Read or write } males ...	1422	1684	1962	1605	1511	1588	1625
} females..	512	684	844	679	691	764	697
Could read and write well ... } males ...	491	437	582	571	486	468	467
} females..	50	56	93	83	72	88	75
Had superior education..... } males ...	60	61	71	76	77	73	82
} females..	2 $\frac{3}{8}$	2 $\frac{3}{8}$	3 $\frac{3}{8}$	4	5	8	7

Statistics.

Of the 3169 persons tried in 1857, there were tried by the High Court of Justiciary 99; by the Circuit Court of Justiciary 375; by the sheriff with a jury, 1114; by the sheriff without a jury, 1402; by burgh magistrates, 144; by justices or other courts, 5. The sentences passed in that year were transportation for life, 2; transportation for more than 15 years, 8; transportation for 15 or 14 years, 18; penal servitude for life, 1; penal servitude for more than 15 years, 2; penal servitude for 15 years and above 10 years, 4; penal servitude for 10 years and above 6 years, 24; penal servitude for 6 years and above 4 years, 50; penal servitude for 4 years, 132; penal servitude for 3 years, 17; imprisonment for 3 years and above 2 years, 2; imprisonment for 2 years and above 1 year, 132; imprisonment for 1 year and above 6 months, 326; imprisonment for 6 months and under, 1877; whipping, fine, and discharge, 287.

Occupation.

The total number of males in Scotland in 1851 was 1,375,479, of whom 3352 were Protestant clergymen; 2422 lawyers; 3010 medical men; 2557 law clerks; 1194 druggists; 282 literary writers; 371 artists; 273 architects; 420 civil engineers; 3982 schoolmasters; 1983 land proprietors; 48,071 farmers; 94,899 outdoor agricultural labourers; 45,346 farm-servants (indoor); 8489 domestic servants; 2915 road labourers; 5203 railway labourers; 40,701 labourers (undefined); 8276 gardeners; 1944 gamekeepers; 1903 grooms or jockeys; 19,617 fishermen; 12,189 seamen; 32,971 coal-miners; 7619 iron-miners; 898 lead-miners; 4527 stone-quarriers; 784 slate-quarriers; 1116 limestone-quarriers or burners; 2017 brickmakers; 12,283 carriers, carters, &c.; 1434 publishers or booksellers; 1019 bookbinders; 3401 printers; 623 engravers; 45,560 engaged in the manufacture of cotton; 32,907 of linen; 9572 of woollen cloth; 2317 of carpets and rugs; 367 of worsted; 1824 of stockings; 1539 of silk; 1265 of paper; 1645 of earthenware; 13,240 of iron; 724 of glass; and 1673 of chemicals; 2762 dyers; 8860 cotton printers; 17,093 blacksmiths; 1549 nailmakers; 1430 boiler-makers; 5719 engine, machine, and toolmakers; 1534 brassfounders; 166 wire-workers; 185 gunsmiths; 1894 tinsmiths; 305 copper-smiths; 755 gold and silver smiths; 1526 watchmakers; 657 combmakers; 685 sugar-refiners; 2411 ropemakers; 161 soap-boilers; 393 tallow-chandlers; 1220 curriers; 815 tanners; 453 skinners; 531 cork-cutters; 530 tobaccoists; 9621 grocers; 2937 wine and spirit merchants; 2338 licensed victuallers; 1840 innkeepers; 1152 brewers; 561 maltsters; 4471 millers; 9541 bakers; 1155 confectioners; 4851 butchers; 29,703 shoemakers; 18,492 tailors; 772 hatters; 827 hair-dressers; 1006 builders; 773 bricklayers; 22,332 masons and paviors; 24,066 carpenters and joiners; 2707 slaters; 1793 plasterers; 5545 painters and plumbers; 5528 cabinet-makers and upholsterers; 1185 turners; 4025 coopers; 4729 sawyers; 2020 wheel-wrights; 2249 mill-wrights; 1162 coachmakers; 1642 saddlers; 4395 ship and boat builders; 1256 were in the post-office service; 1173 in the inland revenue; 1019 customs; and 1920 police.

Of the 1,513,263 females, 114,751 were domestic servants; 28,477 indoor farm-servants; 26,151 agricultural labourers (outdoor); 28,902 milliners; 12,971 seamstresses; 1457 staymakers; 2049 schoolmistresses; 1164 governesses; 10,380 washerwomen, laundresses, &c.; 4865 farmers; 4024 grocers; 1082 licensed victuallers; 524 wine and spirit merchants; 52,685 were employed in the manufacture of cotton; 39,579 linen; 5696 woollen cloth; 945 worsted; 4715 stockings; 1059 silk; 2159 paper; 653 straw plait; 3006 shawls; 5602 were cotton printers; and 4361 embroiderers.

Mines.

Coal.

The coal and iron mines of Scotland are great sources of wealth, and afford employment to a great number of the population. In 1858 there were 417 coal mines in Scotland, in the counties of Lanark, Ayr, Fife, Clack-

mannan, Haddington, Edinburgh, Linlithgow, Stirling, Dumbarton, Renfrew, Dumfries, Peebles, and Perth. These were estimated to employ 32,000 persons, of whom about 27,000 were colliers and drawers, the remainder being overseers, engine-keepers, mechanics, labourers, &c. The total quantity of coal produced in 1854 was 7,448,000 tons; and in 1858, 8,926,249 tons.

Iron is of frequent occurrence in the coal districts, especially in Lanarkshire, where the ores are of the very best quality. The iron trade of that county, and of Scotland generally, has increased with unexampled rapidity. In 1825 there were only 33,540; and in 1830, 37,500 tons of iron produced in Scotland; whereas in 1840 it had risen to 241,000 tons; in 1854 to 796,640; in 1856 to 832,000; and in 1858 to 925,500 tons. The quantity of ore raised in this last mentioned year was 2,312,000 tons, valued at L.750,000. In 1858 there were 32 iron-works in Scotland, with 177 furnaces, of which 132 were in blast. Of these, 13 iron-works, with 97 furnaces, 81 being in blast, were in Lanarkshire; and 9 ironworks, with 50 furnaces, of which 32 in blast, were in Ayrshire.

The number of lead mines in Scotland in 1858 was 9, Lead. of which 1 was in Dumfriesshire (Wanlockhead), producing 870 tons of ore; 1 in Lanarkshire (Lead Hills), 1087 tons; 4 in Kirkcudbrightshire, 235 tons; 1 in Argyllshire, 44 tons; 1 in Perthshire, 54 tons. The total produce of lead ore was 2290 tons, from which 1586 tons of lead were obtained, and 4882 ounces of silver extracted.

The salmon fishery of Scotland has long been very considerable. It is chiefly carried on in the rivers on the east coast,—the Tweed, Forth, Tay, Dee, Don, Findhorn, Spey, Ness, &c. The London market is chiefly supplied with salmon from Scotland. Before the London trade commenced, salmon was so common in the country, that, in some parts, domestic servants used to stipulate that they should not be obliged to dine on it more than three or four times a week. Of late years the value of the river-fisheries has declined considerably, owing, doubtless, in a great measure, to the increased use of stake and bag nets in estuaries and along the coast. See article FISHERIES.

The herring fishery is an important branch of industry, Herring. and has long been extensively carried on. Till a recent period large sums were annually expended by government in premiums and bounties to stimulate this branch of industry, but these were finally abolished in 1830, and since that time it has gradually but steadily progressed. In 1830, 329,557 barrels of herring were cured; in 1840, 543,945; and in 1857 (an unfavourable year), 580,813. The total produce of this fishery in Scotland and the Isle of Man in the last of these years was 666,934 barrels, of which 86,121 barrels were sold or disposed of for immediate consumption, and 580,813 cured; 218,992 were branded; 367,160 exported; and assorted after the Dutch mode, and branded accordingly, 178,440 "full," and 283 "matied." The export trade to the Continent is rapidly increasing; and there the Scotch herrings now rival those of any other country. In 1857, 307,275 barrels were exported to the Continent.

The cod and ling fisheries produced in 1857, 157,706 Cod and ling. cwt., and 4393 barrels; of which there were cured dried, 104,668 cwt.; and cured in pickle, 4393 barrels; exported, 34,310 cwt. The quantity caught and not cured was 53,038 cwt.

In 1857 the herring, cod, and ling fisheries in Scotland employed 11,858 boats (3702 1st class—30 feet keel and upwards; 3607 2d class—18 to 30 feet keel; and 4549 3d class—under 18 feet keel); having an aggregate burden of 82,175 tons. The total number of persons employed was 90,543, of whom 40,724 were fishermen and boys; 2045 coopers; 19,748 gutters, packers, &c.; 28,026 net-makers, venders, &c.; and 1017 fish-curers. The total value of boats, nets, and lines was L.702,715; of which L.85,811

Statistics.

Fisheries—Salmon.

Statistics. belonged to the Wick district; L.72,702 to the Banff district; L.72,640 to the Anstruther district; L.47,118 to the Peterhead district; L.41,695 to the Eyemouth district; L.32,216 to the Inverary district; L.30,926 to the Leith district; L.29,407 to the Orkney district; L.29,588 to the Fraserburgh district; L.25,545 to the Findhorn district; L.20,384 to the Rothesay district; L.26,725 to the Stornoway district; L.23,557 to the Lybster district; L.21,060 to the Loch Broom district; and L.20,344 to the Loch Shiel-dag district. The total value of the boats was L.265,569; of the nets L.373,963; and of the lines, L.63,183.

The prosperity of the fisheries in general has had a very beneficial effect upon the fishermen. Their social condition has improved; their labours are now more largely remunerated; and they have found that diligence, and skill, and enterprise are necessary to success. A great advance has taken place in the size and character of the boats employed; and the number and value of the nets in use by each boat have also greatly increased. This spirit of improvement is also beginning to manifest itself in their towns and villages; their dwelling-houses are being improved, shops of larger size and of superior character are increasing, and roads and other means of communication are being opened up.

**Manufac-
tures.
Linen.**

It is only since the union with England that Scotland has attained to any importance in the manufactures. The linen manufacture was the earliest, and was long regarded as the staple branch of industry. At the time of the Union in 1707 it is not supposed to have yielded more than 1,500,000 yards a year. In 1727 a board of trustees was established for the superintendence and encouragement of the linen manufacture; and bounties and premiums were given to encourage its production and exportation. The quantity produced for sale in 1728 was 2,000,000 yards; in 1775, 12,000,000 yards; and in 1822, 36,000,000 yards. The regulations as to the inspection and stamping of the linen intended for exportation, by which the trade was much annoyed, were abolished in 1822, and the bounties ceased in 1830.

Previously to 1791 all the flax used in the manufacture was spun upon the common hand-wheel; but at that time the spinning by machinery began to be introduced, and since then the progress of this manufacture has been rapid. In 1837 the flax factories employed 15,462 hands; in 1850, 28,312; and in 1856, 31,722, of whom 8331 were males and 23,391 females. In 1850 there were 189 factories, with 303,125 spindles, and 2529 power-looms; and in 1856 there were 168 factories, with 278,304 spindles and 4011 power-looms, driven by 6346 horse-power, of which 5529 was steam. The principal seat of the linen manufacture is Dundee, especially of the coarser fabrics,—as sailcloth, sacking, sheeting, osnaburgh, &c. In Kirkcaldy, Arbroath, Forfar, Montrose, and Aberdeen this manufacture is also largely carried on. In Dunfermline, and the immediate vicinity, the finer fabrics are chiefly manufactured. The counties where the linen manufacture is chiefly carried on are Forfar, Fife, and Aberdeen; to a less extent, Perth, Lanark, Renfrew, Edinburgh, and Ayr; and to a small extent, Kincardine.

Cotton.

The cotton manufacture in Scotland is only of comparatively recent introduction, the first steam-engine for a cotton factory having been constructed so late as 1792. Its principal seats are in the counties of Lanark and Renfrew. Some of the fabrics made at Glasgow and Paisley are of almost unrivalled beauty and fineness. The number of cotton mills in 1837 was 177; all those of considerable size, with only a few exceptions, being situated in Glasgow, or within 20 or 30 miles of it, and all of them without exception being connected with Glasgow houses, or the Glasgow trade, at least so far as the raw material was concerned. In 1850 the number of cotton factories was 168, with 1,683,093 spindles and 23,564 power-looms, employing 36,325 hands. In 1857 there were 152 cotton factories,

with 2,041,129 spindles and 21,624 power-looms, driven by 9971 horse-power, of which 7641 was steam, and employing 34,698 hands, of whom 7609 were males and 27,089 females. The entire cotton manufacture of Scotland may be said to centre in, or be dependent on, Glasgow.

The woollen manufacture has never been considerable in Scotland; but it is more generally diffused over the country than either of the other two, being carried on, to a greater or lesser extent, in 24 of the 32 counties; whereas the linen manufacture is carried on only in 9, and the cotton in 10. It was formerly the custom for the occupiers of land to spin the whole of their wool with the hand in their own houses, and to send the yarn to the village weaver to be woven into a species of coarse cloth called *plaiding*; but this mode could exist only in a rude state of society, and is now entirely abandoned. Coarse cloth still continues to form the staple article of Scotch manufacture, though factories for the making of fine cloth have been established in various parts of the country. Flannels, blankets, shawls, plaids, stockings and stocking-yarn, tartans, druggetts, &c., are produced to a considerable extent at Galashiels, Hawick, Paisley, Bannockburn, Stirling, Kilmarnock, Jedburgh, and Aberdeen, as is more particularly noticed in the special articles on these places. In 1850 there were 188 woollen and worsted factories, with 233,533 spindles and 247 power-looms, employing 10,210 persons; and, in 1856, 202 woollen and worsted factories, with 293,363 spindles and 800 power-looms, driven by 3267 horse-power, of which 1487 was steam, and employing 10,175 hands, of whom 5179 were males and 4996 females. The power-loom has not hitherto been much employed in this manufacture; but it is being rapidly introduced, the number having more than tripled between 1850 and 1856.

The silk manufacture is still less considerable than that of woollen. Its seats are Paisley and Glasgow. In 1856 there were 6 silk factories, with 30,244 spindles, driven by 122 steam horse-power, and employing 837 persons, of whom 160 were males and 677 females.

The favourite beverage of the people of Scotland has for a lengthened period been whiskey. Previously to 1823, owing to the high rate of duty, smuggling prevailed to a great extent in almost every district of the country, but especially in the Highlands. But in that year the duty was reduced from 6s. 2d. to 2s. 4½d. per imperial gallon, when the quantity of legally distilled spirits rose from 3,337,850 gals. in 1822 to 5,908,373 gals. in 1824, and 8,224,807 in 1825. The quantity charged duty for home consumption in Scotland in 1822 was 2,225,124 gals.; and in 1825, 5,981,549. In 1826 the duty was increased to 2s. 10d.; in 1831 to 3s. 4d.; and in 1840 to 3s. 8d. In 1855 it was farther increased to 4s. 8d.; in 1854 to 6s.; and in 1855 to 8s. per gallon. In 1850 there were 167 licensed distilleries in Scotland, and the quantity of proof spirits distilled during the year ending 5th January 1850 was 10,846,634 gallons, of which 6,058,086 were from malt only, and 4,788,548 from a mixture of malt with unmalted grain, sugar, or molasses. The number of gallons of proof spirits distilled in Scotland during 1857 was 13,299,409. Since the passing of the Act 18 and 19 Vict. cap. 94, allowing malt to be made, and sugar and molasses to be used for distillery purposes free of duty, in lieu of allowances and drawbacks, no separate account of the quantities of spirits made from these materials has been kept.

Since the repeal of the duty in 1830 we have no means of determining the quantities of ale and beer brewed. In 1829, 111,071 barrels of strong beer, and 229,384 barrels of table-beer were made in Scotland, yielding a duty of L.71,787. The duty on strong beer was 9s. 10d., and on table-beer was 1s. 11½d. per barrel. The brewers are now subject to license duties, varying according to the quantity which they produce. In 1857 there were 223 brewers of

Statistics. strong beer, 11 brewers of table-beer, 23 retail brewers, and 15 brewers from sugar, licensed in Scotland. The number of bushels of malt consumed was 1,228,524. The principal seat of this manufacture is Edinburgh, but it is also carried on in many other places.

Malt. Malt has been largely made in Scotland from an early period. A duty was first imposed upon it in 1713; and in 1770 the quantity charged with duty was 1,762,460 bushels. In 1856 the number of bushels made by maltsters was 4,192,039; and in 1857, 5,131,876. In the latter of these years the numbers of bushels consumed by brewers was 1,228,524; and by distillers, 3,814,663.

Paper. Paper is a large and rapidly extending manufacture in Scotland. In 1837 the quantity produced was 13,781,383 lb.; in 1841, 16,821,354 lb.; in 1851, 31,723,001 lb.; and in 1857, 41,673,595 lb. The number of paper-mills in operation in 1838 was 49; in 1850, 48; and in 1856, 51. Paper was one of the first articles that was subjected to excise duties,—viz., as early as 1712. In 1737 the amount of duty collected was L.187; in 1790, L.5048; in 1820, L.52,182; in 1840, L.108,675; in 1850, L.187,687; and in 1857, L.271,662.

Among the more important of the other manufactures are, leather, soap, earthenware, glass, hardware, hats, and combs. The making of steam-engines, and every other description of machinery, as also the building of steam-boats, both of wood and iron, is carried on to a great extent, especially on the Clyde; and ship-building is largely carried on at all the chief ports.

Commerce. Previous to the Union, Scotland having little industry, and being thinly peopled, possessed only a very limited trade. Its exports were chiefly wool, skins, hides, and other raw materials; and its imports, corn, wine, spices, &c. Soon after the Union, however, the trade with the American and West India colonies began to awaken the commercial energies of the nation. In 1755 the exports amounted in value to L.535,576, and the imports to L.465,411. Since that time the rapid extension of its manufactures, aided by the discoveries and inventions of Watt, Arkwright, and others, has led to a corresponding increase of its commerce. In 1801 the exports amounted to L.2,844,502, and the imports to L.2,579,914. In 1851 the official value of the exports was L.17,871,869; and of the imports, L.8,921,108. The declared real value of the produce of the United Kingdom exported from Scotland in 1851 was L.5,016,116; and in 1857 it was L.8,136,708; of which, cotton yarn and manufactures, L.2,448,852; iron, wrought and unwrought, L.1,545,311; linen yarn and manufactures, L.832,692; herrings, L.445,016; woollen and worsted yarn and manufactures (pure and mixed), L.424,430; coals, cinders, and culm, L.288,199; haberdashery and millinery, L.247,131; machinery of all sorts, L.222,531; spirits, L.176,014; ale and beer, L.145,193. The principal ports from which these articles were exported were—Glasgow (L.5,103,318, chiefly cotton, linen, and iron manufactures); Leith (L.830,532, chiefly linen and iron manufactures); Greenock (L.502,899, chiefly iron and cotton manufactures); Grangemouth (L.445,078, chiefly iron manufactures); Irvine (L.246,588, chiefly iron and coal); and Dundee (L.230,020, chiefly linen yarn and manufactures).

Shipping. At the time of the Union in 1707, Scotland possessed only 215 vessels, having an aggregate burden of 14,485 tons. In 1800, its shipping amounted to 171,728 tons; in 1840, to 429,204 tons; in 1850, to 522,222 tons; and in 1857, to 639,557 tons. Of these last, the number registered as belonging to Scotland on 31st December 1857, there were 3214 sailing vessels, with 558,623 tons, of which 1170 vessels, with 35,405 tons, were of and under 50 tons burden each; and 294 steam vessels, with 80,934 tons, of which 66 vessels, with 1406 tons, were of and under 50 tons burden each. At 31st December 1858, 3543

vessels, having 652,675 tons, were registered at the various ports of Scotland, and that year 141 vessels, having 33,432 tons, were built. The following table gives the number of vessels and tonnage registered at the principal ports of Scotland on 31st December 1857:—

Ports.	Sailing Vessels.		Steam Vessels.		Total. Tonnage.
	Num- ber.	Tonnage.	Num- ber.	Tonnage.	
Glasgow	458	162,355	153	56,591	218,946
Greenock	386	83,304	30	5,739	89,043
Aberdeen	252	65,814	15	4,347	70,161
Dundee	269	50,477	9	1,852	52,329
Leith	150	21,370	39	6,809	28,179
Total	3214	558,623	294	80,934	639,557

The number of sailing vessels entered coastwise in Scotland in 1857 was 15,129 (15,096 British and 33 foreign); their tonnage, 948,946 (944,660 British and 3286 foreign); the number cleared coastwise, 15,827 (15,800 British and 27 foreign); their tonnage, 915,556 (913,531 British, 2025 foreign). The number of steam vessels (all British) entered coastwise was 5961; tonnage, 1,254,360; the number cleared coastwise, 6020; tonnage, 1,246,404. The number and tonnage of the sailing and steam vessels entered and cleared at the chief ports in 1857 were:—

Ports.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Glasgow	2,769	495,420	4,142	545,545
Aberdeen	1,767	288,374	1,102	217,624
Leith	1,595	272,657	1,314	250,886
Dundee	1,898	174,129	498	56,503
Inverness	2,421	150,861	2,364	146,980
Campbeltown	1,777	138,298	1,362	110,341
Irvine	391	46,454	3,512	254,246
Total	74,736	2,203,306	21,847	2,161,965

The number of sailing vessels entered from the colonies in 1857 was 585 (560 British and 25 foreign); their tonnage, 248,368 (236,563 British, and 11,805 foreign); the number cleared for the colonies was 570 (547 British and 23 foreign); their tonnage, 257,621 (245,069 British and 12,552 foreign). The number of steam vessels (all British) that entered from the colonies was 10; their tonnage, 2426; the number that cleared for the colonies was 37; their tonnage, 13,325. The number and tonnage of sailing and steam vessels entered and cleared in the colonial trade at the chief ports were:—

Ports.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Greenock	228	111,324	126	66,422
Glasgow	145	45,082	271	116,043
Port-Glasgow	53	40,695	24	20,712
Irvine	32	12,361	86	31,455
Leith	27	11,663	24	10,831
Dundee	18	5,737	18	6,380
Aberdeen	17	5,469	12	4,663
Total	595	250,794	607	270,946

The number of sailing vessels entered from foreign ports in 1857 was 3936 (1357 British and 2579 foreign); their tonnage, 550,320 (233,781 British and 316,539 foreign); the number cleared for foreign ports was 4951 (2093 British and 2858 foreign); their tonnage, 678,687 (322,612 British and 356,075 foreign). The number of steam vessels entered from foreign ports was 391 (346 British and 45 foreign); their tonnage, 128,058 (117,479

Statistics. British and 10,579 foreign); the number cleared for foreign ports, 434 (354 British and 80 foreign); their tonnage, 136,715 (114,908 British and 21,807 foreign). The number and tonnage of sailing and steam vessels entered and cleared in the foreign trade at the chief ports in 1857 were:—

Ports.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Leith.....	1355	192,927	451	85,936
Glasgow.....	370	100,146	636	144,797
Grangemouth.....	568	92,360	714	107,670
Dundee.....	518	89,665	357	63,747
Greenock.....	80	31,731	46	22,932
Aberdeen.....	203	26,008	76	12,991
Irvine.....	76	17,165	442	95,626
Borrowstounness.....	132	13,936	887	100,177
Total.....	4327	678,378	5385	815,402

The following table shows the progress of shipping in the colonial and foreign and coasting trade for the seven years, from 1851–1857:—

	Coasting Trade.		Colonial and Foreign.		Total.	
	Inwards.	Outwards.	Inwards.	Outwards.	Inwards.	Outwards.
1851...	2,010,988	2,105,224	663,321	753,312	2,674,309	2,858,536
1852...	1,971,204	2,058,185	579,158	691,828	2,550,362	2,750,013
1853...	1,904,270	2,003,581	720,047	902,005	2,624,317	2,905,586
1854...	1,935,689	2,104,967	702,940	806,773	2,638,629	2,911,740
1855...	1,963,552	2,057,936	668,078	840,150	2,631,630	3,898,086
1856...	2,049,390	2,056,090	793,193	965,447	2,842,583	3,021,537
1857...	2,203,306	2,161,965	929,172	1,086,348	3,132,478	3,248,313

Roads.

Until after the middle of last century there was scarcely a good road in Scotland. Even in the southern counties, corn, coal, turf, and even straw and hay, were usually carried upon the backs of horses. "Cadgers" plied regularly between different places, conveying goods in sacks or baskets, suspended one on each side of the horse. Where the distance, however, was considerable, it was necessary to use a cart, as all that a horse could carry on his back would not defray the expense of a long journey; and such was the wretched state of the roads that the time taken by the carriers (*i.e.*, those that used carts) is almost incredible. The common carrier from Selkirk to Edinburgh, 38 miles distant, required a fortnight for his journey going and returning. In 1678 an agreement was made to run a coach, with six horses, between Edinburgh and Glasgow, a distance of 44 miles, the double journey to be accomplished in six days; and even so late as the middle of last century, the stage-coach between these two towns took a day and a half to the journey. Soon after the rebellion of 1745, government began to open up the country by roads made by the military, hence called military roads, of which there were in all about 800 miles. These, however, were mostly confined to the Highlands, and were of little use for commercial purposes, being formed with little or no regard to such ascents and descents as do not impede the passage of an army.

Turnpike roads.

The turnpike roads and bridges in the Lowlands have, for upwards of a century, been made and kept in repair by means of tolls exacted from those who use them, under the authority of private acts of Parliament. The first of these acts was obtained in 1750. The roads are under the management of a board of trustees, who appoint clerks, collectors, surveyors, &c.; borrow money; enforce subscriptions; erect or remove toll-bars; reduce tolls or raise them as far as permitted by the local act; let tolls by public roup; provide tables of tolls, &c. By this means, and in consequence of the excellent materials that abound in all parts of the country, Scotland is now well supplied with turnpike roads, which are superior even to those in England. There are about 7000 miles of turnpike roads in Scotland, and 245

trusts. In the year 1854–55, the revenue received from tolls was L.216,661, and the total income from all sources, L.250,800; the total expenditure was L.248,347; and the total debt L.2,358,767. The expenditure for manual labour was L.84,956; for carriage of materials, L.9367; for materials for surface repairs, L.25,875; for land purchased, L.360; for damage done in obtaining materials, L.1004; for tradesmen's bills, L.5723; for salaries of treasurers, L.2138; of clerks, L.4768; of surveyors, L.11,672; for law charges, L.3587; for interest of debt, L.37,587; for annuities, L.500; for improvements, L.32,760; for watering roads, L.424; for debts paid off, L.18,923; for incidental expenses, L.9145.

In the Highlands, the nature of the country and the state of the population did not admit of the same system being roads and bridges. carried out as in the Lowlands. The military roads, after being made, had likewise to be kept in repair at the public expense, for which L.5000 a year was usually granted by parliament. A great many new roads and bridges were also required; and in 1803 an act was passed by which parliament agreed to provide half the estimated expense of the necessary roads and bridges, the other half to be defrayed by the landed proprietors. There are now 938 miles of these, in the following counties:—Inverness, 383½; Ross, 210½; Sutherland, 96½; Caithness, 54; Aberdeen, 15½; Nairn, 20½; Moray, 8½; Banff, 2; Bute, 17; Argyre, 130½. The military roads have in many instances been allowed to fall into disrepair, but 255 miles of them are still kept up by the Commissioners for Highland Roads and Bridges. The total sum expended in keeping in repair these roads in 1857 was L.10,765, of which L.2372 was paid from the funds of the commissioners, and L.2745 from toll-dues, leaving L.5647 as the proportion payable by counties. There was a further sum of L.1015 expended in maintaining in repair 137 miles of roads in Caithness-shire, surrendered to the charge of the commissioners in 1838.

The Caledonian Canal, the greatest work of its kind in Britain, stretches S.W. and N.E. across the island, through the centre of the Highlands, from the Moray Firth, on the E. coast, to Loch Linnhe, on the W. It is 60 miles in length, but the greater part of it consists of three lakes or lochs,—Ness, Oich, and Lochy. The artificial portion, 23 miles in length, is 122 feet wide at the top, 50 feet at the bottom, and affords a maximum depth of 20 feet. Had it been executed as originally intended, frigates of 32 guns, and merchantmen of 1000 tons burden, might have been able to pass through; but owing to a wish to lessen the expense and to hasten the opening of the canal, parts of it were executed in a hurried and insufficient manner, and parts were not excavated to the proper depth, so that in some cases it is not more than 17 feet deep. It was executed entirely at the expense of the government, from the designs and under the superintendence of Thomas Telford, Esq. The total cost of the canal up to 1822, when it was opened, was L.905,258; and the aggregate outlay to the 1st of May 1839, was L.1,023,628. Nor has the income ever met the expenditure. In the year ending 1st May 1839, the expenditure was L.4170, while the income was only L.2532; and in the year ending 1st May 1859, the expenditure was L.6951, and the income only L.5080. It is not to be wondered at, therefore, that the question has more than once been debated, whether it would not be better to abandon the canal altogether. And now it is less necessary than formerly to maintain it, seeing that all the principal ports of the east and west coast are connected by railway. During the year ending 1st May 1859, the passages through the canal from E. to W. were 387; from W. to E. 289; on parts of the canal, 289; passages of steamers, 467; and the total dues collected on these L.3916.

The Crinan Canal is situated in Argyshire, and stretches across the Mull of Cantyre, from Loch Gilp to Jura Sound.

Statistics. It was originally undertaken in 1793 by a company of shareholders, but the sum subscribed (L.108,000) being insufficient for the completion of the work, the government advanced the money, and the canal was transferred, on mortgage, to the Barons of Exchequer in Scotland. The management since 1817 has been in the hands of the Commissioners of the Caledonian Canal. It is 9 miles long and 12 feet deep, admitting vessels of 200 tons burden. In the beginning of February last (1859), one of the great reservoirs by which the canal is supplied with water burst, and did great damage to the canal and adjacent country. It is, however, in course of being repaired. Notwithstanding the disaster by which the traffic of the canal had been almost wholly suspended for three months, the receipts of the year ending 1st May 1859 amounted to L.2238, and the payments to L.2150, leaving a balance of L.88. In the previous year there was a deficiency of L.90, which led to a rise in the rates on certain classes of goods.

Forth and Clyde, &c. The Great Canal, uniting the Firths of Forth and Clyde, was begun in 1768, but not finally completed till 1790. Its length from Grangemouth, on the Forth, to Bowling Bay, on the Clyde, is 35 miles, or including the lateral branch to Port-Dundas, Glasgow, 38½ miles. Its average width at the surface is 56 feet; at the bottom, 27 feet; general depth, 10 feet. It is understood to have been very profitable to the proprietors. The Union Canal, which was finished in 1822, stretches from Port-Hopetoun, Edinburgh, until it joins the Forth and Clyde Canal at Port-Downie, near Falkirk, a distance of 31½ miles. Its depth is only 5 feet, so that its traffic is very limited; and all altogether it has been a very unprofitable undertaking. The Monkland Canal stretches from Glasgow to Woodhall, about 2 miles S.E. of Airdrie, a distance of 12 miles, and communicates by a lateral branch with the Forth and Clyde Canal at Port-Dundas. The Glasgow, Paisley, and Ardrossan Canal has never been completed. It extends from Port-Eglinton, near Glasgow, to the village of Johnstone, a distance of 11 miles, and was opened in 1811. It was on this canal that the experiment was first made in rapid travelling, showing that it was practicable for a properly constructed boat to proceed at the rate of nine or ten miles an hour without injury to the banks.

Railways. The first railway formed in Scotland was that between Kilmarnock and Troon, a distance of 9¾ miles. The act for the formation of this railway, or rather tram-road, was passed in 1808, and it was opened in 1810. It was followed by the Monkland and Kirkintilloch Railway, 11 miles in length, connecting the rich coal and ironstone district of New and Old Monkland with the Forth and Clyde Canal, near Kirkintilloch. In 1849, there were 795 miles of railway in operation; in 1853, 987; and in the end of 1857, 1243; of which 409 miles were single lines. Besides these, at last mentioned date, there were 573 miles authorised but not opened. The total number of passengers conveyed in 1857 was 14,733,503, of whom 1,823,542 were first class; 2,180,284, second; 10,723,694, third and parliamentary; and 5983 mixed, or not duly apportioned into classes. The receipts from passengers were L.916,697; from goods, L.1,584,781; total, L.2,501,478. The total amount authorised to be raised by railways in Scotland to 31st December 1857 was L.38,222,976, of which L.33,668,115 was actually raised—L.16,756,881 by ordinary shares, L.7,700,808 by preference and guaranteed shares, and L.9,210,426 by loans. The total amount of working and preferential charges in 1857 was L.1,846,999. Of the preferential charges L.354,774 were charges for interest on preference and guaranteed shares; and L.401,775 charges for interest on loans. The average cost per mile of railways in Scotland has been L.28,225; but for independent lines authorised and opened since 1848 it has been only L.7243. See article RAILWAYS.

The following table will show the progress of railways since 1849. It gives the mean length of railway open in each year from 1849 to 1857; the capital raised per mile open; the average number of passengers; and the average receipts from passengers and goods per mile; together with the proportion per cent. of traffic to capital raised. **Statistics**

Year.	Mean Length.	Capital raised per Mile.	No. of Passengers per Mile.	Receipts per Mile per Annum from		Proportion of Traffic to Capital raised.
				Pass'gers.	Goods.	
1849.....	795½	L. 27,654	9,933	L. 680	L. 818	5.41
1850.....	902½	27,612	9,799	664	799	5.29
1851.....	957½	29,001	9,698	649	850	5.16
1852.....	970	29,476	10,035	663	958	5.49
1853.....	987	29,564	11,246	713	1075	6.04
1854.....	1019	29,792	11,725	742	1219	6.58
1855.....	1069½	29,580	11,413	726	1277	6.77
1856.....	1147	27,750	11,419	745	1277	6.94
1857.....	1226	28,225	12,017	746	1293	7.22

A duty of one halfpenny per mile for every four passengers conveyed by railway was imposed in 1832. In 1842 this was altered to the present duty of 5 per cent. upon the receipts from passengers. In 1844 an act was passed requiring railway companies to run cheap trains, at least once daily from each end of their lines, for the benefit of the poorer classes, at a rate not exceeding one penny for each mile travelled, and granting an exemption from duty on the receipts from such passengers. The powers of central control over railways, which, in 1846, were vested in a board of railway commissioners, were, in 1851, restored to the Board of Trade.

The great advance made by Scotland since the time of the Union, is indicated by the increase that has taken place in her public revenue. In 1707 it amounted to no more than L.110,694; in 1788 to L.1,099,148; in 1813 (including the property-tax and other war taxes) to L.4,204,097; in 1822 (the property-tax, &c., having been repealed) to L.3,436,642; in 1839 to L.5,254,624; in 1846 to L.5,586,756; in 1851 to L.6,154,804; and in year ending 31st March 1858, to about L.7,300,000. The principal sources of revenue are the *Customs, Excise, Stamps, Land and Assessed Taxes, Property and Income Tax, and Post-Office*.

The gross amount of customs collected in Scotland for the year 1836 was L.1,129,802; in 1844 it was L.1,864,148; in 1850, L.1,951,981; in 1856, L.2,188,379; and in 1857, L.2,024,093. The chief ports, with the amount of duty collected at each in 1857, were—Glasgow, L.752,263; Leith, L.486,646; Greenock, L.448,318; Aberdeen, L.92,036; Dundee, L.58,703; Port-Glasgow, L.56,174. The number of officers was 532, and the amount of their salaries, L.56,448. **Customs.**

The gross amount of excise duties collected in Scotland in 1849 was L.2,838,397; in 1851, L.2,899,338; and in 1853, L.3,045,471. In 1850 the duty on bricks was abolished, and in 1853 the duties on soap and post-horses. The following table gives the amount of duties collected on the several articles for each year, from 31st March 1854 to 31st March 1859:— **Excise.**

Description.	1854.	1855.	1856.	1857.	1858.
	L.	L.	L.	L.	L.
Licenses.....	138,627	131,285	129,555	127,805	127,220
Malt.....	672,253	401,211	183,457	167,542	189,986
Paper.....	246,699	243,392	263,391	271,662	284,600
Railways.....	23,330	25,199	27,718	28,520	28,715
Stage Carriages.....	12,906	9,818	8,535	8,943	9,437
Spirits (home-made)...	2,349,095	2,539,117	2,911,796	2,807,969	2,750,394
Sugar used in brewing	425	249	116	...	...
Total.....	3,443,335	3,350,271	3,524,568	3,412,441	3,390,352

Statistics. In 1849 the stamp-duties yielded L.538,406; in 1851, L.533,096; and in 1853, L.576,774. The following table gives the gross amount collected in the various branches for each year from 31st March 1854 to 31st March 1859:—

Description.	1854.	1855.	1856.	1857.	1858.
	L.	L.	L.	L.	L.
Deeds and other Instruments	107,188	100,397	109,558	121,870	124,323
Probates of Wills and Letters of Administration	96,359	90,239	81,669	89,751	97,687
Bills of Exchange	86,037	55,108	61,890	63,078	52,776
Bankers' Notes and Com-position	6,877	6,482	10,828	10,728	11,434
Receipts and Drafts	24,808	29,464	31,084	31,877	36,716
Marine Insurances	19,438	21,978	25,506	25,173	19,577
Licenses and Certificates	21,811	25,299	29,259	31,013	30,219
Newspapers	38,828	25,877	19,411	18,958	19,367
Medicine	312	259	423	316	370
Legacies and Succession Tax	133,119	139,692	205,948	136,108	170,991
Fire Insurances	58,839	79,502	83,075	89,536	93,188
Gold and Silver Plate	2,724	2,369	2,713	2,794	2,540
Total	596,340	576,666	661,364	621,202	659,188

Land-tax.

The land-tax, which previously existed in England, was introduced into Scotland at the time of the Union, and was fixed at the rate of 4s. upon the pound of the then valued rental. The amount it yielded was L.47,954. The rate has varied at different times from 4s. to 1s. per pound, but the valuation has remained fixed. In 1798 this tax was made perpetual at its original rate, but subject to redemption, a privilege which, however, has been but sparingly taken advantage of. In 1858 this tax yielded a gross sum of L.35,596.

Assessed taxes.

The assessed taxes comprise duties on inhabited houses, servants, carriages, horses, dogs, game, &c. In 1849 they produced L.258,149; in 1851, L.256,748; and in 1853, L.163,014. The deficiency in the last of these years arose from the repeal of the window tax, yielding about L.124,000 annually, for which was substituted a duty on inhabited houses, which produced about L.42,000. In 1854 the rates of duty were considerably reduced, and were rendered more simple and uniform by the abolition of the progressive duties and of several exemptions. The following table gives the gross amount collected on each branch in each of the five years preceding 31st March 1859:—

Description.	1854.	1855.	1856.	1857.	1858.
	L.	L.	L.	L.	£.
Inhabited houses	48,255	49,030	45,001	53,682	50,042
Servants	21,040	17,411	16,499	19,355	17,193
Carriages	34,374	23,482	22,703	26,209	25,906
Horses for riding, &c.	23,614	19,278	18,212	20,899	19,137
Other horses and mules	8,864	10,902	10,750	12,766	12,600
Dogs	16,639	20,703	19,280	22,386	19,825
Horse dealers	1,481	1,631	1,612	1,752	1,690
Hair powder	71	61	62	64	52
Armorial bearings	6,081	4,442	4,490	5,142	4,929
Game Duties	11,864	11,112	10,824	11,289	11,177
Additional 10 per cent.	12,182	1,541	1,344	1,305	1,117
Composition duty	886	230	222	...	...
Total	185,351	159,823	150,990	174,849	163,674

Income-tax.

The income-tax was first had recourse to by Mr Pitt in 1798, to supply means for carrying on the war. It first took the form of an increase of assessed duties to each person who possessed an income of L.60 per annum and upwards; but next year it was changed to a duty of 10 per cent. on incomes of L.200 and upwards, with modified rates on incomes between L.60 and L.200. This tax was repealed in 1802, after the peace of Amiens; but was revived again the following year, a rate varying from 3d. to 11d. per pound being imposed upon all incomes between L.60 and L.150 per annum, and 5 per cent. on all incomes

amounting to or exceeding this latter sum. In 1805, an additional duty of one-fourth of the above rates was imposed; and in 1806, the duty was raised to 10 per cent. on incomes of L.150 and upwards, and only professional incomes under L.50 were exempted from taxation. This tax ceased in 1816, and was not revived till 1842, when it was reimposed by Sir Robert Peel's government for the purpose of meeting the deficiency which then occurred in the revenue, and to enable the government to make some reforms, with the view of improving the commerce and manufactures of the country. The rate imposed was 7d. in the pound on all incomes of L.150 and upwards, exemption being granted to all persons whose income was under that sum. It was first imposed for three years, but in 1845 it was continued for three years longer at the same rate, and again for another three years. In 1851 it was continued for one year, and in 1852 for another year.

In 1853, Mr Gladstone introduced an act by which the tax was reimposed for a period of seven years, after which it was to cease entirely. By this act the original rate of duty of 7d. in the pound was continued for two years; 6d. in the pound was imposed for the next two years; and 5d. in the pound for the remaining three years, ending 5th April 1860. The rate of duty on incomes between L.100 and L.150 was fixed at 5d. in the pound annually during the whole seven years. On the declaration of the war with Russia, it was found necessary to double the income-tax from the 5th April 1854; and a farther increase was afterwards imposed, from the 5th April 1855, of 2d. in the pound, on incomes of L.150 and upwards, and of 1½d. in the pound on incomes between L.100 and L.150. In 1857, the rates were reduced to 7d. and 5d. in the pound respectively; and in 1858, the former of these was farther reduced to 5d. In 1859, the rates were again raised to 9d. in the pound on incomes of L.150 and upwards, and to 6½d. in the pound on incomes between L.100 and L.150. The following table gives the nett amount of property and income-tax collected in Scotland in each of the eleven years, from year ending 5th April 1847 to 5th April 1857, under each schedule. Schedule A applies to incomes arising from lands, houses, mines, and other heritages in respect of *property*; schedule B to incomes arising from the above in respect of *occupancy*; schedule D to incomes derived from trades, manufactures, professions, or employments; and schedule E to salaries and emoluments of office of all persons employed in public offices:—

Year.	A.	B.	D.	E.	Total.
	L.	L.	L.	L.	L.
1847	266,439	23,137	163,688	12,458	465,722
1848	274,401	23,308	154,342	13,097	465,148
1849	284,239	23,796	135,861	13,973	457,869
1850	285,396	23,162	132,275	13,755	454,588
1851	282,216	22,778	138,288	14,381	457,663
1852	289,206	22,453	140,720	15,159	467,538
1853	290,484	22,592	145,332	15,397	473,805
1854	321,171	28,408	186,523	18,312	554,414
1855	656,805	58,396	386,133	39,396	1,140,730
1856	767,679	69,026	432,811	49,211	1,318,727
1857	774,302	70,711	442,417	52,405	1,339,835

The amount of property and income charged duty for year ending 5th April 1857 was, under schedule A, L.11,657,882; B, L.2,806,855; D, L.6,856,106; E, L.818,376,—total, L.22,139,219; for 1858, A, L.12,529,689; B, L.3,397,365; D, L.7,107,287; E, L.869,627,—total, L.22,563,238. The annual value of real property assessed under schedule A, in 1843, was L.9,481,000, showing an increase of nearly a fourth in fifteen years.

The number of persons charged under schedule D, on incomes derived from trades and professions in 1857, was 26,190, of whom more than one-half, or 13,567, were from L.100 to L.150; 3331 under L.100; 2749 from L.150 to

Statistics. L.200; 2393 from L.200 to L.300; 1281 from L.300 to L.400; 640 from L.400 to L.500; 1282 from L.500 to 1000; and 947 L.1000 and upwards.

Post-office. On 10th January 1840 the penny postage system was introduced, and since that time the number of letters delivered in the United Kingdom has increased more than sixfold. The gross revenue for year ending 5th January 1839 (the last complete year before the reduction) was L.2,346,278; and for the year ending 31st December 1857, it was L.3,035,713: the nett revenue in the former case was L.1,659,509; and in the latter, L.1,314,898—the difference arising from the increased cost of management, which in 1839 was only L.686,768, and in 1857, L.1,720,815. The gross revenue from postages in Scotland, in 1857, was L.271,906, being an increase of L.17,473 on that of 1856; and the commission on money-orders was L.8463, being an increase of L.466 on that of 1856. The number of chargeable letters delivered in the United Kingdom in 1857 was, as nearly as can be estimated, 504,421,000, being an increase on the previous year of $5\frac{1}{2}$ per cent.; in Scotland, 51,612,000, showing an increase of 7 per cent. The colonial and foreign letters were less than one-fiftieth of the number delivered; and about one letter in every 400 was registered. The proportion of letters to each individual in the United Kingdom was about 17; in Scotland, about 16. The number of free newspapers delivered in the United Kingdom, in 1857, was about 51,616,000; in Scotland, 7,245,000; the number of book-packets and chargeable newspapers (*i.e.*, not bearing the newspaper stamp) delivered in the United Kingdom in 1857 was 25,193,000; in Scotland, 3,623,000. The number of money-orders issued in the United Kingdom, in 1857, was 6,389,702; and their aggregate amount was L.12,180,272, affording a clear profit of L.24,175. In Scotland the number was 512,874; amount, L.950,872; clear profit, L.1180. Of the number of orders issued in Scotland, 350,178 were of and under L.2, and 162,697 above L.2 and not above L.5.

Poor-laws. Though poor rates were not generally imposed in Scotland till very recently, yet as early as 1579 an act was passed by the Scottish Parliament involving a compulsory assessment for the support of the impotent poor. Down to the middle of the last century, however, the weekly collections, under the management of the kirk-session, were in general found sufficient for the support of the poor, except in years of peculiar pressure or scarcity, when in some cases temporary assessments were resorted to. Assessments have only been introduced as a last resort, and only when the poor could not otherwise be supported. Hence we find that, in 1838, only 236 parishes were legally assessed in Scotland, and 126 voluntarily assessed, while 517 were unassessed. These assessments were most common and heaviest in the parishes bordering on England; and except in the case of the larger towns, they decreased or disappeared as they receded from the contaminating influence of the sister kingdom. Thus, every parish in the Synod of Merse and Teviotdale was burdened with assessment, while in the midland synods less than the half of the parishes were assessed; and in the northern synods, embracing 157 parishes, only three were subjected to that burden.

In 1845 an act (8 and 9 Vict. c. 83) was passed for the amendment and better administration of the laws relating to the relief of the poor in Scotland. It established a board of supervision to inquire into the management of the poor throughout Scotland, and to make an annual report of its proceedings. This statute placed three modes of assessment in the option of parochial boards, subject to the sanction of the board of supervision:—(1.) One-half of the assessment may be imposed upon the owners, and the other half upon the tenants, or occupants of all lands and heritages within the parish rateably, according to the annual

value of such lands and heritages. (2.) One-half of the assessment may be imposed upon the owners of all lands and heritages within the parish, according to the annual value of such lands and heritages; and the other half upon the whole inhabitants, according to their means and substance, other than lands and heritages situated in Great Britain and Ireland. (3.) The whole assessment may be imposed as an equal percentage upon the annual value of all lands and heritages within the parish, and upon the estimated annual income of the whole inhabitants from means and substance, other than lands and heritages situated in Great Britain and Ireland. The act farther permitted the continuance of any other mode of assessment established in any parish by a local act or by usage. The following table gives the number of parishes assessed in each mode for each year (ending August) since the institution of the board:—

Mode.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
First	323	431	471	499	524	534	554	567	581	593	630	657
Second	35	37	40	34	30	30	30	29	24	24	17	3
Third	31	34	36	40	40	39	37	35	35	34	34	28
Local usage	56	56	55	52	50	50	50	49	49	49	35	31
Total assessed	445	558	602	625	644	653	671	680	689	700	716	729
„ unassessed ..	435	322	278	255	236	228	211	202	194	183	167	154

The sums received from all sources for the relief of the poor were, in 1836, L.171,042; in 1845-6, L.306,044; in 1856-7, L.669,852. Of this last sum there was expended for relief of poor on the roll, L.485,803; relief of casual poor, L.20,719; medical relief, L.23,730; management, L.61,553; law expenses, L.7399; poor-house buildings, L.27,277; general sanitary measures, L.1122. The number of registered poor, on the 14th of May 1857, was 69,217 (a decrease of 10,756 since the same date in preceding year); the number who had died, or ceased to receive relief during the year, was 19,405; and the number of casual or unregistered poor was 36,545.

The supreme court in civil matters is the Court of Session, consisting of thirteen judges. They act in what is called the “Inner” and the “Outer” house. The Outer-House is the court of first instance, whence litigations pass to the Inner as to a court of review. Five of the junior judges sit in the Outer-House, each holding a separate court, which, to distinguish it from the Inner-House, is called the court of a Lord Ordinary. The Inner-House is partitioned into two divisions, each consisting of four judges. An ordinary litigation in the Court of Session comes first before a Lord Ordinary, and may be taken for review to one of the divisions of the Inner-House, where a decision is a decision of the Court of Session. It is practicable, however, when occasion demands, to have the judgment of the whole court on a point. The decisions in the Court of Session are under certain restrictions, liable to be brought by appeal before the House of Lords. See APPEAL. Causes may be taken into the Court of Session from local courts by a process called “advocation.”

The supreme tribunal for matters criminal is the Court of Justiciary, consisting of five of the judges of the Court of Session. The High Court of Justiciary, as it is termed, sits in Edinburgh, but Circuit Courts of Justiciary are held, four in Glasgow, and two in the other circuit districts, annually. This court has jurisdiction in all criminal charges, except those which are reserved by statute for summary trial in inferior tribunals. There are points which can be referred from the circuit courts to the High Court of Justiciary, but from this tribunal there is no appeal, nor can it review its own judgments. The head of this Court is the Lord Justice-General, whose title represents that of the ancient Justiciar of Scotland. The offices of Lord Justice-

Statistics. General and President of the Court of Session are now united.

The most important local courts are those of the sheriffs. There is at least one sheriff-court in each county. The immediate business of the court is conducted before the sheriff-substitute, who resides within the county, where he is the Sovereign's immediate representative, enforcing the decisions of the courts of law generally, and superintending everything done under the authority of what is called "the executive." The sheriff-substitute, as his title implies, acts for a principal, who has, within certain limits, a power to revise his proceedings, while there are certain acts, both judicial and executive, which must be performed by the sheriff-principal. By an act passed in 1855, arrangements were made for grouping the counties into districts; and one sheriff-principal serves for all the counties of each district. There was previously a sheriff-principal as well as a sheriff-substitute for each county, and the new arrangement was adopted under the view, that although there might be work enough for a sheriff-substitute in a county, or for several, as in the county of Lanark, the office of principal-sheriff of any of the smaller counties was apt to degenerate to something little above a sinecure.

There is no limit to the importance, in a pecuniary scale, of the questions of civil right that may be tried in the court of the sheriff. Its operation is of course restrained by the local limits of the sheriff's jurisdiction. He has no authority in questions of feudal rights, or, in other words, of land rights. Nor can he decide questions of status, as it is termed, such as marriage or legitimacy. The peculiar Scottish action called a "Declarator," by which a person who is neither prosecuting another nor defending himself, but establishing a right liable to be called in question, is excluded from the sheriff-court. The proceedings in the civil department of the ordinary sheriff's court are chiefly conducted in written pleadings. For the recovery of small debts, the sheriff has a separate court, in which the procedure is oral and summary. In the criminal department of the sheriff's court, those cases are tried which the crown lawyers do not think it necessary to bring before the Court of Justiciary. As the sheriff has not authority beyond his district, transportable offences could not be adjudicated by him, and the exclusion now of course applies to the punishment of penal servitude. The punishment of death is within the power of the sheriff by the theory of the law, but has been long abandoned in practice. Justices of peace appointed under royal commission, as in England, and magistrates of municipal corporations, have jurisdiction in Scotland, both in civil and criminal matters. Their authority, however, limited by law and custom, is practically left to a still narrower sphere, by the efficiency of the jurisdiction exercised by the sheriffs, who are professionally trained and responsible judges.

The law administered by the Scottish tribunals differs fundamentally from the law of England. This difference will be found to have originated in the antagonism between

the two countries, created by that war of independence which ended in the establishment of Bruce's kingdom in Scotland. The records of the laws and customs of the two countries anterior to that war show that there was then little fundamental difference between them. Scotland, however, having to support her national independence against so powerful a neighbour, fell into alliance with France. Hence her laws, and to some extent her institutions, followed the example of that country. The Court of Session, for instance, was an imitation of the Parliament of Paris. So far as Scotland took her laws from France, she received them from those two great fountains of the Roman and the feudal law which supplied all the continental nations with their jurisprudence. In England the common law owes more to the Justinian system than the old school of English common lawyers would have readily admitted; but Scotland received the whole of the civil law as authority, unless when the field was occupied by the feudal law. Hence the whole of the Justinian system, and the numerous comments on its various parts by French and German jurists, were the study of the Scottish lawyers, while those in England perused the year books and the works of the commentators who restricted their views to precedents purely English. Both England and Scotland drew from the feudal law, but both in a different fashion. The Scottish system of law rights became more purely and scientifically feudal than the English, carrying out a hierarchy of subinfeudation from the monarch, the supreme over-lord, through nearly any number of grades of sub-vassalship. If this system had its political and its economical inconveniences, it had the effect of establishing a thorough and scientific system of land registration in Scotland. In many points the laws of England and of Scotland have since the union been assimilated by statute. In the criminal department, the continental characteristics are still preserved in the institution of public prosecutors. A private person may prosecute in Scotland on a criminal charge, but partly from difficulties in carrying out such proceedings, and far more because they are rendered unnecessary by the ample official organization for the administration of the criminal law, the private prosecution of criminal charges is virtually unknown.

For fuller information on the law and judicature of Scotland, see ADVOCATE, AGENT, APPEAL, ARREST, ARRESTMENT, BANKRUPTCY, CHARTER, CONVEYANCING, CORPORATION, ENTAIL, HUSBAND AND WIFE, INFECTMENT, INHIBITION, JOINT-STOCK, JURY, LEASE, PARENT AND CHILD, &c.

For information on subjects connected with Scotland, not noticed, or only glanced at in this article, see such headings as MONEY, SAVINGS BANKS, PARLIAMENT, MUNICIPAL CORPORATIONS, POLICE, PRISONS, &c.

It only remains to add, that of this article the physical description and geology are by Professor Nicol of Aberdeen; the climate and agriculture by Robert Russell, Esq., author of *North America, its Agriculture and Climate*; the botany by Professor Balfour of Edinburgh University; and the judicature by J. H. Burton, Esq., advocate.

Scott,
David.

SCOTT, DAVID, a Scottish painter of unquestionable genius, was the fifth child of Robert Scott, a landscape-engraver, and was born in Edinburgh on the 10th or 12th of October 1806. A year after his birth, he was the only surviving child of the family, the rest having been cut off within a few days by a prevalent epidemic. From this blow, it is said, neither father nor mother ever recovered; and David Scott grew up under the shade of religious melancholy and gloom. If this constant fostering of the memories of the dead, so characteristic of certain classes of the Scottish people, did not create in young Scott that sad, brooding, imaginative disposition, which was so noticeable a part of his character, it at least had the effect of being highly advantageous to its development. David Scott grew up silent, earnest, and imperious. He never "whistled or sang" like other youths, but plodded eagerly at his Latin, in which he made but very slow progress, or amused his leisure hours in drawing rude designs of his own from "Paradise Lost," "Macbeth," or Scottish and Greek history. The same impulse continued to the end of his life; the same aim actuated all his artistic career. When he came to his full stature, he was tall and of a delicate build, with very fine features, and an uncommonly large dark-blue eye. He began his artistic career by assisting his father in his business of a landscape-engraver, but it was his business to become a painter. He accordingly began a painting of "Lot and his Daughters fleeing from the Cities of the Plain," designed on an enormously large scale, which was returned from the British Institution as too large. Heedless of this hint, he held on his course and painted pictures which would have required a hall for their exhibition, and which the public would neither admire nor buy. The "Hopes of Early Genius dispelled by Death" was exhibited in 1828; and his "Fingal and the Spirit of Lodi," "Adam and Eve," "The Death of Sappho," "Wallace defending Scotland," were painted during the next year. He sold his first picture "The Cloud" in 1831; and during the same year appeared his outline sketches of the "Monograms of Man." He likewise began this year his series of splendid designs for Coleridge's "Ancient Mariner," which were published after his return from Rome in 1837. The poet, on being shown these designs, expressed his satisfaction with them; adding, at the same time, that he had not thought it possible to illustrate such a piece. Such was Scott's progress up to the year 1832. His devotion to high art was quite enthusiastic; and it was utterly in vain that men tried to convince him of the entire unremunerative department of art to which he devoted his nights and days, his dreams and reveries. As Dr Samuel Brown said of him, who knew him well and loved him ardently, "he was self-willed, yet sensitive; ambitious, but despising the arts of rising; impulsive and industrious; well-informed, but imaginative; studious, yet imperiously original." (*Essays*, two vols., 1858). In 1832, after painting "Nimrod," "Cain," "Sarpedon carried by Sleep and Death," "Pan," "Aurora," and the Sketch of "Burying the Dead," he set out for Italy, staying some time at the Louvre in Paris on his way southward. He passed through the towns of Geneva, Milan, Venice, Parma, Bologna, Florence, and Siena, on his journey to Rome, which city he reached on the 8th of December 1832. While on this Italian tour he painted immensely, and gained great facility in execution, without, however, essentially changing his style. The grand style had been born with him in Edinburgh, and so entirely original was his genius, that Rome and all Italy could not weed it out of him. He painted a very large picture of "Discord" while resident in Rome, which was much admired by the artists who came to visit this solitary Scotsman in his solitary studio. One of Scott's earliest undertakings on his return to Edinburgh in 1834, was to paint a "Descent from the Cross" for St Patrick's Chapel,

Lothian Street, which proclaimed him, on its exhibition the following year, to be no longer the student but now the master in art. From this period he continued to paint with remarkable diligence and with remarkable ambition, a series of paintings as wonderful for their astonishing excellencies, as they were for their want of power to interest the general spectator. The artist, it was evident, despite his long practice and his untiring study, had not yet attained to the full and adequate expression of which his nature was capable. That the elements of a great painter were now visible in every line he drew and in every hue he painted, no adequate judge could for a moment doubt, but whether he ever could so nicely harmonize all his remarkable artistic gifts, and set them forth in the full and fair proportions of nature, was a question which time alone could solve. He had now attained to near the age of thirty, but his nature was of slow growth, and the few who knew him well had great confidence in his future, provided his health would keep good. His strength had never been robust, and his isolated, determined devotion to art, and to everything worthy of the name of art, had by no means increased his bodily vigour. He sent to the Exhibition in Edinburgh, in 1835, four pictures—"Sappho and Anacreon," "The Vintager," "A Fresco," and a "Sketch of the Head of Mary Magdalene;" and in 1836, "The Abbot of Misrule," and "Judas betraying Christ." During the same year he had painted, for a prize, "Lady Macbeth leaving the Daggers by the Sleeping Grooms." His appearance in the Scottish Royal Academy was made in 1838 by "Orestes seized by the Furies," "Rachel weeping for her Children," "Puck fleeing before the Dawn," and "Ariel and Caliban," the last of which is characterized by the painter's brother, W. B. Scott, himself both an elegant poet and a fine painter, as "perhaps the most truly poetic production" of the artist. During the same year he painted his "Alchymist," a really noble picture. In the year 1839 he had etched several large plates of the "Last Judgment" of Michael Angelo, which he had made in Rome some years ago, and which were designed for publication. Publishers were slow, however, to undertake this project; and accordingly his Essay, which he intended to accompany these prints as letter-press, "On the peculiarities of Thought and Style," was accepted by *Blackwood's Magazine* in the month of February 1839. This was followed up by papers on the genius of Raphael, on Titian, and Venetian painting; on Leonardo da Vinci and Corregio, and on the Caracci, Caravaggio, and Monachism in March 1841. These remarkable pieces of critical literature abounded, says Dr S. Brown, with "knowledge, fancy, reasonableness, imagination, and poetic insight;" so that, in spite of their literary shortcomings, they will yet be read as long as men admire what is highest in art and what is truest in its historical embodiments. The proposition which lay at the basis of all these dissertations, and which never forsook the artist in life, was, that "the sole purpose of art is the sustaining of humanity in man." In 1840 he exhibited his painting of the "Agony of Discord, or the Household Gods destroyed," on which he had been long engaged; "Philoctetes," "Cupid sharpening his Arrows," and the "Crucifixion;" in 1841, he produced "Queen Elizabeth in the Globe Theatre," "Queen Mary," "The Death of Jane Shore," "Ave Maria," and "A Parthian Archer." This year was an uncommonly fertile one with Scott, for he not only made the sketches of forty designs for the *Pilgrim's Progress* (afterwards published by Fullarton and Co.), and painted the "Duke of Gloucester taken into the Water Gate of Calais," "Silenus praising Wine," and "The Challenge;" but he likewise began the great painting of his life, "Vasco de Gama encountering the Spirit of the Cape." From this year till his death he worked on with untiring devotedness, following always his own conception, without

Scott,
David.

Scott,
John.

Scott,
John.

in any case humouring the taste of the public. His stern will, amounting occasionally to wilfulness, toiled on in comparative poverty, apparently thoughtless of whether he painted what would please or not. His "Richard III.," "The Four Great Masters, Michael Angelo, Raphael, Titian, and Corregio," and the "Belated Peasant," were exhibited in 1843. He produced during the following years—"Wallace the Defender of Scotland," "Sir Roger Kirkpatrick stabbing the Red Cummin," "The Baron in Peace," and "May." The "Christian listening to the instructions of Piety, Charity, and Discretion," and the "Dead Rising at the Crucifixion," were two of his most remarkable productions. His pictures in 1846 were, "Peter the Hermit," "Dante and Beatrice," "The Fall of the Giants," "Rhea," and the "Ascension." Next year he exhibited on the walls of the academy in Edinburgh only one painting, "The Triumph of Love," a wonderful piece of colouring, considered his masterpiece in this respect. "Time surprising Love," "Children following Fortune," "Queen Mary of Scotland at the place of Execution," "Hope passing over the Sky of Adversity," and the "Baptism of Christ," were all finished in 1848. He was unsuccessful in his competition for the execution of frescoes for the new Houses of Parliament; but this did not much damp his courage. The lamp which had burned so long in comparative obscurity was now to send forth a full, fiery blaze of light before being extinguished for ever. He had just finished his great painting of "Vasco de Gama," on which he had been engaged for years, and the critics were speaking of it with quite unwonted enthusiasm; but it was too late, the painter was dying. He felt he had not yet succeeded in adequately giving expression to his nature; but in this painting, which is now in the Trinity House, Leith, he felt he had come nearer reconciling his own ideas with the public taste than he had ever done before. "If I could," he said a few days before his death, "but have time yet, I think I could meet the public in their own way more, and yet do what I think good. But it is over, and here I lie." He never rose again, but died on the 5th of March 1849.

David Scott was, without doubt, the greatest example on record, among Scottish artists, of a great painter nobly struggling up towards the light and freedom of clear articulate expression in art, whose fire was quenched ere his work was done. His whole life was a fight, and the struggle was not quite ended when his own end came. It was nearing its close, however, and a few years more of the kindly sunshine of success, might, by lessening his opinionativeness, have modified his views of nature, and given him a larger and more genial power of artistic expression. But such was not vouchsafed to him; and men must strive to read and to learn from this man's life, as they have likewise to do from many other mysterious problems, what of noble and great was in it, leaving what of meanness or littleness they may chance to find in it, to be trodden under foot of men. Some beautiful specimens of David Scott's poetry are given by his brother W. B. Scott, in his very able and kindly tribute to the memory of the artist. This *Memoir* was published in 1850.

SCOTT, John, Baron Eldon, Lord High Chancellor of England, was born 4th June 1751, in Love Lane, Newcastle. His ancestors were obscure, though respectable, and he had the merit of raising himself, by his talents, to the highest honours in the State.

His grandfather, William Scott, of Sandgate, a suburb of Newcastle, was a clerk to a "fitter"—a sort of water-carrier and broker of coals, engaged either as a merchant or on commission, in conveying coals from the pits in "keels," or barges, to the lower ports of the Tyne. His father, whose name also was William, began life as an apprentice to a "fitter," in which service he obtained the freedom of Newcastle, becoming a member of the guild of Hoastmen;

later in life he became a principal in the business, adding to his income by keeping a public-house near the quay of Newcastle, to supply drink to his keelmen, on the modern truck system; he also engaged somewhat in speculations in shipping and the maritime insurance called bottomry. In these various occupations he attained a most respectable position as a merchant in Newcastle; he led a quiet and prudent life outside what is called "society;" and accumulated property worth nearly £20,000. He was twice married; his second wife, the mother of John Scott, was a daughter of a Mr Atkinson, also a "fitter" in Newcastle—"a woman," says Lord Campbell (*Life of Lord Eldon*, p. 4), "who was a model of all the domestic virtues, and of such superior understanding, that to her is traced all the extraordinary talent which distinguished her two sons, William and John—Lord Stowell and Lord Eldon." Besides the two just named, there was a third and intermediate son, Henry, who followed his father's business of merchant and fitter in Newcastle. It may be mentioned, as a peculiar circumstance, that William and John were each of them one of twins, each having been born with a sister.

The boys were educated under the Rev. Hugh Moises, at the grammar school of their native town, where William and John, at least, exhibited excellent talents, and secured the affection of their master, without, however, giving promise of the splendid careers which they were destined to run. This Moises was a gentleman of good scholarship and varied accomplishments, and, if we are to credit Dr W. E. Surtees (*Sketch of the Lives of Lords Stowell and Eldon*, 1846), exercised a singular influence on the characters of his two distinguished pupils. He combined the opposite qualities of a smart, sparkling, after-dinner talker, and canting hypocrite—mixing in his conversation small jokes, and grave appeals to his conscience and God. William and John assumed each of them one of the elements of this composite character—the former becoming remarkable for the brilliancy of his conversation, and the latter for the frequency with which he would call God to witness the purity of his intentions. Be the origin of this canting habit in John what it may, it must be stated that when under Mr Moises' charge, he was not remarkable for his application to his studies, though his wonderful memory enabled him to make good progress in them; he frequently played truant, and got whipped for doing so; robbed orchards, and indulged in other questionable school-boy freaks, which might here be overlooked as symptoms merely of surplus energy and love of adventure, could it be added that he always came out of his scrapes with honour and a character for truthfulness. The boy is father to the man; and in Johnnie Scott telling fibs to evade the tawse, may be seen the rudiments of the Lord High Chancellor falsifying history to escape the merited censure of mankind.

William Scott, who was John's senior by nearly six years, was fortunate enough, on leaving school, to obtain a Durham scholarship at Corpus Christi College, Oxford, to which he was eligible through the accident of having been born in the county of Durham. He accordingly proceeded to the University, where he distinguished himself so greatly that, in December 1764, in his eighteenth year, he obtained a fellowship at University College, of which he afterwards became a tutor, an office in which he acquired a high reputation for himself and college. This success determined the career of his youngest brother. When John had finished his education under Mr Moises, his father thought of apprenticing him to his own business, to which Henry had already devoted himself; and it was only through the interference of William, whose affection for him was as strong as his opinion of him was high, that it was ultimately resolved that he should continue the prosecution of his studies. Accordingly, on the 15th May 1766, he entered University College as a commoner, with the view of entering the Church,

Scott,
John.

and obtaining a college living. In the year following he obtained a fellowship, and in the summer of 1771 won the prize for the English essay, the only university prize open for general competition in his time. It does not appear, however, that he distinguished himself at college any more than he had done at school by his application; indeed, in after-life he would speak of himself as having spent his time at the university very much in the pleasures of society, and—though that must have been an exaggeration—of the bottle. It is certain that the ambition with which he went to Oxford was one capable of being satisfied by a very moderate exercise of good abilities. It was not till after his marriage with Miss Elizabeth Surtees, through which he lost, of course, his fellowship, and with it the prospect of church preferment, that he first concentrated his whole energies, with unflagging zeal, on the congenial study of law—to which, throwing theology to the winds, he was now obliged to devote himself. This marriage, indeed, which was celebrated under the most inauspicious circumstances, may be regarded as the turning point in his career towards the great eminence to which he ultimately attained.

Miss Surtees was the eldest daughter of a large family. Her father was Mr Aubone Surtees, banker, Newcastle; her mother, a daughter of Mr John Stephenson, of Knaresdale Hall, Northumberland, a gentleman who had accumulated a large fortune as a merchant. John Scott first met her at Sedgefield Church, in the county of Durham; and, though it is not known how they became acquainted, it is certain that they speedily became bound to one another by a strong mutual affection, to the great disgust of the friends of the young lady, who was beautiful, and had several suitors among the young squirearchy of the north. To give her passion for Scott a chance of dying a natural death, she was sent to live with her uncle, Mr Henry Stephenson, with whose family she spent several months in London and at their seat in Berkshire, carefully, but it would appear not successfully, guarded from intercourse with her lover. Repression, however, in love, as in religion, is a bad policy; as for one case in which the proverb holds, "out of sight out of mind," there are ten in which it is true that "absence makes the heart grow fonder." Bessie Surtees returned to Newcastle in the spring or summer of 1772, and on the 18th November of the same year—the hour of night is lost to history—John Scott, with the aid of a ladder and an old friend, carried her off from her father's house in Sandhill. Over the border and away went the future Lord Chancellor and his lady, to Blackshields, in Scotland, where they were married with just money enough to pay their way back to their outraged parents. The fathers of both of the young people were set against their union; Mr Scott being, however, only opposed to its taking place at that time, as the connection in itself was one which he could not but covet for his son. If Mr Surtees could not compare young John Scott, who had not as yet chosen his profession, or developed a single lineament of his future greatness, with any one of the young squirearchy in love with his daughter, old Mr Scott could not fail to see that the marriage at that time was a blight on his son's prospects, depriving him of his fellowship and chance of church preferment. When, after a few days, the young pair returned to Newcastle, the Surtees' connection cut them. Mrs Henry Stephenson, indeed, with whom Mrs John had spent the preceding winter, wrote to Mrs Surtees that she could not think of introducing them to her daughter, her only child, whose pretty face and good fortune, which afterwards won her the status of Countess of Wexborough, made her an object of general attraction, and to whom the example of an elopement condoned could not safely be offered. Fortunately old Mr Scott, like a prudent man and affectionate father, set himself to make the best of a bad matter, and received them kindly, settling on his son L.2000, to bear

interest at 5 per cent. till he received the principal. Lord Campbell (*Life of Lord Eldon*, p. 28) tells a story which, however, he does not profess to believe to be true, to the effect that before this provision was made, a wealthy and childless grocer, taking "compassion on the destitute state of John," offered him half his business, and that the offer would have been accepted had not William interposed, begging his father to send John, wife and all, to Oxford, where he would do for them what he could. To Oxford it is certain they went, where John continued to hold his fellowship for what is called the year of grace given after marriage, and to add to his income by acting as a private tutor. After a time Mr Surtees was induced, through the intercession of his son William, to go through the form of reconciliation with his daughter, on whom he subsequently settled first one thousand pounds, and then another, thus making her provision equal to that enjoyed by young Scott from his father. On the death of his son Edward, Mr Surtees' parental love was quickened by his affliction, and the reconciliation between him and his daughter became total. As for John Scott, his year of grace, fortunately for him, closed without any college living falling vacant; with his fellowship he gave up the church, and turned to the study of law. In 1776 he was called to the bar, to which he ventured at first with the humble ambition of establishing himself as an advocate in his native town, a scheme which his early success led him to abandon, and he soon settled to the practice of his profession in London, and on the Northern Circuit. Thus, at last, was he started, as his relative W. E. Surtees, in the *Sketch* already referred to, remarks, on the high road to the chancellorship, having just escaped becoming a coal-fitter, a country parson, a provincial barrister, and, to credit Lord Campbell's story, a retailer of figs and raisins.

In the autumn of the year in which he was called to the bar his father died (6th November 1776), leaving him a legacy of L.1000 over and above the L.2000 previously settled on him; so that with his own and wife's money he had just enough to live on with a pinch—the condition best suited for developing a man's energies—he was above want, but not so far as ever to lose consciousness of its pressure. He was already an excellent lawyer, having devoted his whole powers since his marriage to qualify himself for his profession. We shall now see how he succeeded.

His success to begin was not very remarkable, to judge from the conflicting evidence on the point, for in his old days he loved to exaggerate the difficulties which he had in early life to surmount. But so far is clear from his brother's correspondence, that he succeeded very well on his first circuit, though not so well as to satisfy him of the safety of attempting a London career. On this point he received various opinions from his advisers,—Mr Heron, a solicitor in Newcastle, being one of the few who entertained no doubt of his success. It is certain that he went the length of taking a house in Newcastle, with the view of establishing himself there, and that he did this after his first circuit. He delayed, however, to leave London; and his prospects there suddenly improving, he assigned the Newcastle house to his brother Henry. Still, being careful to hold Newcastle open as a retreat should London fail him, we find him desiring Henry, in a curious letter quoted by Mr Surtees (p. 42 of the *Sketch*) to give out that the assignation of the house was conditional, and that he retained the right (which was not the fact) to resume the lease whenever he thought fit to remove his establishment to Newcastle,—this misrepresentation (*white lie*, as he calls it in the letter, a species of lie which he often found serviceable) being intended to prevent any other barrister attempting in the meantime to settle in Newcastle. The fib (it is not known whether the affectionate Henry told it)

Scott,
John.

Scott,
John.

Scott,
John.

was unnecessary. In his second year at the bar his prospects began to brighten. His brother William, who by this time held the Camden professorship of ancient history, and enjoyed an extensive acquaintance with men of eminence in London—he was the friend, among others, of the great Dr Samuel Johnson—was in a position materially to advance his interests. Among his friends was the notorious Bowes of Gibside, to the patronage of whose house the rise of the Scott family was largely owing. Bowes having contested Newcastle and lost it, presented an election petition against the return of his opponent. Young Scott was retained as junior counsel, and though he lost the petition he did not fail to improve the opportunity which it afforded for displaying his talents. This employment, in the commencement of his second year at the bar, and the dropping in of occasional fees, must have raised his hopes; and with the encouragement to persevere in London which he received from Mr Heron of Newcastle, was probably the cause of his abandoning the scheme of becoming a provincial barrister. But whatever the causes were which inspired his hopes, it is certain they did not continue to sustain them. There followed a year or two of dull drudgery and few fees—and those directly traceable to friends—and he began to be much depressed. It is probable that in 1779 he thought it prudent to avoid the expense of going on his circuit. This disheartening state of matters, however, was not of long continuance, for in 1780 we find him suddenly “buttering his bread for life,” to use the words of a knowing agent who addressed him on the occasion, by his appearance in the case of *Ackroyd v. Smithson*, to which in his old age he used fondly to refer, but of which no more can be said here than that it became a leading case settling a rule of law; and that young Scott, having lost his point in the inferior court, insisted on arguing it, on appeal, against the opinion of his employers, and carried it before Lord Thurlow, whose very favourable consideration he won by the ability that he displayed in his argument. The same year Bowes again retained him in an election petition, and in the year following he greatly increased his reputation by his appearance in the Clitheroe election petition, in which he acted as leading counsel; the seniors having suddenly failed their client, and the junior in the case mistrusting himself, having declined to conduct it on his own responsibility. Scott only got his brief about six o'clock of the morning on which the case came on; but notwithstanding the want of preparation made an excellent appearance. From this time his success was certain. In two years he obtained a silk gown, and was so far cured of the modesty which had led him to aspire to the recordership of Newcastle and a retreat there, that he declined accepting the king's counselship if precedence were given over him to his junior, Mr Erskine, though the latter was the son of a peer and a most accomplished orator. He was now on the high way to fortune. His health in the years of his depression had been but indifferent; he complained much of giddiness and swimming in the head; probably his mode of life was too retired (Mrs Scott's management was very frugal), and there was too little variety in his life of study. But now his constitution strengthened with the demands made upon it; his talents, and power of endurance, and ambition, all expanded together. He enjoyed a considerable practice in the northern part of his circuit, before parliamentary committees, and at the chancery bar, and was in sight of the honours and emoluments of the solicitor and attorney generalships. By 1787 his practice at the Equity bar had so far increased that he was obliged to give up the eastern half of his circuit (which embraced six counties), and attend it only at Lancaster.

Scott was now at that stage of professional progress when lawyers, in order to obtain the highest honours, must become political; and to politics, accordingly, he betook

himself. Shortly after taking the silk gown, he entered Parliament for Lord Weymouth's close borough of Weobley, which Lord Thurlow obtained for him without solicitation. In Parliament he played his cards with great discretion, giving a general and independent support to Pitt. His first parliamentary speeches were directed against Fox's India bill. They were unsuccessful. In one he aimed at being brilliant, and becoming merely laboured and pedantic, was covered with ridicule by Sheridan, from whom he received a lesson which he did not fail to improve. Thereafter, abandoning the affectation of eloquence, he contented himself with good sense; and with being remarkable, in spite of the clumsiness and poverty of his style, for the subtlety of his reasonings and the soundness of his law. In 1788 Pitt found it convenient to confer on him the honour of knighthood and the office of solicitor-general; and in the end of this year, as solicitor-general, he attracted attention by his speeches in support of Pitt's resolutions on the state of the king (George III., who then laboured under a mental malady), and the delegation of his authority. It is said that he drew the regency bill, introduced in 1789,—a bill which was as much calculated to fix on him the hatred of the prince (afterwards George IV.) as to secure him the gratitude of the then king, who recovered before the bill passed into law. In 1793 he advanced to the office of attorney-general, in which it fell to him to conduct the memorable prosecutions for high treason against British sympathisers with French republicanism; among others, against the celebrated Horne Tooke. These prosecutions, in most cases, were no doubt instigated by Sir John Scott, and have been generally condemned as an attempt to pervert the criminal law. They were the most important proceedings, as he himself has said, in which he ever was professionally engaged; but it would be altogether out of place, in this brief memoir, to attempt to give any account of them. He has left on record, in his “Anecdote Book,” a defence of his conduct in regard to them. A full account of the principal trials, and of the various legislative measures for repressing the expressions of popular opinion, for which he was more or less responsible, will be found in Mr Twiss's admirable book, *The Public and Private Life of the Lord-Chancellor Eldon*, and in the more masterly and impartial pages of his life, as written by the Lord Chancellor Campbell. In 1799, the office of Chief-Justice of the Court of Common Pleas falling vacant, Sir John Scott's claim to it was not overlooked; and after seventeen years' service in the Lower House, he entered the House of Peers as Baron Eldon. In February 1801, the ministry of Pitt, to whom Lord Eldon owed his promotion so far, was succeeded by that of Addington, and as part of the new arrangement, the Chief-Justice ascended the woolsack, having, indeed, been one of those who suggested the reconstruction of the cabinet, excluding his old patron, Pitt. The chancellorship was given to him nominally because of his great anti-Catholic zeal. From the peace of Amiens, 1801, till 1804, Lord Eldon appears to have interfered little in politics. In the latter year we find him intriguing to turn out Addington, and restore Pitt to the office of prime minister. George III. was again afflicted with his malady, and the Chancellor used his right of approaching the royal person to conduct a correspondence between him and Pitt, in the course of which delicate work he actually took occasion to recast Pitt's letters, to suit them to the moods of the king. The upshot of the intrigue was, says a writer in the *Law Review*, xi. p. 264, that Mr Pitt shoved Mr Addington out of his place, which he himself took, and retained his coadjutor in the business as chancellor, “his ally, within the besieged garrison, who opened the gate to him under the cloud of night, while the rest slept.” There is but one word by which to denominate his conduct on this occasion—treachery. But the

Scott,
John.

worst of it is, that he has put on record in his autobiography—"The Anecdote Book," already mentioned—an account of his part in the intrigue, which is inconsistent with the truth. (Vide *Campbell's Life of Eldon*, p. 166, *et seq.*) The whole transaction is most discreditable to his memory. It is painful, yet amusing, to find him justifying himself to others, by constantly repeating that he was the king's chancellor, and not Addington's—a distinction not known to the constitution—and for which, at any rate, there was but a mere shadow of a foundation in the history of his appointment. It is certain that neither Addington, nor any other minister, would have consented to the appointment of a chancellor who was not to owe him fealty. Lord Eldon was now chancellor under Pitt; but Pitt's new administration was but of short duration. On the 2d February 1806, he sank, under the anxieties of office, and his ministry was succeeded by a coalition, under Lord Granville. The death of Fox, who was the new foreign secretary and leader of the House of Commons, soon however broke up the Granville administration; and in the spring of 1807, Lord Eldon once more, under Lord Liverpool, returned to the woolsack, which, from that time, he continued to occupy for about twenty years, swaying the cabinet, and in all but the name the prime minister of England. It was not till 1827, when the premiership, vacant through the paralysis of Lord Liverpool, fell to Mr Canning, the chief advocate of Roman Catholic emancipation, that Lord Eldon, in the sixty-seventh year of his age, resigned the chancellorship for ever. When, after the two short administrations of Canning and Goderich, it fell to the Duke of Wellington to construct a cabinet, Lord Eldon expected that he would have been included, if not as chancellor, at least in some important office, but he was overlooked, at which he was much chagrined. Notwithstanding that, during his long tenure of office, he was constantly protesting before his God and on his conscience,—the element of the composite character of Moises which fell to his lot became more remarkable in him the older he grew—that he did not covet power, but longed for the retirement of his seat, at Encombe, and the society of his dear "Bessy," we find him again so late as 1835, within three years of his death, in hopes of office under Peel. The desire of it only left him to be replaced by disgust with those friends whom he conceived to have deserted him. He ceased to speak in Parliament in July 1834, but even then, as we know, he had not fully realised the fact that he had survived his influence.

In 1821 Lord Eldon was made an earl by George IV., whom he managed to conciliate, and to turn into an enemy of the Whigs, partly, no doubt, by espousing his cause against his wife (whose advocate he had been in the days of George III., when he used to fête her, and dine, and get drunk with her, at Blackheath), and partly through his well-earned reputation for zeal against the Roman Catholics. No sooner was the prince, whose enmity he had justly incurred, made regent, than Eldon hastened to transfer to him the affection which he had so long nourished for his father. The wife of the son, whom George III. hated, was an injured innocent; but with what Mr Surtees calls his "convenient versatility," the wife of the prospective George IV. immediately became a "d—d ——" In the same year, his brother William, who, since 1798, had filled the office of judge of the High Court of Admiralty—the highest dignity of the courts at Doctors' Commons—was raised to the peerage under the title of Lord Stowell.

It is impossible, in a memoir of the brevity to which the present is restricted, to give any more than the merest outline of a life so prolonged, and remarkable for so much activity as Lord Eldon's. It must suffice to state just one or two of the leading facts about his family, and then to

give a brief review of his character and career. His dear "Bessy," his love for whom is almost the only beautiful feature in his life, died before him, 28th June 1831. By nature she was a simple character, and by habits acquired during the early portion of Lord Eldon's career, almost a recluse. She was dearly loved by her husband and surviving son, both of whom—the one in his will, the other on his deathbed—desired to be buried close to her. Two sons of their love reached maturity; John, grandfather of the present earl, who died in 1805, at the age of thirty-one; and William Henry John, who died in 1832, at the age of thirty-seven. Lord Eldon himself survived almost all his immediate relations. His brother William died in 1836. He himself died, in London, in his eighty-seventh year, 3d January 1838, leaving behind him two daughters, Lady Frances Bankes, and Lady Elizabeth Repton, and his grandson, all of whom were round his deathbed. During the last years of his life he had sunk a good deal from public notice. "But," says his biographer, Lord Campbell, "his death created a considerable sensation. When his remains lay in state in Hamilton Place large numbers of all classes went to see the solemn scene; and when the funeral procession, attended by the carriages of the Princes of the blood, many of the peerage, and all the dignitaries of the law, blackened the way, dense crowds stood uncovered, respectfully gazing at it as it passed." He was buried in a vault which he had constructed in the burying-ground of the chapel of Kingston, in Dorsetshire, by the side of his beloved "Bessie." The fortune which he left behind him exceeded in amount half a million of money, mostly invested in the funds; for, like his brother William, though he bought some land, he preferred "the elegant simplicity of the three per cents" to every other security.

The facts already narrated speak volumes as to the talents of Lord Eldon, his powers of managing men, and great political sagacity. He was no legislator,—his one aim in politics was to keep in office, and maintain things as he found them; and almost the only laws he ever helped to pass were laws for popular coercion. For nearly forty years he fought against every improvement in law, as in the constitution; calling God to witness, on the smallest proposal of reform, that he foresaw from it the downfall of his country. Without any political principles, properly so called, and without interest in or knowledge of foreign affairs, he maintained himself and party in power for an unprecedented period by his great tact, and in virtue of his two great political properties—of zeal against every species of reform, and zeal against the Roman Catholics. And yet, though it is most likely that he was a good Christian, and though certainly he frequently appealed to the Supreme Being, excepting when he resided in the country, he never attended public worship. "Although Dr Johnson," says Campbell, "when dying, had sent him a message to request that he would attend public worship every Sunday, he never was present at public worship in London from the one year's end to the other." And when near his death, and he was talking complacently to Dr Philpotts, Bishop of Exeter, of his past life, and the bishop desired to draw his attention to the merits of the Redeemer, he resented the attempt to disparage his own as a reflection on his public character! Yet this was the man who, through a long life, was the defender of the Church, and its champion against every other class of religionists! To pass from his political to his judicial character, is to shift to ground on which his greatness is universally acknowledged. His judgments, which have received as much praise for their accuracy as abuse for their clumsiness and uncouthness, fill a small library. But though intimately acquainted with every nook and cranny of the English law, he never carried his studies into foreign fields, from which to enrich our legal literature; and it must be added, that against the excel-

Scott,
John.

Scott,
Michael.

lence of his judgments, in too many cases, must be set off the hardships, worse than injustice, that arose from his protracted delays in pronouncing them. A consummate judge and the narrowest of politicians, he was DOUBT on the bench and PROMPTNESS itself in the political arena. For literature, as for art, he had no feeling. What intervals he enjoyed from the cares of office, he filled up with newspapers and the gossip of old cronies. Nor were his intimate associates men of refinement and taste; they were rather good-fellows, who quietly enjoyed a good bottle and joke; he uniformly avoided encounters of wit with his equals. He was all his life a hard drinker, and yet cannot be considered as having been intemperate, for his drink neither hurt his health, disturbed his understanding, nor interfered with the discharge of his duties. He is said to have been parsimonious, and certainly he was quicker to receive than to reciprocate hospitalities; but it is known that he was capable of doing generous and liberal actions; and his mean establishment and mode of life are explained on reference to the retired habits of his wife, and her dislike of company. At the same time it must be mentioned, as looking towards the view that he was miserly, that he never quite forgave his grandson for succeeding to his brother William's lands, without a liferent of them having been given to himself. To conclude, his manners were very winning and courtly, a merit in him not the less that they often bound to him friends whom he merely made such that he might use them. In the circle of his immediate relatives he is said to have always been irresistible, nor can it be doubted that he was a far more loveable person to meet with in society than in history. A charming manner in a man of distinguished position, like charity, covers a multitude of sins from the sight of those who have to do with him; but in the distance of time the secondary qualities of a man's nature become indistinguishable, and he falls to be judged of by the broad lineaments of his character and his leading actions. And it is hard for us now, looking back on his life of intrigue and remembering his "convenient versatility" and meannesses, to detect any trace of affection in our admiration for the great Lord-Chancellor. "He is one," says Miss Martineau, "that aftertimes will not venerate; but fortunately for the fame of the larger number of the great ones of the earth, there is a vast neutral ground between veneration and contempt."

As the most appropriate conclusion to this short memoir we append the following account of his person from the pen of Lord Campbell:—"In his person, Lord Eldon was about the middle size, his figure light and athletic, his features regular and handsome, his eye bright and full, his smile remarkably benevolent, and his whole appearance prepossessing. The advance of years rather increased than detracted from these personal advantages." As he sat on the judgment-seat, the deep thought betrayed in his furrowed brow,—the large eyebrows, overhanging eyes that seemed to regard more what was taking place within than around him,—his calmness, that would have assumed a character of sternness but for its perfect placidity,—his dignity, repose, and venerable age, tended at once to win confidence and to inspire respect." (Townsend.) "He had a voice both sweet and deep-toned, and its effect was not injured by his Northumbrian burr, which, though strong, was entirely free from harshness or vulgarity." (J. F. M'L.)

SCOTT, *Michael*, or according to some SIR MICHAEL, was a renowned wizard, once known and feared all over Europe, is supposed to have been one of the Scotts of Balwearie, in Fifeshire, where he is said to have been born in the early part of the thirteenth century, during the reign of Alexander II. After pursuing his studies at home with great success, he went to Paris, and some add to Oxford, where he spent some years in quiet study and meditation. Leaving France he proceeded to the court

VOL. XIX.

Scott,
Michael.

of Frederic the Second of Germany, a prince distinguished for his literary acquirements and for his munificent patronage of literary men. He was strongly addicted to the studies of judicial astrology, alchemy, physiognomy, chemistry, and chiromancy; and seems to have made great progress in those abstruse inquiries during his stay in Germany. Scott is reported to have proceeded to England on the death of his imperial patron in 1250, where he was received with great favour by King Edward I. This portion of the narrative does not hang well together, for Edward I. did not ascend the throne till 1272. From England he is said to have proceeded to Scotland, where he remained during the rest of his life. He is reported to have been one of the ambassadors sent to bring the Maid of Norway to Scotland on the death of Alexander III., in 1290; but this seems very doubtful. Sir Robert Sibbald, in his *History of Fife and Kinross*, cites from an old indenture of 1294 to show that "Sir Michael Scott of Balwearie" was then still living; and further, he ascribes to the same individual a share in the embassy to Norway for the cession of the Orcades in the fifth year of Robert I., that is, in 1310. The ordinary account assigns his death to 1291, and it is just probable he may have been confounded with another person of the same name. The writer of his life in Knight's English *Cyclopædia* conjectures that the Sir Michael Scott who was engaged in the embassy to Norway in 1310 was a son of the great wizard's. Dempster, who wrote in the beginning of the seventeenth century, did not know, moreover, that the magician was the same person with Sir Michael Scott of Balwearie; but tells us the name Scotus was not that of the astrologer's family, but of his nation (Dempsteri *Historia Ecclesiastica Gent. Scot.* 1627). Tradition, likewise, varies concerning the place of his sepulture. Some contend for Ulme or Holme Cultram, in Cumberland, while the Scottish tradition, which is likely to be the correct one, assigns it to Melrose. It is this tradition which is followed by Sir Walter Scott in his *Lay of the Last Minstrel*, where, in the opening of the wizard's grave, the withdrawing from his cold hand of his "Book of Might" forms so striking an episode in the progress of the ballad. All accounts agree in making his books of magic be buried with him wherever he was interred. Satchells (*Hist. of the Name of Scott*), according to Sir Walter Scott, pretends that in 1629, chancing to be at Burgh under Bowness, in Cumberland, he was shown by a person named Lancelot Scott an extract from the works of Michael Scott, containing the following story:—

"He said the book which he gave me
Was of Sir Michael Scott's historie;
Which history was never yet read through,
Nor never will, for no man dare it do.
He carried me along the castle then,
And showed his written book hanging on an iron pin.
His writing pen did seem to me to be
Of hardened metal, like steel or accumie;
The volume of it did seem so large to me
As the Books of Martyrs and Turks historie.
Then in the church he let me see
A stone where Mr Michael Scott did lie."

Michael Scott, who, from all accounts of him, was a very learned man, seems to have paid the penalty attached to letters during that dark age. He made too much of those conjectural sciences of alchemy, astrology, and chiromancy, but otherwise he was unquestionably a great scholar. He is alluded to by Dante, Boccacio, and other early Italian writers, as a great magician, and is severely taken to task by Mirandola in his book against astrology. To this day he is remembered in remote parts of the south of Scotland as a wonderful magician, to whom the whole realms of hell lay open, and who divided his power only with the prince of darkness. The fantastic stories told of his wonderful

5 L

Scott,
Thomas.

projects would fill a volume. Sir Walter Scott records of him, in a note to his *Lay*, that "in the south of Scotland any work of great labour and antiquity is ascribed either to the agency of Auld Michael, of Sir William Wallace, or of the devil." The works ascribed to Michael Scott are the following:—*Aristotelis Opera Omnia, cum notes*, 2 vols., Ven., 1496; *Avicennam de Animalibus ex Arabico in Latinum Transtulit*, no date, according to Mackenzie (see his *Lives of Eminent Scottish Writers*); *Physiognomia et de Hominis Procreatione*, Paris, 1508; *Questio curiosa de natura Solis et Lunæ*, Strasburg, 1622; *Mensa Philosophica*, Leipzig, 1603. This last work has been translated into English under the title of the "Philosopher's Banquet," by W. B., 1633.

SCOTT, Thomas, an eminent divine of the Church of England, was born on the 16th of February 1747. His father was a grazier in Lincolnshire, in humble circumstances, with thirteen children, of whom Thomas was the tenth. The father was ambitious that one of his sons should belong to a learned profession, and with this view sent the subject of this memoir, when about fifteen years of age, to be apprentice to an apothecary and surgeon at Alford. In this situation he conducted himself so improperly, that after a short time he was dismissed by his master, and sent home in disgrace. His father, mortified and vexed by the conduct of his son, treated him with great harshness, and employed him only in the lowest and most laborious drudgery about the farm. For nine years after his return home in disgrace, he was exposed to great hardships, associated with persons in the lowest stations of society, and often joined in their riotous and abandoned pursuits. Conceiving himself used with unjust severity by his father, his temper was soured, and he became exceedingly irritable and discontented. His employment of tending the sheep left him often in solitude. At these seasons his mind was filled with bitter reflections on the past, and gloomy anticipations of the future; and although his education had been very superficial, yet he had acquired so much as awakened in him an insatiable longing after the pleasures and distinctions of literature; and everything conspired to disgust him with his present employment. When about twenty-five years of age, to the astonishment of every one, he declared his resolution of entering the church. This scheme was strongly opposed by his father, treated as chimerical by his friends, and ridiculed by his neighbours. At length, however, his unconquerable fortitude and patient perseverance overcame every obstacle, and he was admitted to priest's orders in the year 1773, and shortly thereafter was appointed curate of Weston Underwood, with a salary of £50 a year. While here, he applied with indefatigable zeal and industry to the study of sacred and profane literature. His sentiments at first were decidedly Socinian; but a candid and diligent study of the Scriptures gradually opened his eyes to the fallacy and the dangers of the doctrines which he had espoused; and being in the neighbourhood of the old sea-captain, John Newton, the friend of Cowper, who was strongly evangelical and Calvinistic in his views, his acquaintance with that eminent individual may have contributed to this change in his religious sentiments. In the year 1779 he published a small autobiography, entitled the *Force of Truth*, in which he gave a candid statement of the change in his opinions, and the steps by which he was gradually led to adopt the orthodox and evangelical creed. This publication made a great sensation at the time, and has gone through many editions since. In 1780 he succeeded John Newton at Olney, and in 1785 he accepted the situation of lecturer at the Lock Hospital, with a salary of £80 a year. This, with small sums for occasional lectureships, furnished but a scanty allowance for the support of an increasing family; and when, a few years afterwards, a proposal was made to him by a London book-

seller to write a *Commentary on the Bible*, to be published in numbers, the offer of a guinea a week as remuneration for his writings decided him to engage in the undertaking. This valuable work was well received by the public, and under proper management ought to have been a very profitable speculation; but, owing to the bankruptcy of the bookseller, Scott not only received no remuneration for his labour, but lost all his little savings, and was involved in considerable debt. The first edition, of two thousand copies, commenced in 1802, and was finished in 1809; a second of two thousand copies, in 1807–11; the third of three thousand copies, in six volumes 4to, 1812–14. The fourth was stereotyped, and sold to a great extent. He published a volume of Essays in 1793–94. He also published, in two volumes 8vo, *Remarks on the Bishop of Lincoln's Refutation of Calvinism*; and *Sermons* on various subjects, from time to time. His *Theological Works* were collected and edited by his son, the Rev. John Scott, and published in ten volumes 8vo, in 1823.

In 1803 he left London for the rectory of Aston, Sandford, where he died on the 16th of April 1821. He was a man of eminent piety, somewhat eager and impetuous, but of great sincerity, and sterling honesty of character; of a vigorous intellect, indefatigably diligent in his studies, and a useful and practical preacher.

SCOTT, Sir Walter, was born at Edinburgh on the 15th of August 1771. "My birth," says he, "was neither distinguished nor sordid. According to the prejudices of my country, it was esteemed *gentle*, as I was connected, though remotely, with ancient families, both by my father's and mother's side." His paternal great-grandfather was a cadet of the border family of Harden, which has been ennobled within the last few years, and sprung in the fourteenth century from the great house of Buccleuch; his grandfather became a farmer in Roxburghshire, and married a lady who was a relation of his own; and his father, Walter Scott, was a writer to the signet in the Scottish capital. The poet's mother, Anne Rutherford, who was likewise of honourable descent, was the daughter of one of the medical professors in the University of Edinburgh.

Neither Scott's poetical turn nor his extraordinary powers of memory seem to have been inherited from either of his parents. His early years displayed as little precocity of talent as did the steady development of his mind in riper days; and the eventful tenor of his childhood and youth, although their impressions can now be traced vividly in his works, must have seemed, but for these, as little calculated as possible to awaken in his mind a love of the imaginative or romantic.

Delicacy of constitution, accompanied by a lameness which proved permanent, exhibited itself before he had completed his second year, and caused soon afterwards his removal to the country. There, at his grandfather's farmhouse of Sandyknowe, situated beneath the crags of a ruined baronial tower, and overlooking a tract of many miles studded with spots famous in border-history, the poet passed his childhood till about his eighth year, with scarcely any interruption but that of a year spent at Bath. From this early period there are related some interesting anecdotes of his sympathy with the grandeur and beauty of nature. The tenacity of his infantine recollections gave promise of what was afterwards so remarkable a faculty in his mind; and the ballads and legends, which were recited to him amidst the scenes in which their events were laid, co-operated in after-days with family and national pride to decide the bent of the border-minstrel's fancy.

His health being partially confirmed, he was recalled home; and from the end of 1779 until 1783 his education was conducted in the High School of Edinburgh, with the assistance of a tutor resident in his father's house. In the years immediately preceding this change, he had shown

Scott,
Sir Walter.

Scott, Sir Walter. decided activity of intellect, and strong symptoms of its diversion towards literary pursuits; but now, introduced with imperfect preparation into a large and thoroughly trained class, and thrown, for the first time in his life, among a crowd of boisterous boys, his childish zeal for learning seems to have been quenched by ambition of another kind. His memory, it is true, was still remarkable, and procured for him from his master the title of historian of the class; while he produced some school-verses, both translated and original, which were at least creditable for a boy of twelve. Even his intellectual powers, however, were less active in the proper business of the school than in enticing his companions from their tasks by merry jests and little stories; and his place as a scholar scarcely ever rose above mediocrity. But his reputation stood high in the play-ground, where, possessed of unconquerable courage, and painfully eager to defeat the scorn which his physical defects excited, he is described as performing hazardous feats of agility, and as gaining pugilistic trophies over comrades who, that they might have no unfair advantage over the lame boy, fought, like him, lashed face to face on a plank. At home, his tutor, a zealous Presbyterian, initiated him, chiefly by means of conversation, in the facts of Scottish history, political as well as ecclesiastical, though without being able to shake those opinions which the boy had already taken up as an inheritance descending from his Jacobite ancestors; and he pursued with eagerness, at every interval which could be stolen from the watchfulness of his elders, a course of reading utterly miscellaneous and undigested, and embracing much that to most minds would have been either useless or positively injurious. "I left the High School," says he, "with a great quantity of general information, ill arranged, indeed, and collected without system, yet deeply impressed upon my mind, readily assorted by my power of connexion and memory, and gilded, if I may be permitted to say so, by a vivid and active imagination."

His perusal of histories, voyages, and travels, fairy tales, romances, and English poetry, was continued with increasing avidity during a long visit which, in his twelfth year, he paid to his father's sister at the village of Kelso, where, lying beneath a noble plane-tree in an antique garden, and beholding around him one of the most beautiful landscapes in Scotland, the young student read for the first time, with entranced enthusiasm, Percy's *Reliques of Ancient Poetry*. This work, besides the delight which was imparted by the poems it contained, influenced his mind by giving new dignity, in his eyes, to his favourite Scottish ballads, which he had already begun to collect from recitation, and to copy in little volumes, several of which are still preserved at Abbotsford. "To this period, also," he tells us, "I can trace distinctly the awaking of that delightful feeling for the beauties of natural objects, which has never since deserted me. The romantic feelings which I have described as predominating in my mind, naturally rested upon and associated themselves with the grand features of the landscape around me; and the historical incidents or traditional legends connected with many of them gave to my admiration a sort of intense impression of reverence, which at times made my heart feel too big for its bosom. From this time the love of natural beauty, more especially when combined with ancient ruins, or remains of our fathers' piety or splendour, became with me an insatiable passion, which, if circumstances had permitted, I would willingly have gratified by travelling over half the globe."

In November 1783, Scott became a student in the university of Edinburgh, in which, however, he seems to have attended no classes but those of Greek, Latin, and logic, during one session, with those of ethics and universal history at a later period, while preparing for the bar. At college the scholastic part of his education proceeded even more unprofitably than it had previously done. For science, mental,

physical, or mathematical, he displayed no inclination; and in the acquisition of languages, for which he possessed considerable aptitude, he was but partially industrious or successful. Of Greek, as his son-in-law and biographer admits, he had in later life forgotten the very alphabet. He had indeed entered on the study with disadvantages similar to those which had formerly impeded his progress in Latin; he had, as he informs us, petulantly resolved on despising a study in which he found himself inferior to his competitors; and Professor Dalziel, irritated not only by his carelessness, but by an essay in which he maintained that Ariosto was a better poet than Homer, solemnly pronounced of him, "that dunce he was, and dunce would remain." His knowledge of Latin does not appear to have ever extended farther than enabling him to catch loosely the meaning of his author; although we are informed that for some writers in that tongue, especially Lucan, Claudian, and Buchanan, he had in after life a decided predilection. About the time now under review, he also acquired French, Italian, and Spanish, all of which he afterwards read with sufficient ease; and the German language was learned a few years later, but never critically understood.

It was some time between his twelfth and his sixteenth year that his stores of romantic and poetical reading received a vast increase, during a severe illness which long confined him to bed; and one of his schoolfellows has given an interesting account of excursions in the neighbourhood of the city, during this period, when the two youths read poems and romances of knight-errantry, and exercised their invention in composing and relating to each other interminable tales modelled on their favourite books. The vocation of the romance-writer and poet of chivalry was thus already fixed. His health likewise became permanently robust. The sickly boy grew up into a muscular and handsome youth; and the lameness in one leg, which was the sole remnant of his early complaints, was through life no obstacle to his habits of active bodily exertion, or to his love for out-of-door sports and exercise.

The next step in his life did not seem directed towards the goal to which all his favourite studies pointed. His father, a formal though high-spirited and high-principled man, whose manners are accurately described in his son's novel of *Redgauntlet*, designed him for the legal profession; and, although he always looked wishfully forward to his son's embracing the highest department of it, considered it advisable, according to a practice not uncommon in Scotland, that he should be prepared for the bar by an education as an attorney. Accordingly, in May 1786, Scott, then nearly fifteen years old, was articled for five years as an apprentice to his father, in whose chambers he thenceforth continued, for the greater part of every day, to discharge the humble duties of a clerk, until, about the year 1790, he had, with his father's approbation, finally resolved on coming to the bar. Of the amount of the young poet's professional industry during those years of servitude we possess conflicting representations; but many circumstances in his habits, many peculiarities in the knowledge he exhibits incidentally in his works, and perhaps even much of his resolute literary industry, may be safely referred to the period of his apprenticeship, and show satisfactorily that at all events he was not systematically negligent of his duties. Historical and imaginative reading, however, continued to be prosecuted with undiminished ardour; summer excursions into the Highlands introduced him to the scenes, and to more than one of the characters, which afterwards figured in his most successful works; while in the law-classes of the university, as well as in the juvenile debating societies, he formed, or renewed from his school-days, acquaintance with several who became in manhood his cherished friends and his literary advisers. In 1791 the Speculative Society made him acquainted with Mr Jeffrey and those other young

Scott, Sir Walter.

Scott, Sir
Walter.

men whose subsequent celebrity has been to a small extent reflected on the arena of their early training.

Scott's attempts in poetry had now become more ambitious; for, it is said, about the completion of his fifteenth year, he had composed a poem in four books on the Conquest of Granada, which, however, he almost immediately burned, and no trace of it has been preserved. During some years after this time, we hear of no other literary compositions than essays for the debating societies.

In July 1792, being almost twenty-one years of age, he was called to the bar. Immediately after his first circuit, he commenced that series of "raids," as he playfully called them, or excursions into the secluded border-districts, which in a few years enabled him to amass the materials for his first considerable work. His walks on the boards of the Parliament House, the Westminster Hall of Scotland, if they gained him for a time few professional fees, speedily procured him renown among his fellow-lawyers as a storyteller of high excellence; his father's connections and his own friendships opened for him a ready admission into the best society of the city, in which his cheerful temper and his rich store of anecdotes made him universally popular; and his German studies produced, in 1796, his earliest poetical efforts that were published, namely, the translations of Burger's ballads, *Lenora* and the *Wild Huntsman*. The same year witnessed the disappointment of a long and fondly-cherished hope, by the marriage of a young lady, whose image, notwithstanding, clung to his memory through life, and inspired some of the tenderest strains of his poetry.

In the summer of 1797, however, on a visit to the watering-place of Gillsland, in Cumberland, he became acquainted with Charlotte Margaret Carpenter, a young lady of French birth and parentage, whose mother, the widow of a royalist of Lyons, had escaped to England, and there died, leaving her children to the guardianship of their father's friend the Marquis of Downshire. A mutual attachment ensued; and, after the removal of prudential doubts, which had arisen among the connections on both sides, Scott and Miss Carpenter were married at Carlisle in December of the same year.

The German ballads, which, though they met with very little sale, had been justly praised by a few competent critics, served as the translator's introduction to the then celebrated Matthew Gregory Lewis, who enlisted him as a contributor to his poetical *Tales of Wonder*; and one cannot now but smile to hear of the elation with which the author of *Waverley* at that time contemplated the patronising kindness extended to him by the author of *The Monk*. Early in 1788 was published Scott's translation of Goethe's *Goetz von Berlichingen*, which, through Lewis's assistance, was sold to a London bookseller for twenty-five guineas; but, though favourably criticised, it was received by the public as coldly as the preceding volume. In the summer of 1799, the poet wrote those ballads which he has himself called his "first serious attempts in verse;" the *Glenfinlas*, the *Eve of St John*, and the *Grey Brother*.

After Scott's marriage, several of his summers were spent in a pretty cottage at Lasswade near Edinburgh, where he formed, besides other acquaintances, those of the noble houses of Melville and Buccleuch. The influence of these powerful friends, willingly exerted for one whose society was agreeable, whose birth connected him, though very remotely, with the latter of those titled families, and who in politics was decidedly and actively devoted to the ruling party, procured for him, in the end of the year 1799, his appointment as sheriff-depute of Selkirkshire, an office which imposed very little duty, while it gave him a permanent salary of £300 per annum. His father's death had recently bestowed on him a small patrimony; his wife had an income which was considerable enough to aid him greatly; his practice as a lawyer yielded, though not much, yet more than

barristers of his standing can usually boast of; and, altogether, his situation in life, if not eminent, was at least strikingly favourable when compared with that which has fallen to the lot of most literary men. Scott, however, now twenty-eight years of age, had done nothing to found a reputation for him as a man of letters; and there appeared as yet to be but little probability that he should attach himself to literature as a profession, or consider it as any thing more than a relaxation for those leisure hours which were left unoccupied by business and the enjoyments of polite society.

In 1800 and 1801 those hours were employed in the preparation of the *Border Minstrelsy*, the fruit of his childish recollections, and of his youthful rambles and studies. The first two volumes appeared in the beginning of the next year, and the edition, consisting of eight hundred copies, was sold off before its close. This work, however, the earliest of his which can be said to have given him any general fame, yielded him about eighty pounds of clear profit; being very far less than he must have expended in the investigations out of which it sprang. In 1803 it was completed by the publication of the third volume. Besides the value which the *Minstrelsy* possesses in itself, in the noble antique ballads, so industriously, tastefully, and yet conscientiously edited, in the curious and spiritedly-used information which overflows through all the prose annotations, and in those few original poems which gave the earliest warning of that genius which as yet had lurked unseen, the work has now a separate value and interest, as forming the most curious of all illustrations for the history of its editor's mind and of his subsequent works. "One of the critics of that day," remarks Mr Lockhart, "said that the book contained 'the elements of a hundred historical romances;' and this critic was a prophetic one. No person who has not gone through its volumes for the express purpose of comparing their contents with his great original works, can have formed a conception of the endless variety of incidents and images, now expanded and emblazoned by his mature art, of which the first hints may be found either in the text of those primitive ballads, or in the notes which the happy rambles of his youth had gathered together for their illustration."

But before the publication of the *Border Minstrelsy*, the poet had begun to attempt a higher flight. "In the third volume," says he, writing to his friend George Ellis in 1803, "I intend to publish a long poem of my own. It will be a kind of romance of border chivalry, in a light-horseman sort of stanza." This border romance was the *Lay of the Last Minstrel*, which, however, soon extended in plan and dimensions, and, originating as a ballad on a goblin story, became at length a long and varied poem. The first draught of it, in its present shape, was written in the autumn of 1802, and the whole history of its progress has been delightfully told by the author himself, and is well illustrated by his biographer.

In 1803, during a visit to London, Scott, already familiarly acquainted with Ellis, Heber, and other literary men, and now possessing high reputation himself in virtue of the *Minstrelsy*, was introduced to several of the first men of the time; and thenceforth, bland as he was in manner, and kind in heart, indefatigable and successful in his study of human character, and always willing to receive with cordiality the strangers whom his waxing fame brought about him, it is not surprising to find, that not to know personally Walter Scott, argued one's self unknown. The toleration and kindness of his character are illustrated by the fact, that firm as his own political opinions were, and violently as excitement sometimes led him to express them, not only did he always continue on friendly terms with the chief men of the opposite party in Edinburgh, but several of them were his intimate friends and associates; and he even was for some years an occasional contributor to the *Edinburgh Review*.

In 1804 was published his edition of the ancient poem

Scott, Sir
Walter.

Scott, Sir Walter. of Sir Tristrem, so valuable for its learned dissertations, and for that admirable imitation of the antique which appears as a continuation of the early minstrel's work.

During that year and the preceding, the Lay was freely communicated to all the author's friends, Wordsworth and Jeffrey among the rest; and after undergoing various changes, and receiving enthusiastic approval in several quarters from which commendation was wont to issue but sparingly, it was at length published, in the first week of 1805. The poet, now thirty-three years of age, took his place at once as a classic in English literature. Its circulation immediately became immense, and has since exceeded that of any other English poem.

But exactly at this culminating point of the poet's life, we must turn aside from the narrative of his literary triumphs, to notice a step of another kind, which proved the most important he ever took. In one of those interesting communications of 1830, which throw so much light on his personal history, he has told us, that from the moment when it became certain that literature was to form the principal employment of his days, he determined that it should at least not constitute a necessary source of his income. Few literary men, perhaps, have not nourished a wish of this sort; but very few indeed have possessed, like Scott, the means of converting the desire into an effectual resolution. In 1805, as his biographer tells us, he was, "independently of practice at the bar and of literary profits, in possession of a fixed revenue of nearly, if not quite, £1000 a year." To most men of letters this income would have appeared affluence; but Scott has frankly avowed, that he did not think it such. The truth is, that his mind was already filled with the feeling which speedily became its master-passion, namely, the ambition, not of founding a new family (for that was too mean an aim for his pride of birth to stoop to), but of adding to his own ancestral pretensions that claim to respect which ancient pedigree does not always possess when it stands alone, but which belongs to it beyond challenge when it is united with territorial possessions. The fame of a great poet, now within his reach, if not already grasped, seemed to him a little thing, compared with the dignity of a well-descended and wealthy Scottish landholder; and, while neither he nor his friends could yet have foreseen the immensity of those resources which his genius was afterwards to place at his disposal for the attainment of his favourite wish, two plans occurred and were executed, which promised to conduct him far at least towards the goal.

The first of these was the obtaining of one of the principal clerkships in the Scottish Court of Session, offices of high respectability, executed at a moderate cost of time and trouble, and remunerated at that time by an income of about £800 a year, which was afterwards increased to £1300. This object was attained early in 1806, through his ministerial influence, aided by the consideration paid to his talents; although, owing to a private arrangement with his predecessor, he did not receive any part of the emoluments till six years later.

The second plan was of a different sort, being in fact a commercial speculation. James Ballantyne, a schoolfellow of Scott, a man possessing a good education, and considerable literary talent of a practical kind, having become the editor and printer of a newspaper in Kelso, had been employed to print the *Minstrelsy*, and acquired great reputation by the elegance with which that work was produced. Soon afterwards, in pursuance of Scott's advice, he removed to Edinburgh, where, under the patronage of the poet and his friends, and assisted by his own character and skill, his printing business accumulated to an extent which his capital, even with pecuniary aid from Scott, proved inadequate to sustain. An application for a new loan was met by a refusal, accompanied, however, by a proposal, that Scott

should make a large advance, on condition of being admitted as a partner in the firm, to the amount of a third share. Accordingly, in May 1805, Walter Scott became regularly a partner of the printing-house of James Ballantyne and Company, though the fact remained for the public, and for all his friends but one, a profound secret. "The forming of this commercial connexion was," says his son-in-law, "one of the most important steps in Scott's life. He continued bound by it during twenty years, and its influence on his literary exertions and his worldly fortunes was productive of much good and not a little evil. Its effects were in truth so mixed and balanced during the vicissitudes of a long and vigorous career, that I at this moment doubt whether it ought, on the whole, to be considered with more of satisfaction or of regret."

From this time we are to view Scott as incessantly engaged in that memorable course of literary industry whose toils advancing years served only to augment, and from which neither the duties of his two professional offices of clerk of session and sheriff, nor the increasing claims made on him by society, were ever able to divert him. He now stood deservedly high in the favour of the booksellers, not merely as a poet and man of genius, but as one possessed of an extraordinary mass of information, and of such habits as qualified him eminently for turning his knowledge to account. He was therefore soon embarked in undertakings, not indeed altogether inglorious, but involving an amount of drudgery to which, perhaps, no man of equal original genius has ever condescended. The earliest of these was his edition of Dryden, which, entered upon in 1805, was completed and published in 1808.

But the list of works in which his poetical genius shone forth continued rapidly to increase amidst his multiplicity of other avocations. From the summer of 1804 till that of 1812, the spring and autumnal vacations of the court were spent by him and his family at Ashiestiel, a small mansion romantically overhanging the Tweed some miles above Melrose, and rented from one of the poet's kinsmen. In this beautiful retreat, at intervals during twelve months, was chiefly composed the magnificent poem of *Marmion*, which was published in the beginning of 1808. At the same place, likewise, in 1805, were composed the opening chapters of a novel which, on the disapproval of one of the author's critical friends, was thrown aside and not resumed for years.

Scott's commercial engagements must now again be adverted to. In the year 1808 he took a part, perhaps as suggester, certainly as a zealous promoter, of a scheme which terminated in the establishment of the *Quarterly Review* in London, as a political and literary counterpoise to the *Edinburgh Review*, the advocate of Whig opinions. But the poet had other than political grounds for embarking in this opposition. He had seriously quarrelled with the firm of Constable and Company, the publishers of the *Edinburgh Review*, and of several of his own earlier works; and his wish to check the enterprising head of that house in his attempts to obtain a monopoly of Scottish literature, is openly avowed, in Scott's correspondence at the time, as one of his principal motives for framing another scheme. His plan, as far as it was explained either to the public or to his own friends, amounted only to this: That a new publishing house should be set up in Edinburgh, under the management of John Ballantyne, a younger brother of James; and that this firm, with the acknowledged patronage of Scott and his friends, should engage in a series of extensive literary undertakings, including, amongst others, the annual publication of a historical and literary Register, conducted on Tory principles. But, unfortunately both for Scott's peace of mind, and ultimately also for his worldly fortunes, there was here, as in his previously-formed connection with the same family, an undivulged secret. The profits of the printing-house had been large; Scott's territorial ambition had been

Scott, Sir Walter.

Scott, Sir
Walter.

growing faster than his prospect of being able to feed it; and these causes, inextricably mixed up with pique towards Constable, and kindness for his Kelso protégés, led him into an entanglement which at length ruined both himself and his associates. By the contract of the publishing house of John Ballantyne and Company, executed in May 1808, Scott became a secret partner to the extent of one third. The unhappy issue of this affair will force itself on our notice at a later stage.

In the mean time we see him prosecuting for some time his career of poetical success. The *Lady of the Lake*, published in 1810, was followed by the *Vision of Don Roderick* in 1811; by *Rokeby* in 1812; and by the *Bridal of Triermain*, which came out anonymously in 1813. His poems may be said to have closed in 1815 with the *Lord of the Isles* and the *Field of Waterloo*; since *Harold the Dauntless*, in 1817, appeared without the writer's name, and the dramatic poems of 1822 and 1830 are quite unworthy of him. In the midst of these poetical employments he made his second and last great appearance as an editor and commentator of English classics, by publishing in 1814 his edition of *Swift*.

But from 1815 till 1825, Scott's name ceased almost entirely to be before the public as an avowed author; and for those who chose to believe that he was not the writer of the *Waverley Novels* it must have been a question not a little puzzling, if it ever occurred to them, how this man, who wrote with such ease, and seemed to take such pleasure in writing, was now occupying his hours of leisure. A few articles in the *Quarterly Review*, such works as *Paul's Letters*, and annotations in occasional editions of ancient tracts, accounted but poorly for his time during ten years.

About 1813 and 1814 his popularity as a poet was sensibly on the decline, partly from causes inherent in his later poems themselves, and partly from extraneous causes, among which a prominent place belongs to the appearance of *Byron*. No man was more quicksighted than Scott in perceiving the ebb of popular favour; and no man better prepared to meet the reverse with firmness. He put in serious execution a threat which he had playfully uttered to one of his own family even before the publication of the *Lady of the Lake*. "If I fail now," said he, "I will write prose for life." And in writing prose his genius discovered, on its first attempt, a field in which it earned triumphs even more splendid than its early ones in the domain of poetry.

The chapters of fiction begun at *Ashestiel* in 1805, which had already been resumed and again thrown aside, were once more taken up, and the work was finished with miraculous rapidity; the second and third volumes having been written during the afternoons of three summer weeks in 1814. The novel appeared in July of that year, under the title of *Waverley*, and its success from the first was unequivocal and unparalleled. Although we cannot here give a catalogue of Scott's works, yet in truth such a list of the novels and romances does in itself present the most surprising proof, both of his patient industry, and of the singularly equitable command which he had at all times over his mental resources. In the midst of occupations which would have taken away all leisure from other men, the press poured forth volume after volume, in a succession so rapid as to deprive of some part of its absurdity one of the absurd suppositions of the day, namely, that more persons than one were concerned in the novels. *Guy Mannering*, the second of the series, in 1815, was followed in 1816 by the *Antiquary* and the *First Series of the Tales of My Landlord*. *Rob Roy* appeared in 1817; the *Second Series of the Tales* in 1818; and in 1819 the *Third Series* and *Ivanhoe*. Two romances a-year now seemed to be expected as the due of the public. The year 1820 gave them the *Monastery* and the *Abbot*; 1821, *Kenilworth* and the *Pirate* the *Fortunes of Nigel*,

coming out alone in 1822, was followed in 1823 by no fewer than three works of fiction, *Peveril of the Peak*, *Quentin Durward*, and *St Ronan's Well*; and the comparatively scanty number of novels in 1824 and 1825, which produced respectively only *Redgauntlet* and the *Tales of the Crusaders*, is accounted for by the fact that the author was engaged in preparing a large historical work.

It is impossible even to touch on the many interesting details which Scott's personal history presents during these brilliant years; but it is indispensable to say, that his dream of territorial acquisition was realized with a splendour which, a few years before, he himself could not have hoped for. The first step was taken in 1811, by the purchase of a small farm of a hundred acres on the banks of the *Tweed*, which received the name of *Abbotsford*, and in a few years grew, by new purchases, into a large estate. The modest dwelling first planned on this little manor, with its two spare bed-rooms and its plain appurtenances, expanded itself in like manner with its master's waxing means of expenditure, till it had become that baronial castle which we now reverentially visit as the minstrel's home. The hospitality of the poet increased with his seeming prosperity; his mornings were dedicated to composition, and his evenings to society; and from the date of his baronetcy in 1820 to the final catastrophe in 1826, no mansion in Europe, of poet or of nobleman, could boast such a succession of guests illustrious for rank or talent, as those who sat at Sir Walter Scott's board, and departed proud of having been so honoured. His family meanwhile grew up around him; his eldest son and daughter married; most of his early friends continued to stand by his side; and few that saw the poet in 1825, a hale and seemingly happy man of fifty-four, could have guessed that there remained for him only a few more years (years of mortification and of sorrow), before he should sink into the grave, struck down by internal calamity, not by the gentle hand of time.

And yet not only was this the issue, but, even in the hour of his greatest seeming prosperity, Scott had again and again been secretly struggling against some of the most alarming anxieties. On details as to his unfortunate commercial engagements we cannot here enter. It is enough to say, that the printing company of which he was a partner, which seems to have had considerable liabilities even before the establishment of the publishing house, was now inextricably entangled with the concerns of the latter, many of whose largest speculations had been completely unsuccessful; that, besides this, both firms were involved to an enormous extent with the house of *Constable*; and that large sums, which had been drawn by Sir Walter as copyright-money for the novels, had been paid in bills which were still current, and threatening to come back on him.

In the beginning of 1826, *Constable's* house stopped payment; and the failure of the firm of *Ballantyne*, for a very large sum, followed instantly and of course. Probably even the utter ruin which this catastrophe brought upon Scott, was not more painful to him than the exposure which it necessarily involved, of those secret connections, the existence of which even his most confidential friends could till now have at most only suspected. But if he had been imprudent, he was both courageous and honourable; and in no period of his life does he appear to such advantage, as when he stood, as now, beggared, humbled, and covered with a load of debt from which no human exertions seemed able to relieve him. He came forward without a day's delay, and refused to be dealt with as an ordinary bankrupt, or to avail himself of those steps which would have set him free from the claims of his creditors, on surrendering his property to them. He insisted that these claims should, so far as regarded him, be still allowed to subsist; and he pledged himself that the labour of his future life should be unremittingly devoted to the discharge of them. He did

Scott, Sir
Walter.

Scott, Sir
Walter.

Scott, Sir
Walter.

more than fulfil his noble promise; for the gigantic toil to which, during years after this, he submitted, was the immediate cause that shortened his life. His self-sacrifice, however, effected astonishingly much towards the purpose which it was designed to serve. Between January 1826 and January 1828, he had realized for the creditors the surprising sum of nearly L.40,000; and soon after his death the principal of the whole Ballantyne debt was paid up by his executors.

We have now briefly to describe the efforts by which this result was accomplished. After spending at Abbotsford, in 1826, a solitary summer, very unlike its former scenes of splendour, Scott, returning to town for his winter duties, and compelled to leave behind him his dying wife (who survived but till the spring), took up his residence in lodgings, and there continued that system of incessant and redoubled labour which he had already maintained for months, and maintained afterwards till it killed him. Woodstock, published in 1826, had been written during the crisis of his distresses; and the next fruit of his toil was the *Life of Napoleon*, which, commenced before the catastrophe, appeared in 1827, and was followed by the *First Series of Chronicles of the Canongate*; while to these again succeeded, in the end of the same year, the *First Series of the Tales of a Grandfather*. The year 1828 produced the *Second Series* of both of these works; 1829 gave Anne of Geierstein, the first volume of a *History of Scotland* for Lardner's *Cyclopædia*, and the *Third Series of the Tales of a Grandfather*. The same year also witnessed the commencement of that annotated publication of the collected novels, which, together with the similar edition of the poetical works, was so powerful an instrument in effecting Scott's purpose of pecuniary disentanglement. In 1830 came two Dramas, the *Letters on Demonology*, the *Fourth Series of the Tales of a Grandfather*, and the second volume of the *History of Scotland*. If we are disappointed when we compare most of these works with the productions of younger and happier days, our criticism will be disarmed by a recollection of the honourable end which the later works promoted; and as to the last productions of the mighty master, the volumes of 1831, containing *Count Robert and Castle Dangerous*, no one who is acquainted with the melancholy circumstances under which these were composed and published, will be capable of any feeling but that of compassionate respect.

The dejection which it was impossible for Scott not to feel in commencing his self-imposed task, was materially lightened, and his health invigorated, by an excursion to London and Paris in the course of 1826, for the purpose of collecting materials for the *Life of Napoleon*. In 1829 alarming symptoms appeared, and were followed by a paralytic attack in February 1830, after which the tokens of the disease were always more or less perceptible to his family; but the severity of his tasks continued unremitted, although in that year he retired from his clerkship, and took up his permanent residence at Abbotsford. The mind was now but too evidently shaken, as well as the body; and the diary which he kept contains, about and after this time, melancholy misgivings of his own upon this subject. In April 1831 he had the most severe shock of his disease that had yet attacked him; and having been at length persuaded to abandon literary exertion, he left Abbotsford in September of that year, on his way to the Continent, no country of which he had ever yet visited, except some parts of France and Flanders. This new tour was undertaken with the faint hope that abstinence from mental labour might for a time avert the impending blow. A ship of war, furnished for the purpose by the Admiralty, conveyed Sir Walter, first to Malta, and then to Naples; and the accounts which we have, both of the voyage and of his residence in Italy, abound with circumstances of melancholy interest. After the beginning

of May 1832, his mind was completely overthrown; his nervous impatience forced his companions to hurry him homeward from Rome through the Tyrol to Frankfort; in June they arrived in London, whence Sir Walter was conveyed by sea to Edinburgh; and, having reached Abbotsford on the 11th of July, he there continued to exist, with few intervals of consciousness, till the afternoon of the 21st of September, when he expired, having just completed the sixty-first year of his age. On the 26th he was buried in the beautiful ruins of Dryburgh Abbey.

In the article ROMANCE, observations have been made on Scott's prose works of fiction. It remains here to add a very few words on the character of his poetry. It would be rash for any who have lived only in the same age with a great poet, and still more rash for those whose earliest conceptions of poetical celebrity and poetical beauty are inseparably associated with his name and his writings, to pronounce peremptorily on the rank which may probably be assigned to him by posterity, among the classics of his native language. But without venturing on such ground as this, there are points of comparison with himself and others, which may warrantably be applied to the illustration of his genius.

In regard to the spirit which animates the poetry of Scott, he stands entirely alone in his age; separated indeed so far from the tendencies of the time, that his universal popularity seems at the first glance to have in it something unaccountable. The passionate intenseness and moody self-inquisition of Byron, the calm thoughtfulness and universal sympathies of Wordsworth, and the wildness of Coleridge's lyrical dreams, are in their several kinds allied to those impulses which have widest sway in these generations of our race; while other poets, Campbell with his gentle pathos, Crabbe with his melancholy anatomy of life, and Moore with his overflow of voluptuous imagery, appeal to emotions which are not so much distinctive of particular periods in the history of mankind, as common to the mind in all its ages. But the world which Scott reproduced in the midst of us, the world of feudalism and chivalry, the transition-stage in the annals of Christian Europe, is one with which the men of modern times have very little communion or fellow-feeling; and the boldness with which he chose his themes was even exceeded by that of the tone in which he ventured to treat them; neither jesting with his own fancies, like Pulci or Ariosto, nor, like Tasso, overlaying the essential substance of the chivalrous life with a garniture of poetry and of delicate feeling which left the genuine light of elder times but few openings to glimmer through; but grappling with his materials in the believing and lofty devotion of an historical poet, and painting for us a picture in which the fierce and fiery spirit of martial adventure inspires the leading groups, and gives the outlines of the piece, while interesting local superstitions and the ascetic religion of Catholicism, the absorbing love of country and the anomalous devotedness of feudalism, form, singly or united, the colouring which is spread over different portions of the composition.

For, in essentials, this character of historical truth does belong to the poetry of Scott; not indeed that his view of the old world is one which could have presented itself to those who lived nearer to the times he depicts; but that it is almost as near to truth as consists with the united requirements made by the purposes of his art and the temper of his age, and probably nearer to the truth than any similar attempt which has been made in modern times. Doubtless there are many instances in which he does not preserve this fidelity to the claims of his subject; but it is surprisingly preserved in his best works, and the inferiority of the others is in no small degree owing to their deficiency in it. Indeed he goes even farther than this; for he not only presents to us the scenes of old, but he invests them in a dress

Scott, Sir
Walter.

substantially the same as that in which they would have been clothed by poets contemporary, or nearly succeeding them, if these, for their metrical romances or their ballads of love and war, had possessed equal appliances, in a formed language, and in extended views as to the principles of the poetical art.

The Lay of the Last Minstrel is really a long border-ballad; and, inspired by the poet's early recollections and studies, and nourished not only by those copious sources of illustration of which the Border Minstrelsy furnishes abundant specimens, but by affectionate familiarity with the landscapes of his story, this work possesses, both in spirit and in details, at once a fervour and a unity superior to any of his others. Very little indeed, either of incident or character, would require to be withdrawn from it, as foreign to its essence. *Marmion* is pitched in another key, but is still antique, and, though less rich in characteristic details of the olden time, and rather less free from modern admixtures, is pervaded almost throughout by the chivalrous spirit, while that spirit blazes forth at several points with a splendour which the poet elsewhere never equalled. The poem is a metrical romance of history; the full development of a species of composition in which Barbour had but faintly traced the design. The *Lady of the Lake* cannot be so readily referred to any one class of our old national poems; in which, indeed, that moving panorama of gorgeous landscapes, amidst which the personages exist, is, as a prominent feature, quite unknown. But this very feature, and the placidly romantic air which breathes through most of the adventures, at once determine its type as a kind of pastoral romance (instanced more frequently in foreign literature than in our own), and diffuse over the work a singular charm, which hides from us much vagueness, both in the characters and in the historical details of manners and ideas. *Rokeby*, the next in the list, is confessedly the weakest of its author's larger poems, as it is also that in which he has removed himself farthest from his ordinary models. Defective alike in unity of spirit and in historical fidelity, it would, but for some poetical gems which sparkle through, deserve no higher name than that of a novel in verse. In the *Lord of the Isles* we behold a return to the poet's higher sources of inspiration; for we have here another metrical chronicle, a second *Marmion*, every way inferior to the first.

It is abundantly evident that the task which Scott has thus performed, of creating anew the scenes and characters of a fierce and chaotic stage of society, allowed him ample room for arousing some of the strongest emotions which poetry can awaken. Sometimes, indeed, he errs by applying himself to the excitement of feelings which, though strictly within his limits, are not broadly enough impressed on the minds of most men to found any lively sympathy. Such are the feelings of superstitious awe and delight in supernatural invention, feelings which are chiefly addressed in his two anonymous poems, and to whose prevalence these works, equal in some points to any thing in verse he ever wrote, mainly owe their want of general interest and popularity. But he far oftener throws himself on those principles which are universally sympathized with and appreciated, not indeed arousing all of them with equal skill, but compounding, out of the use he makes of all, a representation which is at once sufficiently true and widely attractive. That which was really the master-feeling of the times he delineates, the love of warlike adventure, is the path in which he has been by far most successful. In tenderness or passion he does not stand by any means first among the poets of our day; and even in those exhibitions of chivalrous generosity and lofty feeling which are so closely consonant to his stories and their actors, he is, although often delightfully felicitous, yet by no means without his equals; but there is no poet of our times, and very few in any age or coun-

try, who have portrayed with such admirable force and fire the soldier's thirst for battle, and the headlong fury of the field of slaughter. Throughout all his works there occur bursts of this sort, which would of themselves have placed him high among poets of the class, even though he had never written his noblest passages of warfare, the knightly combat of Fitzjames and Roderick, or the magnificent battle-piece which closes *Marmion*. His clear and cheerful, yet delicately sketched and poetically elevated descriptions of natural scenery, less strong in their outlines than some poetry of a similar kind, and less vivid in their colouring and chiaroscuro than others, but always pleasing and original, and often far more, may probably be said to be, after their warlike temper, the most distinctive feature of his poems.

If the moral tone of Scott's poetry is not high, it must be at least admitted that it is uniformly inoffensive; and if most passages excite us less violently than those of some other poets, there is none whose works leave on the mind a more pleasing expression of content and hopefulness. Perhaps, in his views of human society, the only thing which can at all jar on the feelings of any, is that tendency to aristocratic hauteur, which, not indeed shrinking from contact with the lower orders, and willingly recognising and esteeming many of their virtues, yet considers them strictly as the dependents of higher men, and is silent on every other relation they can be supposed to hold. This feeling, so palpable both in his poetry and in his romances, is, it must be remarked, quite in keeping as a feature of the times he describes in the former class of writings; and even as an element in modern poetry, there doubtless are, after all, many who will esteem the sentiment a just one.

In skill of execution, as respects both ease of expression and melody of versification, there is in the poems an exceedingly observable progress, not at all corresponding to their respective degrees of real merit. Both in diction and in music there is a very wide distinction between the first few stanzas of the Lay and the most finished passages in *Rokeby* or the *Lord of the Isles*. Not less noticeable are the variations in point of poetical ornament, a thing very different from genuine poetical force or beauty. In the Lay, the most poetically conceived of all the works, there are wonderfully few passages of the kind that furnish showy quotations, though those of this class that do occur are of a very high order. *Marmion*, except in the Introduction, scarcely contains more; the *Lady of the Lake* possesses such far more abundantly; while *Rokeby* overflows with couplets poetically sententious; and the *Lord of the Isles* again returns towards the earlier manner.

There is one point of view in which the poems offer a very interesting subject of consideration, not for their own sake, but in their relation to those more celebrated and certainly higher works which succeeded them. They may be regarded as in some sense preparations, or, in the artist's phrase, studies, for the novels and romances. The field of speculation which is thus presented may furnish some intelligent inquirer with extremely apt materials for illustrating the poet's genius; but the mine is too wealthy to be here so much as opened. It may be remarked, however, that while the latter poems in their spirit approach far nearer to the prose romance than the earlier ones, thus in some degree indicating the operations which were going on in the author's mind, yet it is from the earlier that the romances have derived by far the most plentiful hints and materials. In the slightly sketched personages of the poems we may frequently discover elements which were expanded into the finished characters of the prose works, and this not only in the dignified and poetical, but even in the comic, as one instance of which may be cited the *Friar John of Norham* as the first outline of *Robin Hood's Tuck*. In incident, the borrowings from the poems are less direct and

Scott, Sir
Walter.

Scott,
William.

Scott,
William.

palpable; and the most obvious are the obligations which, both in this and the other particular, the Monastery owes to the Lay, and Ivanhoe to Marmion. The Lady of the Lake, also, both in its scenery and its draughts of Highland character, may be considered as the preface to Waverley.

(w. s—g.)

SCOTT, *William, Baron Stowell*, was born 17th. October 1745, at Heworth, in the county of Durham, whither his mother, being with child, had, a few days before, removed; deeming it prudent, as the Scotch rebels were advancing from Prestonpans, to be confined there rather than in Newcastle. William was the eldest son of Mr William Scott, coal-fitter and merchant, Newcastle, and brother of Lord Eldon; and a short notice of his family circumstances and early education will be found in the preceding memoir of his distinguished brother.

When he was in his sixteenth year, a scholarship for the diocese of Durham became vacant at Corpus Christi College, Oxford, and his father, aware of his great talents, resolved that he should avail himself of his accidental birth in the county of Durham to become a candidate for it. He accordingly proceeded to Oxford, and there, on the 24th February 1761, after an examination, which he passed with great distinction, he won the vacant scholarship. His youthful reputation, both in his native town and at Oxford, having suggested that he should choose the bar for his profession, he next, on the 24th June 1762, when between sixteen and seventeen years old, was entered as a student at the Middle Temple. On the 20th November 1764 he took his bachelor's degree, and on the 13th of the following month was elected a probationary fellow of University College, for his eligibility to which he was again indebted to the accident of having been born in the county of Durham. He was, soon after, also elected by the same society a college tutor; and having now, from his fellowship and tutorship together, a liberal income, from which he could even manage to save somewhat, he hesitated to carry out his original plan of going to the bar, fearing to relinquish the certainty which he possessed for the chances of that precarious profession. In 1767 he took the degree of master of arts, and in May 1772 proceeded to B.C.L. In 1774 he was elected by the members of convocation, after a contest, to the Camden chair of ancient history, from which, about four years afterwards, he delivered a course of lectures, which attracted crowded audiences, and brought him into high and wide reputation. These lectures, which are believed yet to exist in manuscript, he could never be induced to publish, probably because he thought they had received greater praise than they deserved, and was unwilling, by exposing them to closer criticism, to risk the fame they had brought him.

In 1776, his father having died and left him his executor, he resolved on following the profession of an advocate at Doctors' Commons, bitterly regretting that his father's reserve as to his means had delayed him so long from entering on an active career. In the same year he retired from his office of college tutor, still, however, retaining his professorship, and continuing to reside mostly in the university, till after he had taken his degree of D.C.L., which he did in 1779. He was called to the bar on the 11th February 1780, having three months previously (in the thirty-fifth year of his age) been admitted at Doctors' Commons into the Faculty of Advocates. By this time he enjoyed an extensive and intimate acquaintance with many eminent men in the metropolis. It has been mentioned, in the memoir of his brother John, that he took after that phase of Moises, his old master, in which he excelled in lively and brilliant conversation; his wit improved with his learning and knowledge of the world; and what with his "clubbable qualities," and the patronage of his friend, Dr Johnson, to whom he had been introduced, in University College,

VOL. XIX.

by their common friend Chambers (afterwards Sir Robert), he already possessed, when he removed to London, a *locus standi* in its most intellectual society. So early, indeed, as 1778 he had been elected, through Johnson's influence, a member of the famous Literary Club.

In 1781 Mr William Scott married Anna Maria, the eldest daughter and coheir of Mr Bagnall of Early Court, in Berkshire, a gentleman of moderate pretension. To some the lady's purse appeared more attractive than her person, but there is no reason for thinking that the marriage proved an unhappy one. At any rate, his experience of the fair sex was such as might have justified him in an easy marriage of convenience. In early life he had loved a Miss Jane Reay, daughter of a townsman of his own, who is said to have reciprocated his affection; but her father, ambitious of a higher alliance for his daughter, objected to their union, and the facile young lady (how unlike the gentle "Bessy" of his brother John) married a man of good estate and family. There is reason to think that William and Jane, in their old age, and when both their married lives were over, retained the old feeling for one another! Mr Surtees says, "She, as well as her early admirer, lived to a very advanced age; and he, when an octogenarian peer, requested, through a common friend, permission to send her an engraving of himself, which had just been published. The request was gracefully acceded to, and the engraving sent. Was not this the romance of real life?" It may be added, such are the fates that regulate marriages! After losing Jane, William Scott went, like a man of sense, and fell in love elsewhere, but with equal bad fortune. He failed with the "fair," says Mr W. E. Surtees (the *Sketch*, p. 29), probably because there was too little of "the devil" in his composition. Be that as it may, he had certainly gone through an experience to teach him to consult his head rather than his heart in his next adventure.

In the spring of 1781 Dr Scott's year of silence expired, and he entered on the practice of his profession, with every guarantee of success. For practice in the ecclesiastical courts he was fitted by his long residence in the university, and familiarity with the rights, interests, difficulties, and dangers of the Church; while, as the son of a merchant and shipowner, educated in a large seaport-town, he brought a knowledge of shipping to aid him in practising in the Courts of Admiralty such as few advocates have ever attained to. His talents and great learning at once brought him a large practice. So early as the spring of 1782 we find him writing that he is "exceedingly oppressed with business." This success soon led to his promotion. In 1783 he was appointed to the office of registrar of the Court of Faculties. In 1788 the Bishop of London appointed him judge of the Consistory Court; and the Archbishop of Canterbury, his vicar-general or official principal. In the same year he was knighted, appointed advocate-general, and admitted a privy councillor. In 1798 he attained the highest dignity in connection with his courts, being appointed judge of the High Court of Admiralty. So early as 1780 Sir William Scott had attempted to enter Parliament for his university, but failed. In 1784 he was elected member for the nomination borough of Downton, but was unseated on petition. He afterwards entered Parliament for the same borough in 1790. He was again returned for the same borough in 1796, and on the retirement of Francis Page, Esq., in 1801, from the representation of Oxford, was gratified by being elected member for his university; and this seat he continued to hold till 1821, when, on the occasion of the coronation of George IV., he entered the House of Peers as Baron Stowell of Stowell Park. He retained his place on the bench till 1828. As a politician, Lord Stowell, like his brother, was an uncompromising Conservative, but, excepting that he appeared to vote in support of his party, he

Scott,
William.

took little or no part in politics in either house. During the earlier years of his parliamentary life—if such it may be called—he never spoke at all; nor was he instrumental in carrying any measures into law, excepting one or two affecting the Established Church, of which he was on all occasions a staunch supporter, regarding himself as representative of the clergy, in his double character of judge of the ecclesiastical courts and member for Oxford.

Lord Stowell was twice married. By his first wife he had four children, of whom two, a son and daughter, died in infancy. His eldest daughter, who survived him, was twice married, first to Colonel T. Townsend, a gentleman of Warwickshire, and next to Viscount Sidmouth. His son, William, destroyed his constitution by intemperate habits, and died at the age of forty, about two months before his father. Lord Stowell's first wife died on the 4th September 1809, and on the 10th of April 1813 he was married to Louisa Katherine, Marchioness Dowager of Sligo (widow of the first Marquis and daughter of Earl Howe), with whom he got acquainted, singularly enough, through the circumstance of his having presided, in the preceding December, at the admiralty sessions at the Old Bailey, on the trial of her son, Lord Sligo, for inveigling some seamen from one of the king's ships to serve on board his yacht. This marriage was a very unhappy one, for the lady at least, a circumstance which was foreseen by Lord Eldon, who refused to countenance it by being present at the ceremony. The lady was liberal and generous; Stowell was narrow and parsimonious. Her ladyship, having been for many years of her life the nurse of a sick husband, was weaned from society. Lord Stowell was never so happy as when out shining in society. He went feasting and drinking, and left his poor wife miserable at home. To her the marriage was a revelation of meanness under the courtierly and polished manner of the man who had won her hand; to him the quiet lady with her liberality was an unpardonable spendthrift and bore. In 1817 she proposed a trip to Paris, being anxious to exhibit that metropolis to a favourite niece. He had no objection. She went thither, and at the same time he himself started for a tour in Switzerland. She took suddenly ill, and died in Amsterdam. He finished his tour, leaving Switzerland a fortnight after he heard of her death.

On the 28th January 1836, Lord Stowell died, in the 91st year of his age. He was unquestionably one of the ablest and most accomplished lawyers that ever sat on a judgment-seat. "There is no one," says W. E. Surtees (*The Sketch*, p. 145), "so ambitious of eccentricity as to deny his judgments excellence of the highest order. The statesman in the admiralty, the moral philosopher in the consistory court, will find his own more appropriate instruction; while the scholar who may turn to the reports of Lord Stowell's decisions in either court, will admire the illimitable felicity of the language on which his judicial thoughts are winged, and acknowledge that his character has been formed on the purest models of ancient and modern elegance." And Lord Brougham, in his notice of Lord Stowell in the *Historical Sketches of Statesmen of the time of George III.*, has paid this tribute to his memory:—"His vast superiority was apparent, when, as from an eminence, he was called to survey the whole field of dispute, and to marshal the variegated facts, disentangle the intricate mazes, and array the conflicting reasons which were calculated to distract and suspend men's judgments. . . . If ever the praise of being luminous could be bestowed upon human composition, it was upon his." Some of his judgments, it has further been said, may be called almost revelations of the law, being expositions of large and intricate questions which had never before been thoroughly investigated, but which he completely cleared up and set

at rest. It lies in the observations already made that he surpassed Lord Eldon in literary talent. His style was as remarkable for polish and crystalline clearness as that of his brother for its clumsiness and obscurity.

But though a great lawyer, he was not a great man. He was a great eater, and, says Mr Surtees, "the feats which he performed with the knife and fork were eclipsed by those which he would afterwards display with the bottle." His habits were slovenly and unclean. "The hand that could pen the neatest of periods was itself often dirty and unwashed; and the mouth which could utter eloquence so gracefully, or such playful wit, fed voraciously, and selected the most greasy food." Then, again, he was an unquestionable miser. He kept a very mean establishment. Fond as he was of his wine, he would drink less at his own than at other tables. "He could drink any *given* quantity," as was wittily observed by his brother, Lord Eldon, but was abstemious where he had to pay. The most painful fact that remains to be recorded respecting him is, that when his only son William had formed an attachment that was unexceptionable, he, though it may be said he rolled in riches, would not make him a sufficient allowance to enable him to marry. It has been stated already, that this son died from the effects of intemperate habits; it must now be added, that but for this disappointment the young man might have lived. In despair he plunged into excesses. His father just survived him, and his great wealth was gathered up by collaterals. Perhaps his fondness of poking about London visiting cheap shows, was connected more with his avarice than with his curiosity. Whatever show could be visited for a shilling or less, he visited. After his elevation to the peerage, he was actually seen coming out of a penny show in London—cheap excitement! Like Lord Eldon, though a great friend of the church, he never attended public worship; what had been said of his brother might have been said of him, that he was more properly a buttress of the church than a pillar, for he was never seen inside it. At the same time there is no reason to doubt that he was a good Christian; probably, like many other university men, he had a surfeit of chapels when at college, and shuddered at the thought of again entering one. With all his failings, and notwithstanding his avarice which increased with his years, Lord Stowell must be regarded as having been, after a peculiar sort, a kindly, amiable man. As Lord Eldon is quite a loveable person when he goes into retirement with his "Bessie," so does Lord Stowell force our regards when we consider him as a brother and son. The union of the Scott family was the secret of their rise in life, and the most favourable light under which they can now be regarded is that of their family affections.

(J. F. M'L.)

SCOUGAL, HENRY, author of *The Life of God in the Soul of Man*, was born at Salton, in Haddingtonshire, in June 1650, where his father, the immediate predecessor of Bishop Burnet, was rector. Having prosecuted his studies with much distinction at the University of Edinburgh, he was appointed to the chair of philosophy in Aberdeen, on his leaving college. Having taught there for some years, he took orders, and was settled at Auchterless, some twenty miles from Aberdeen. It was in this retirement he wrote the work by which he is now known. This book is marked above others of its class by the earnest spirit of piety which it breathes, and by the purity and elegance of the style in which the thoughts are conveyed. It appeared in 1677 anonymously, the modesty of the author withholding him from prefixing to it his name. Scougal hardly survived its publication a twelvemonth. He died of consumption on the 13th of June 1678, in his twenty-eighth year. He was interred on the north side of the chapel of King's College, Aberdeen, where a tablet of black marble records to the passer-by the revered dust which lies below.

Scougal.

Screw
||
Scribe.

SCREW, one of the six mechanical powers, is a cylinder cut into several concave surfaces, or rather a channel or groove made in a cylinder, by carrying on two spiral planes the whole length of the screw, in such a manner that they may be always equally inclined to the axis of the cylinder in their whole progress, and also inclined to the base of it in the same angle.

SCRIBE, in Hebrew *sepher*, is very common in Scripture, and has several significations. It signifies, *first*, a clerk, writer, or secretary. This was a very considerable employment in the court of the kings of Judah, in which the Scripture often mentions the secretaries as the first officers of the crown. Seraiah was scribe or secretary to King David (2 Sam. viii. 17). Shevah and Shemaiah exercised the same office under this prince (2 Sam. xx. 25). In Solomon's time we find Elihoreph and Ahia secretaries to that sovereign (1 Kings iv. 4); Shebna under Hezekiah (2 Kings xix. 2); and Shaphan under Josiah (2 Kings xxii. 8). As there were but few in those times that could write well, the employment of a scribe or writer was very considerable. *Secondly*, a scribe is put for a commissary or muster-master of an army, who makes the review of the troops, keeps the list or roll, and calls them over. Under the reign of Uzziah, king of Judah, there is found Jeil the scribe, who had under his hand the king's armies (2 Chron. xxvi. 11); and at the time of the captivity, it is said the captain of the guard, among other considerable persons, took the principal scribe of the host, or secretary at war, which mustered the people of the land (2 Kings xxv. 19). *Thirdly*, scribe is put for an able and skillful man, a doctor of the law, a man of learning that understands affairs. Jonathan, David's uncle by the father's side, was a counsellor, a wise man and a scribe (1 Chr. xxvii. 32). Barnuch, the disciple and secretary to Jeremiah, is called a scribe (Jer. xxxvi. 26); and Ezra is celebrated as a skillful scribe in the law of his God (Ezra vii. 6). The scribes of the people, who are frequently mentioned in the gospel, were public writers and professed doctors of the law, which they read and explained to the people. Some place the original of the scribes under Moses; but their name does not appear until under the judges. It is said that, in the wars of Barak against Sisera, "out of Machir came down governors, and out of Zebulun they that handle the pen of the writer" (Judges v. 14). But others think that David first instituted them when he established the several classes of the priests and the Levites. The scribes were of the tribe of Levi; and at the time that David is said to have made the regulations in that tribe, we read that six thousand men of them were constituted officers and judges (1 Chr. xxiii. 4), among whom it is reasonable to think that the scribes were included. For in 2 Chr. xxiv. 6, we read of Shemaiah the scribe, one of the Levites; and in Chr. xxxiv. 13, we also find it written, "Of the Levites that were scribes and officers."

The scribes and the doctors of the law, in the Scripture phraseology, mean the same thing. And as the whole religion of the Jews at that time consisted chiefly in pharisaical traditions, and in the use that was made of them to explain the Scripture, the greatest number of the doctors of the law, or of the scribes, were Pharisees; and we almost always find them joined together in Scripture. Each of them valued themselves upon their knowledge of the law, and upon their studying and teaching it (Mat. xxii. 52).

They had the key of knowledge, and sat in Moses's chair *Scrimzeor*. (Mat. xxiii. 2). Epiphanius, and the author of the Recognitions imputed to St Clement, reckon the scribes among the sects of the Jews; but it is certain that they formed no sect by themselves, and were only distinguished by their study of the law.

SCRIMZEOR, or SCRIMGEOUR, HENRY, a learned Scotchman of the sixteenth century, was born of an ancient and noble family, at the town of Dundee, in 1506. Passing from the grammar-school of Dundee, where he began his education, he entered the University of St Andrews, and gained much distinction in the study of philosophy. Having removed to Paris, he there prosecuted his inquiries into civil law. The fame of the noted legal lecturers, Baron and Duaren, drew him to Bourges, where he made the acquaintance of Amiot, then Greek professor there, and subsequently cardinal. He now, at the suggestion of his friend Amiot, became tutor to a family named Bucherel, and subsequently went to Italy, in company with Bornetel, the bishop of Rennes, whose friendship he had recently secured. Scrimgeour gained the intimacy of many learned men, and greatly improved himself during this Italian tour. He wrote a life of the famous apostate, Francis Spira, which was probably printed at Basle in 1550 or 1551, but it is not mentioned in any copy of his writings which has come under our notice. On his way home he had occasion to pass through Geneva, where he was prevailed upon to accept of a lectureship in philosophy. Ulric Fugger, the merchant-prince of that age, having invited him to Augsburg, he left Geneva, and gave the rich merchant the benefit of his superior judgment, and his great information in the augmentation of his splendid library. Being introduced by his German patron to Henry Stephens, then residing at Geneva, and the most famous printer in Europe, he entered into negotiations respecting the publication of his works; but, from whatever cause, a jealousy seems to have sprung up between them, which ended only with the life of Scrimgeour. He died at the city of Geneva in or about the year 1571. Scrimgeour's literary property and fame were committed, on his death, to Isaac Casaubon, who seems to have been hardly just to the reputation of the deceased Scotchman. It is now quite impossible to disentangle the writings of Scrimgeour from those of his "literary executor." Casaubon published, in his own name, an edition of Athenæus in 1600, an edition of Strabo in 1602, Diogenes Laërtius in 1593, the *Basilica*, Phurnutus and Palæphatus, 1570—in all of which he was much indebted to the annotations of Scrimgeour and to his improvements on the texts of his authors. The only work published with Scrimzeor's name was Justinian's *Novellæ Constitutiones*, which he had translated into Greek in 1558. This learned man left behind him many valuable manuscripts, of Demosthenes, Æschines, Cicero, and Eusebius, carefully collated, but which never yet have been given to the public. Scrimzeor's immense erudition was only equalled by his exquisite judgment, which found an excellent field for its exercise in the errors and obscurities which had crept into those ancient authors on which he delighted to labour. Cujanus used to say of Scrimgeour that he never talked with him without learning something he had not known before. By no means a wonderful saying for an ordinary man, but a very remarkable one for Cujanus.

SCRIPTURE, HOLY.

Scripture. UNDER this title are commonly designated the sacred books of the Jews and the Christians, in which are contained the revelation of God's will to mankind, and the principles of that religion which He has inculcated upon us. In other parts of this work the reader will find articles elucidatory of the claims preferred and of the doctrines taught in these books. (See especially **INSPIRATION**, **MIRACLE**, **PROPHECY**, and **THEOLOGY**.) In the present article it is proposed to furnish an outline of what may be denominated *the historico-critical knowledge of these books*. In treating of this we have to do with the composition, the history, the reputation, and the literary characteristics of the sacred writings viewed simply as remains of ancient literature.

This department of investigation is comparatively of recent date. In the earlier ages of the church the same necessity for such inquiries did not exist as now, in consequence especially of the efforts which have been made in more recent times to impugn the authenticity of the sacred documents; nor is it probable that the early fathers, from the views which they entertained of the sole agency of the Holy Spirit in the composition of these, would have deemed any inquiry into their peculiarities, as the products at the same time of human agency, other than impious and absurd (1). Since the time, however, when Spinoza issued his attack upon the authenticity of the Pentateuch and the general inspiration of the Scriptures (1670), and Richard Simon, a presbyter and fellow of the oratory at Paris, followed with his acute, learned, and liberal investigations into the critical history of the Old Testament (1678), this subject has occupied the attentive study of critics and theologians of all confessions, and may now be said to have reached the dignity of a *science* (2). The path opened by Spinoza was followed by J. S. Semler in Germany, who may be said to have founded the school of neologic criticism in that country. He was succeeded by Eichhorn, Bertholdt, Augusti, and De Wette, in whom the rationalistic and sceptical school culminated (3). On the more orthodox side appeared J. D. Michaelis, Jahn, Hug, and, more recently, Scholz, Schott, Hengstenberg, Hävernick, Credner, Feilmoser, Guericke, and others (4). In England, besides the older works of Walton, Mill, and Harwood, the only productions in this department of any value are those of Horne, Davidson, Tregelles, Porter, Westcott, and Scrivener (5).

1. The prevailing notion among the Jews and the early Christians respecting inspiration was, that the faculties of the person inspired were completely suspended and superseded during the afflatus, so that the only parts of him actively engaged in the work of composition were his hands and his eyes. Philo speaks of God as "using the organs of the prophets for the manifestation of His will" (Θεὸς καταχρῶμεν τοῖς ὅργανοις πρὸς δηλώσειν ὧν ἀνέβλεπον, *De Monarch.* lib. i., ed. Mangey, t. ii., p. 222): Justin Martyr compares them to the strings of a lyre, which produce sounds just as they are touched by the hand of the player (*Cohort. ad Græcos*, c. 8); and Augustin frequently speaks of the Scriptures as the "Chirograph of Deity," and of their writers as "the stylus or pen of the Holy Spirit." The influence of such exclusive views in discouraging any inquiries of a historico-critical nature is seen in the following sentence of Gregory the Great:—"Quis librum Job scripserit, valde superflue quæritur, cum tamen auctor libri Spiritus Sanctus fideliter credatur. Ipse scripsit, qui et in ejus opera inspirator extitit et per scribentis vocem imitandam ad nos facta transmisit." (*Moral. in Job.* t. i., p. 7.) Ideas of a similar kind are found in the writings of several of the older divines subsequent to the Reformation. (For the opinions most generally received among Protestant divines in the present day, see Henderson's *Lectures on Inspiration*, London, 1836, 3d ed. 1852; Lee *On Inspiration*.)

2. Spinoza's work is entitled *Tractatus Historico-Politicus, continens Dissertationes aliquot, quibus ostenditur, Libertatem Philosophandi non solum salva pietate et reipublicæ pace posse concedi; sed eandem nisi cum pace reipublicæ ipsaque pietate tolli non posse*; Hamburgi, 1670, 4to. Simon's *Histoire Critique du Vieux Testament*

appeared in 1 vol. 4to, in 1678, at Paris; but a fuller and more correct edition was published at Rotterdam in 1685, superintended in all probability by the author. It produced numerous replies and strictures, from the pens both of Catholic and Protestant divines, of which the most important were those of Spanheim (*Lettre sur l'Hist. Crit. du V. T. du R. Simon*); Du Pin (*Dissert. prelim. ou Prolegomènes sur la Bible*), and Le Clerc (*Sentimens de quelques Théologiens d'Holland sur l'Hist. Crit. du V. T. composée par le D. R. Simon*). Both Du Pin and Le Clerc, but especially the latter, whilst reproving Simon, indulged certain speculations of their own, which were considerably too free for the age in which they lived, and which drew down upon them, along with the object of their strictures, the censures of the acute and ingenious Bossuet (*Divers Traitez, contre Mr R. Simon, Du Pin et autres, Œuvres Posthumes*, t. ii., 1753). By far the ablest reply to Spinoza was furnished by Carpzov (*Introductio ad Libros Canonicos V. T. omnes*, 4to, Lips. 1721, 3d ed. 1741).

3. Semler, *Apporatus ad liberaliorem Vet. Test. Interpretationem*, Halle, 1773; *Abhandlung von Freier untersuch. des Canons*, 4 vols. 1771-75. Eichhorn, *Einleitung in das A. T.*, 4th ed. 5 vols., Gött. 1820-24; *In die Apocryphischen Schriften des A. T.*, Leipzig. 1795; *In das N. T.*, 5 vols., Leipz. 1804-27. Bertholdt, *Histor. Kritische Einl. in sämtliche Kanonische und Apoc. Schriften des A. und N. T.*, 6 vols., Erlangen, 1812-19. Augusti, *Grundriss einer Hist. Krit. Einl. ins A. T.*, Leipz. 1827, 2d ed.; *Versuch einer Hist. Dogmat. Einl. in die Heilige Schrift*, Leipz. 1832. De Wette, *Lehrbuch der Hist. Krit. Einl. in die Bibel A. und N. T.*, 2 vols., Berlin 1849, 6th ed. (translated by Theodore Parker, 2 vols., Boston, 1843).

4. Michaelis, *Einl. in die Göttl. Schriften des A. Bundes*, 4to, Hamburg, 1784; *In die Göttl. Schriften des N. B.*, 2 bde. 4to, Göttingen, 4th ed. 1788 (translated by Bishop Marsh, in 6 vols. 8vo, with considerable additions, 3d ed., Camb. 1818). Jahn, *Einl. in die Göttl. Bücher des A. Bundes*, 3 vols. 8vo, 2d ed., Wien. 1802-3; *Introductio in Bibl. Sacr. V. T. in epitomen reducta*, ed. 2da, Vien. 1814, 8vo. Hug, *Einl. in die Schriften des N. T.*, 2 vols., 3d ed. Stuttgart und Tübingen, 1827 (translated by the Rev. D. G. Wait, LL.D., 2 vols. 8vo, 1827, and with much greater accuracy by D. Fosdich, junior, Andover, United States, 1837). Scholz, *Einl. in die Heil. Schriften des A. und N. T.*, 2 vols., Cöln. 1845. Schott, *Isagoge Hist. Critica in libros N. T. Sacros*, Jenæ, 1830, 8vo. Hengstenberg, *Beiträge zur Einl. ins A. T.*, 3 vols., Berlin, 1831, 1836, 1839 (translated by J. E. Ryland; *Dissertations on the Genuineness of the Pentateuch*, 2 vols.; and *On the Genuineness of Daniel and the Integrity of Zechariah*, 1 vol., Edin.) Hävernick, *Handbuch der Hist. Krit. Einl. in das A. T.*, 4 parts, Erlangen, 1836-44 (*A General Histor. Crit. Introduction to the O. T.*, translated by W. L. Alexander, D.D., Edin. 1852; *An Histor. Crit. Introduct. to the Pentateuch*, translated by A. Thomson, A.M., Edin.) Credner, *Beiträge zur Einl. in die Bibl. Schriften*, 2 vols., Halle, 1838; *Einl. in das N. T.*, 2 parts, Halle, 1836. Feilmoser, *Einl. in die Bücher des N. T.*, Tüb. 1830; Guericke, *Histor. Krit. Einl. ins N. T.*, 1843, of which an improved edition has lately appeared.

5. Walton, *Prolegomena in Biblia Polyglotta*, Lond. 1657, of which a separate edition was published, with a preface by J. A. Dathe, at Leipsic, in 1 vol. 8vo, 1777, and republished, with improvements and additions, by Archdeacon Wrangham, in 2 vols. 8vo, Cambridge, 1828. Mill, *Prolegomena in N. T.*, Oxon. 1707, folio. Harwood, *Introduction to the Study and Knowledge of the New Testament*, 2 vols. 8vo, Lond. 1767-1771. Marsh, *Lectures on the Criticism and Interpretation of the Bible*, Camb. 1828. Horne, *Introduction to the Critical Study and Knowledge of the Holy Scriptures*, 10th edition, revised, corrected, and brought down to the present time, by the Rev. T. H. Horne, B.D., Rev. S. Davidson, D.D., LL.D., and S. Pr. Tregelles, LL.D., 4 vols. 8vo, Lond. 1856. Davidson, *Biblical Criticism*, 2 vols. 8vo, Edin. 1852; *Introduction to the New Testament*, 3 vols. 1848-51. Porter, *Principles of Textual Criticism, with their Application to the Old and New Testaments*, London, 1847. Tregelles, *An Account of the Printed Text of the Greek New Testament, with Remarks on its Revision upon Critical Principles*, &c., London, 1854. Westcott, *History of the Canon of the New Testament*, Camb. 1855; Scrivener, *Supplement to the Authorized Version of the New Testament*, &c., London, 1845; *Full and Exact Collation of about Twenty Greek MSS. of the Holy Gospel, with Critical Introduction*, Camb. 1853. To these may be added Kitto's *Cyclopædia of Biblical Literature*, 2 vols. 8vo, 2d ed.

Many valuable treatises upon separate portions of the general subject are extant in different languages, but these it would be out of place to attempt to enumerate here. (See the Bibliographical Appendix to Horne's *Introduction*, Orme's *Bibliotheca Biblica*, and Winer's *Handbuch der Theologischen Litteratur*.)

Scripture.

Scripture. This subject divides itself into two parts, a *general* and a *special*,—the former having reference to the sacred volume as a whole, the latter to the separate books of which it is comprised. In the present article we shall confine ourselves to the former of these, and offer a few general observations on the collected Scriptures, as such.

SECT. I.—*The Name.*

Various designations have been affixed to the sacred volume. As a whole, it bears the name of *The Bible*, τα βιβλία; *Holy Scriptures*, ἱερα γραφή, θεια γραφή, ἁγια γραφή; *Bibliotheca Sancta*. The Jews called their part of it by such terms as עשרים וארבעה, i.e., *Four-and-twenty*, with reference to the number of separate books; מכתב or כתב, i.e., *Writing*, a term borrowed from Exod. xxxii. 16; ספרי הקדש, i.e., *Books of Holiness*; תורה נביאים וכתובים, i.e., *Law, Prophets, and Hagiographa*. In the Apocrypha they are styled ὁ νομος, καὶ οἱ προφηταὶ, καὶ τὰ ἄλλα πατρια βιβλία, *Jesus Sirac. Proleg. sub. init.* So also in the New Testament, νομος καὶ προφηταὶ, Matt. v. 17; νομος, προφηταὶ, καὶ ψαλμοὶ, Luke xxiv. 44; frequently ἡ γραφή and αἱ γραφαὶ; τὰ ἱερα γραμματα, 2 Tim. iii. 15. At an early period of the Christian era, the term *διαθήκη* began to be affixed to the Scriptures as the documents unfolding God's *covenant*; and their two great divisions to be designated as ἡ παλαια διαθήκη and ἡ καινη διαθήκη respectively. This usage seems to have been drawn from the language of Paul, 2 Cor. iii. 6 and 14, though it is only in the writings of Origen that it makes its appearance for the first time. The Latins rendered the word *διαθήκη* by *Testamentum* or *instrumentum* (1), according to its primary meaning, though not that in which it is employed by Paul, who uses it evidently in the sense of *Fœdus*; and from this we have the appellation employed by almost all the versions of modern Europe (2).

1. Tertull. *Adv. Marc.* iv. 1; Aug. *De Civ. Dei*, xx. 4.

2. Horne's *Introduction*, vol. i., p. 30; Michaelis, *Einleit.*, bd. i., s. 1; and in Marsh's translation, vol. i., p. 1; Augusti, *Grundriss*, p. 16, 2d ed.; De Wette, *Lehrbuch*, p. 7, 6th edition.

SECT. II.—*Genuineness and Authenticity of the Sacred Volume.*

As ancient literary documents, the Scriptures lay claim to be regarded as both *genuine* and *authentic* or *credible*. A book is *genuine* when it really is what it professes to be, as the composition of a particular individual, or as produced under particular circumstances, and at a certain place and time; as opposed to a book which appears under a *forged* title. A book is *credible* when the statements it contains are physically true; as opposed to a book the contents of which are *false* or *fictitious*. Both these qualities may meet in the same work, or they may exist separately in separate works. Thus the book of Genesis may be the composition of Moses, and yet be fabulous; or it may be true in all its statements, and yet not be the work of Moses; or it may be, as it is generally believed to be, both the production of Moses and true, both genuine and credible.

The genuineness and credibility of the sacred books form matter of separate investigation and proof. At the same time, they are so connected that the proof of the one paves the way for the proof of the other; for, in the case of such works it is highly improbable that truth would be issued under a forged name, or that such men as Moses, Samuel, or the evangelists would or could issue fictitious narratives as true. It is not, however, matter of indifference which of them we establish first. Before we can set ourselves to prove their credibility we must be in circumstances to show their genuineness; for unless we can do this, a preliminary difficulty will lie in the way of the

former, from the suspicion that these books appear with a *Scripture*. falsehood, or at least what has not been shown to be a truth, upon their front; a work of supposititious authorship being always *prima facie* less credible than one which is the genuine production of the writer to whom it is ascribed.

The proof of the genuineness of the Sacred Scriptures rests upon the following considerations:—

1. There is no antecedent impossibility that they should be genuine. It cannot be shown that it is impossible for Moses to have written the Pentateuch, Isaiah and the other prophets their prophecies, the evangelists their gospels, the apostles their epistles, or for the books which are anonymous to have been composed under the circumstances which they profess; nor that, being composed, it is impossible for them to have been preserved and handed down from generation to generation.

2. Circumstances were favourable to the preservation of these books, supposing them written. The Old Testament books professedly form the national literature, as well as the sacred documents of the Jews, and would naturally be carefully preserved by them. The New Testament books constitute the religious archives and statute-books of the Christian church, and would from their first publication be sacredly conserved by those for whom they were so deeply interesting.

3. It is matter of undeniable history that both Jews and Christians did possess certain sacred books, which they regarded with the utmost reverence, and preserved with the greatest care. The only question then is, Are the books which we possess the same as those thus revered and preserved? And, *first*, with respect to those of the Old Testament.

i. These are the books which were recognised in the early church as the sacred books of the Jews. This is placed beyond doubt by the early versions of Scripture, and by the catalogues of Athanasius, Epiphanius, Jerome, Origen, and Melito, Bishop of Sardis. (Lardner, *Works*, vol. iv., p. 290, 8vo ed.)

ii. The books of the Old Testament which we possess must have been extant at the commencement of the Christian era. This is evident from the allusions to them, and the quotations from them, in the New Testament, but especially from the testimony of Philo, an Egyptian Jew, who at the latest was contemporary with the apostles, and also of Josephus, himself a priest of the Jews, and consequently accurately informed on all matters relating to their sacred books, and who lived in the latter part of the first century of the Christian era. Philo gives no formal catalogue, but quotes from or refers to nearly all the books of the Old Testament, while no other is mentioned by him as of accredited authority. Josephus, besides frequent quotations and allusions, gives (*Cont. Apion.*, lib. i., c. 8) a catalogue of the sacred books of his nation, assigning five to Moses, thirteen to the prophets, and four to the writers of hymns and moral maxims. This, if we regard Judges and Ruth as one book, and add the Lamentations to the Prophecies of Jeremiah, which there is good reason to believe was the case in the days of Josephus, gives exactly the number of the books now extant.

Schmidtii *Historia Antiqua et Vindicatio Canonis Sacri Veteris et Novi Testamenti*, pp. 129–189, Lips. 1775; Ejusdem *Ennarratio sententiarum Flav. Josephi de libris Vet. Test.*, Wittenberg, 1787; Horne-manni, *Obs. ad Illustrationem Doctrinæ de Canone Vet. Test. ex Philone*, Hauniæ, 1778; Henderson's *Lectures on Inspiration*, p. 468, Lond. 1836.

iii. These books must have been written *long before* the Christian era. This is plain from the fact of targums or explanations of them into the Syro-Chaldaic dialect, which was the language of the people, having been made for a long course of years antecedent to the times of Onkelos and Jonathan Ben Uzziel, by whom they were collected

Scripture. in the form now extant, and who lived probably near the days of our Lord; from the allusions to the sacred books of his nation already quoted from the prologue to the work of Jesus the son of Sirach, which was composed about 230 years B.C.; and from the existence of the Septuagint version, which was at least commenced 280 years B.C.

iv. Under such circumstances, the forgery of these books was morally impossible. If such a thing took place, it must have been during the 140 years which elapsed between the death of Malachi, the last of the prophets, and the execution of the Septuagint version. But, first, it is inconceivable that, in so short a period, and in an age when literature was not a trade, a set of men (for the agency of only one man is out of the question) should have appeared in the land of Judea, all endowed with genius sufficient to share in the composition of such works, and all infected with the spirit of literary dishonesty, so as to act the part of forgers. Secondly, even supposing such a piece of deception attempted, it is inconceivable how it should have succeeded, as, by the holders of this hypothesis, it must be allowed to have done. As the whole nation of the Jews acknowledged these books, we must suppose, either that they were all imposed upon in the matter, or that they all agreed to impose upon the rest of the world. But no ingenuity can suffice to persuade a nation that they have for ages possessed sacred books, when they know they have not; and a national agreement to sanction a forgery and tell the world a lie, is a hypothesis too extravagant to be for a moment entertained. Thirdly, the opinions expressed in these books, the doctrines taught, and the duties enjoined, are so averse from those most cherished by the Jews at the time the supposed forgery must have taken place, and the facts recorded are so little flattering, upon the whole, to the pride of the nation, that it is quite incredible, either that any should have been found to write them, or that, being written, they should have been received by the people with any other feelings than those of execration and abhorrence. The respect in which they were held can be accounted for only on the principle that it was rendered to the *venerable antiquity* and *indisputable authority* with which they were invested.

v. The force of this conclusion is heightened by the circumstance, that while all testimony is in favour of the genuineness of these books, not one witness can be produced whose evidence is incompatible with this.

vi. When we apply to the contents of these books such tests as are best fitted to try their genuineness, the result is such as to confirm our previous conclusion. 1. They display just such a diversity of talent, style, and character as we should expect in works composed by different authors at different times. 2. They are written, with a few slight exceptions, in pure Hebrew, a language which we know to have been that of the Jews before the captivity, but the knowledge of which as a vernacular tongue was entirely lost very shortly afterwards. 3. Whilst they use the same language, there are certain grammatical and linguistic differences between the early and the later writers, indicative of such changes as all languages experience in the lapse of time, but less extensive than those found in others of the ancient tongues; which is exactly what might have been expected in the case of persons using, through a long interval, a language which, though exposed to causes of change, was, from the fixed and exclusive habits of those speaking it, less liable to be affected in this way than the languages of more versatile and cosmopolitan nations. 4. The narratives occurring in these books are marked by that minute accuracy and circumstantiality of detail which a forger generally endeavours to avoid, but into which a true witness naturally falls, from having all these details present to his mind as integral parts of the occurrence which he attests, *as it presented itself to his senses*. 5. There

is, amidst the greatest elevation of thought and sublimity of conception, a chastened simplicity of language, and, amidst the utmost variety of manner, style, and illustration, an essential unity of doctrine, which comports well with the claims of these books to be regarded as the sacred books of the Jews, and seems strongly incompatible with the supposition that they are forgeries.

For these reasons, it is affirmed that the books which we now possess are the same as those which were always possessed and held genuine by the Jews. We turn, *secondly*, to the New Testament, and inquire whether the same evidence of its genuineness can be furnished.

i. No person doubts the existence of the New Testament books from the close of the *fourth* century of the Christian era downwards, because the fact is so notorious that to deny it would be to discredit all historical testimony.

ii. As little can it be doubted that they were extant from the *commencement* of that century. Not only are they frequently quoted by writers who lived during that period, but we possess *ten* distinct catalogues of the New Testament books, issued during this century, of which six are identical with our present canon (1), three omit only the book of Revelation (2), and one omits this book and the Epistle to the Hebrews (3), though both are mentioned in other parts of the author's writings.

1. Those of the forty-four bishops at the Council of Carthage (A.D. 397), of Augustin (A.D. 394), of Jerome (A.D. 392), of Rufinus (A.D. 390), of Epiphanius (A.D. 370), and of Athanasius (A.D. 315).

2. Those of Gregory of Nazianzum (A.D. 375), of the bishops at the Council of Laodicea (A.D. 364), and of Cyrill of Jerusalem (A.D. 340).

3. That of Philaster or Philastrius, Bishop of Brixia or Brescia (A.D. 380).

Lardner, Works, vol. iv., pp. 280-501, and vol. v., pp. 1-123.

iii. Their existence in the *third* century is placed equally beyond doubt, from the careful and explicit testimony of Eusebius, who wrote A.D. 315; from the references to them in the writings of the apologists Arnobius Afer and Lactantius (cir. A.D. 300); from the testimonies contained in fragments preserved from numerous writers in that century, especially Victorinus, Bishop of Pettau in Germany, who refers to nearly every book in the New Testament; from the commentaries upon them and quotations from them of Origen (A.D. 253); from the quotations of Cyprian (A.D. 258); and from references to them in the remains of a number of writers who lived during the first thirty years of the third century.

Lardner, Works, vol. ii., pp. 397-430.

iv. For their existence in the *second* century we have abundant evidence, in the quotations from them and allusions to them in the writings of Tertullian (A.D. 200), Clement of Alexandria, Athenagoras (A.D. 180), Irenæus (A.D. 170), Justin Martyr (A.D. 150), and Papias (A.D. 113), and in the *Harmony of the Gospels* by Tatian (A.D. 170).

v. Collateral with these testimonies of the orthodox fathers are those of the early heretics, Cerinthus, the Ebionites, the Basilidians, Marcion, and others, who, by denouncing the writings of the apostles as containing error, thereby attest the existence and genuineness of these writings; and of the early opponents of Christianity, Celsus, Porphyry, and Julian, who, by the notice they take of these books, show how much in their day their genuineness was matter of public notoriety.

vi. We have thus traced up the existence of these books to the close of the *first* century. To say nothing of the testimony in their favour of the apostolic fathers, Barnabas, Clement of Rome, Hermas, Ignatius, and Polycarp, who flourished during that century, and reached up to the days

Scripture. of the apostles, the supposition of a forgery at that time is clearly absurd. Whilst men were still alive whose fathers were the contemporaries of the evangelists and apostles, how could any one impose upon the community as the production of the latter what was only forged in their name? or whilst the churches at Rome, Colossæ, Corinth, and other places were still existing, who could have persuaded them to receive as Paul's letters to them what they knew Paul had never sent to them? or how can we conceive that an attempt so audacious would have been allowed to pass without a single voice being raised in any quarter to denounce the imposture?

vii. The conclusion thus gained by the consideration of external testimony is forcibly confirmed by the contents of the books themselves. The *language* in which they are written is exactly such as a Jew of the first century would naturally fall into in attempting to write Greek, and such as could hardly have been thought of or imitated by a later writer. The *style* of composition is such as a forger could not possibly have hit upon; it has so much of a prevailing simplicity and earnestness, and at the same time is so suitably diversified in the different books, that it bears every indication of having flowed from the pens of the simple-minded, unambitious, uneducated, and honest men to whom it is ascribed. The *sentiments* are such as we cannot suppose men of sufficiently depraved moral habits to act the part of forgers, to have conceived or inculcated. And above all, the *minute circumstantiality* of the narrative is such as, on the one hand, strikingly indicates the agency of an eye and ear witness in the composition of it, and on the other, affords too many tests of the author's personal familiarity with what he narrates to have been ventured on by a forger. The striking coincidence of one part of the volume with another may also be mentioned as a further evidence of its genuineness.

For these reasons it is concluded that the Scriptures of the Old and New Testament are the genuine productions of those to whom they are ascribed. They are reasons which must satisfy every person familiar with such inquiries, that we possess in favour of the genuineness of these books a far larger and more unquestionable body of proof than we have in favour of the genuineness of any of the ancient classics, and indeed of much even of comparatively modern literature.

See on the whole of this section, Horne's *Introduction*, vol. i., pp. 35-99; Lardner's *Credibility*, Works, vols. i.-v., 8vo i., and ii. 4to; Paley's *Evidences of Christianity*, and *Horæ Paulinæ*; Michaelis's *Introduction* by Marsh, vol. i., pp. 4-54; Marsh's *Lectures on the Authenticity and Credibility of the New Testament*, London, 1840; Cook's *Enquiry into the Books of the New Testament*; Taylor's *Essay on the Transmission of Ancient Books to Modern Times*; Schott's *Isagoge*, pp. 518-542.

SECT. III.—*Integrity of the Sacred Books.*

Closely connected with the question of the genuineness of the Scriptures is the question of their *integrity* or *uncorrupted preservation*. Infidels have often asserted that extensive and important changes have been made upon the original documents, especially upon those of the Old Testament. But,

1. Of this there is no proof. It is a mere unsupported assertion on their part, resting upon nothing but certain *a priori* conclusions to which they profess to have come as to the *probability* of such a thing. To prove it, we should require some competent historical testimony to the fact, or an articulate comparison of the alleged interpolations with the original text.

2. Such interpolations could have been perpetrated only by universal consent on the part of all possessing these documents. Had one man altered his own copy, and published his alterations, the only result would have been

certain discrepancies between the readings of that family Scripture. of manuscripts of which his copy was the parent, and those of other families, unless he could have persuaded the whole nation of the Jews, or the entire body of the Christians, as the case might be, to adopt his innovations,—a supposition plainly impossible.

3. Had extensive alterations taken place, the harmony of Scripture would have been destroyed. A number of separate books are written by different persons, for the purpose of unfolding under different aspects and modifications one harmonious system of truth. The result is a harmonious work. But some person, for purposes of his own, sets about interpolating these books. Is it conceivable that this should have been accomplished with such exquisite skill and adroitness, that the original harmony of the work should have been preserved, and all vestiges of a spurious intermixture concealed?

4. It is morally certain that, previous to the Christian era, the Jews did not alter their sacred books. For this we have sufficient security in the habits and circumstances of the people. The Bible was their national statute-book; on it the whole of their civil economy, and all their political and judicial procedure, rested. They were in the habit of giving the utmost publicity to its contents; kings were required to study it continually, priests were appointed to teach it to the people, and fathers were enjoined to inculcate it upon their children; so that the idea of connivance among the members of any class in the community for the purpose of falsifying it is entirely precluded. Their law contains a solemn prohibitory statute against any, the slightest, alterations of these books, Deut. v. 2, xii. 32. The rival sects which arose among them after their return from Babylon served the same purpose, by acting as mutual checks upon each other. And, finally, in the absence of any censure by our Lord upon the Jews, whose crimes He faithfully exposed, for their treatment of the sacred text, and in His continual references to the Old Testament in the state in which it was then extant, as containing an accurate record of God's will, we have the best assurance that no liberty affecting its perfect integrity had been taken with it previous to His advent.

5. Since the commencement of the Christian era it is equally certain that no intentional corruption of the Old Testament Scriptures can have taken place. The *Jews* have not corrupted them, for they have ever shown too deep a reverence for every word and letter of these books to have done so; they have been too much scattered and disunited to have agreed upon any such attempt; they would not have left so many statements condemnatory of themselves and favourable to Christianity had they set about altering their own Scriptures; and they have since that time been so much under the eye of Christians that any such attempt on their part would immediately have been detected and denounced by the latter. *Christians* have not done it; for, to say nothing of the fact that hardly any Christian has been sufficiently master of the Hebrew language to execute skilfully any such alterations, the attempt on their part to do such a thing would have been immediately discovered and exposed by the Jews.

6. As impossible is it that any corruption has taken place in the Christian Scriptures. It is plain that this could not have occurred during the lives of their authors, nor whilst the autographs of their works were extant. But in some cases before, and in others immediately after, the death of the inspired writers, copies of their writings were multiplied to a great extent, and disseminated over the whole Christian world. It could only therefore have been by the general consent of all Christians that any material alterations could have been made on these writings; for if one sect or party had interpolated their copies, this could not have affected the copies of others, and would have been detected

Scripture. and denounced by them. But the idea of a general consent of Christians in all parts of the world to falsify their own documents, is one too extravagant to be admitted.

7. The agreement of versions and of manuscripts, both of the Old Testament Scriptures and of the New, is a corroborative evidence of their integrity. The number of early versions is considerable, and among them so great a harmony prevails that it is undeniable they must have been made from a common original, and that that original must have been the same as we now possess. The same conclusion is attested by the agreement of the manuscripts. Of these, more than 1100, containing the whole or parts of the Old Testament, and about 1400, containing the whole or parts of the New Testament, have been collated, without any material discrepancy having been elicited (1); a fact which is utterly irreconcilable with the supposition of any designed interpolations having been so much as attempted by any class or party, either of Jews or of Christians (2).

1. Rosemüller observes, respecting the codices of the Old Testament, "li qui hodie exstant codices omnes ita inter se conspirant, ut ex aliquot centenis variis lectionibus vix una deprehendatur quæ sensum mutet. Circa unam duntaxat vel alteram litteram, Vocalem vel Accentum versantur. Quod quidem argumento est, Veteris Testamenti libros, prouti eos nunc legimus, ex unius, quam dicunt, recensione codicibus ad nos transmissos esse, atque omnes codices, antiquiores æque perierunt, ac recentiores quos habemus tanquam a communi fonte fluxisse." (*Præf. ad Edit. Stereotypam Hahnii Bib. Heb.*, p. iv.) Language no less strong may be justly held regarding the New Testament.

2. See Horne's *Introduction*, vol. i., pp. 100-108; Michaelis's *Introduction*, vol. i.; Walton, *Prolegom.* vii.; Nolan's *Inquiry into the Integrity of the Greek Vulgate*, London, 1815; [Bentley's] *Remarks on Freethinking*, by Philoleutherus Lipsiensis, Nos. xxxi.-xxxiii.; Dr J. Pye Smith's *Answer to the Manifesto of the Christian Evidence Society*, 4th ed., and *Rejoinder to Taylor*, 2d ed., London, 1830; Ernesti's *Principles of Biblical Interpretation*, translated by Charles H. Terrot, vol. ii., pp. 1-24, Edinburgh, 1833.

SECT. IV.—*Credibility of the Sacred Scriptures.*

That these books, in their narrative parts, contain statements of actual facts, is sufficiently established by various considerations.

1. The things narrated are such as their writers were fully competent to attest. For the most part they were eye and ear witnesses of what they recorded; and where this was not the case, they were placed in circumstances the most favourable for gaining information from first sources as to the facts they narrate. They are in fact, with one or two partial exceptions, what very few of the ancient historians are, annalists of their own times.

2. The matters which they record are such as they could not possibly be deceived about. They are such as any man with the use of his senses, and an ordinary portion of discrimination, was as fully competent to judge of as the most profound philosopher. The passage of the Red Sea, for instance, or the re-appearance of our Lord after His death, was a fact respecting which no man in his senses could be deceived. Unless the sacred writers were the wildest enthusiasts (of which, however, no trace is discoverable in any other part of their conduct, but the contrary), they could not have been misled into the belief that they had seen such things, if they had not seen them.

3. The blameless character and disinterested fidelity of these witnesses show that they were not themselves deceivers. The mind of man is subject to certain laws, upon which we may calculate with the same security as upon the laws of matter; and one of these is, that no man of generally irreproachable character will deliberately and pertinaciously propagate a falsehood, save under the influence of very strong temptation. Now the sacred writers were men of respectable character; so that if their narrative be false, it can only have been under the stress of very urgent necessity or sinister inducement that they can be supposed to

have promulgated it. But where was this stress in their case? What evil had they to shun, what prodigious advantage to gain, by falsehood? On the contrary, did not their adherence to their story expose many of them to the severest privations and the cruellest sufferings, even to death itself? Do men, then, ever so fall in love with falsehood as to consecrate their lives to its propagation, and willingly to endure every species of contumely, persecution, and oppression, rather than relinquish it? Would not such a thing be a moral miracle, infinitely more incredible than any of those which the sacred writers narrate, because, unlike theirs, performed not only without the affirmation of divine agency, but in direct opposition to the law of the God of truth?

4. Their narratives were published at a time when the events they record were so recent that it outrages all probability to suppose, either that they would have had the audacity to publish what was false, or that their falsehoods would have been allowed to descend to posterity uncontradicted. Who can for a moment imagine that, had the Israelites not crossed the Red Sea in the manner described by Moses, he could have persuaded them to believe that they had? or that the facts of our Lord's history could have been palmed upon the world when there were so many still alive both interested in and competent for their refutation, had they not really occurred?

5. These histories account satisfactorily for numerous undeniable facts that are otherwise unaccountable, such as the existence and present state of the Jews, the existence and propagation of Christianity, and the prevalence of certain rites and ceremonies among Jews and Christians, such as circumcision in its religious aspect, the weekly Sabbath, the Lord's Supper, &c. They further tally with the testimony of profane history, in as far as the field is common to both. They "interweave themselves," as Dr Channing has well observed, "with real history so naturally and intimately as to furnish no clue for detection, as to exclude the appearance of incongruity and discordance, and as to give an adequate explanation, and the only explanation, of acknowledged events of the most important revolutions of society." That such narratives should be fictitious, the same writer justly concludes, "is a supposition from which an intelligent man at once revolts, and which, if admitted, would shake a principal foundation of history." (*Discourse on the Evidences of Revealed Religion*, p. 34, 4th [English] edition, Liverpool, 1831.)

6. The credibility of the sacred historians is strikingly confirmed by the traditions and histories of all the ancient nations, by many facts of natural history, and by numerous monuments of human art which are still existing, such as coins, medals, and inscriptions.

See Faber's *Horæ Mosaicæ*, vol. i.; Bryant's *Ancient Mythology*, 3 vols. 4to, 1774; Edwards on the *Truth and Authority of Scripture*, vol. i.; Gray's *Connection of Sacred and Profane Literature*; Lardner's *Credibility*, and *Jewish and Heathen Testimonies*, &c. Works, vols. i.-viii.; Redford's *Lectures on the Divine Authority of the Bible, as confirmed by Science, History, and Human Consciousness*, 1837; Horne's *Introduction*, vol. i., 116-20; Alexander's *Christ and Christianity*, part i.

SECT. V.—*Canon of the Sacred Scriptures.*

The Greek word *κανων* signifies originally a *straight line* or *rod*; hence tropically a *rule*, and hence a *list* or *catalogue*, as that which contains the rule or order of the things contained in it.

In this last sense it is applied to the Scriptures, but with a different reference, according as it is used in inquiries of a dogmatical or in inquiries of a historico-critical nature. In the former, it means the list of books deemed *inspired*; in the latter, the list of books recognised as *genuine* by Jews and Christians. In either case, such books are opposed to those that are *apocryphal* (*ἀποκρυφα*, "ea scripta

Scripture. quibus *publice* ecclesia non utebatur, sed *privatim* habebat legebatque qui vellet." (*Ludovicus Vives ad Augustin. de Civ. Dei*, l. xv., c. 23.)

In regard to the sacred writings, both these lists are identical, for all the books which are found in the former are found also in the latter, no book having been inserted simply on the ground of its Jewish authorship, but only such as were the production of a prophet or inspired man.

See the striking testimony of Josephus, *Cont. Apion.* i. 8, confirmed by that of Philo, by whom no writing is referred to as sacred unless it be the production of a *προφητης*, by which term he intends one whose "organs are used by God for the showing of what He wills." (*De Monarch.* opp. il. 222, ad. Mangey.)

It is the opinion of some that Nehemiah, who is said to have collected a *βιβλιοθηκη* of the sacred books (2d Mace. ii. 13), and Malachi, the last of the prophets, closed the canon by adding to it their own writings; though others affirm that the list was not finally made up until about the time of the Syrian invasion under Antiochus Epiphanes, in the third century B.C. By much the most probable, because best-supported hypothesis, however, is that which ascribes the final and authoritative making up of the Old Testament canon to Ezra and the men of the Great Synagogue. This is formally affirmed in one of the oldest books of the Talmud, the *Pirke Aboth*, or Sayings of the Fathers, and it is repeated in other Jewish writings; it is, besides, in full accordance with all we know of Ezra's personal history and his position among his people, and there is nothing of any weight that can be urged against it. Before the time of Ezra there was a succession of prophets by whom the integrity and purity of the sacred canon was guarded; and Ezra and his associates simply declared finally what always had been, and were to be thenceforward, held as the sacred books. Certain it is that by the third century B.C. all the books now extant had been composed and arranged in order,—as they not only were then translated into Greek, but were spoken of by Jesus Siracides, who lived about two hundred years B.C., as divided into three classes, and as of considerable antiquity. Even if we admit that the closing of the canon took place as late as the time of Antiochus Epiphanes, it must have consisted only of such books as were notoriously reputed among the Jews to be sacred, as having come down to them from the prophets; for it would have been impossible at that time to have induced the nation to accept as of Divine authorship, books which they knew must have been produced since the succession of the prophets and inspired men had ceased.

The classes into which the books of the Old Testament are spoken of by the son of Sirach as divided, are three,—the law, the prophets, and the other writings. This division is still retained, only the last class are denominated *Chetubim* or *Hagiographa*. To the first division belong the five books of Moses; to the second the historical books, with the exception of Ruth, Ezra, Nehemiah, and Chronicles, and the prophetic books, with the exception of Daniel; to the third the poetical books, Daniel, and the excepted historical books. This arrangement, however, was by no means uniformly preserved. In the LXX. Daniel is placed next to Ezekiel; Josephus and the New Testament writers seem to have regarded the third division as comprising only the poetical books: and there is considerable discrepancy among the Jewish rabbis in their statements as to the arrangement of the sacred books. All this seems to indicate that the Talmudical arrangement now followed was not the original arrangement, but was one which, probably for liturgical purposes, the Jews adopted at a later period.

See Vitringa, *De Synagog. Jud.*, lib. iii., 2, 10.

At what time the canon of the New Testament was made up we have not the means of accurately determining. We are sure, however, that from a very early age these writings were separately referred to as divine and authoritative.

VOL. XIX.

Scripture. tive, and as on these grounds quite *sui generis*; and it is certain that they were at an early period collected, and were referred to in their collected character as the received documents of the Christian community. Tertullian does so repeatedly in his writings, denominating them sometimes "the New Testament," and sometimes "the Divine Instrument," in the singular number; and Clement of Alexandria speaks of "the Scriptures of the Lord" under the title of "The Gospel and the Apostles." The collection was doubtless made gradually; and from what we learn from Eusebius respecting a distinction between books *ὁμολογούμενα* and books *ἀντιλεγόμενα* (*Hist. Ecclesiast.*, lib. iii., c. 25, ed. Heinichen, vol. i., p. 244), it would appear that the claims of every book were carefully weighed before its canonicity was admitted.

See Cosin's *Scholastical History of the Canon of the Holy Scripture*, London, 1672; Jones's *New and Full Method of Settling the Canonical Authority of the New Testament*, Oxford, 1798; Alexander's *Canon of the Old and New Testament Ascertained*, London, 1828; Ch. F. Schmidt's *Historia Antiqua et Vindicatio Canonis Veteris et Novi Testamenti*, Lipsiæ, 1775; Haenlein's *Einleitung in die Schriften d. N. T.* bde. i. s. 341, Erlangen, 1801; Henderson's *Lectures on Inspiration*, lect. ix.; Stuart, *Critical History and Defence of the Old Testament Canon*, Lond. 1849; Westcott's *History of the New Testament Canon*.

The apocryphal books of Scripture may be divided into two classes, the one containing those that are simply dogmatically, the other those that are both dogmatically and historico-critically apocryphal. To the former belong the books of Maccabees, Wisdom, Ecclesiasticus, and perhaps those of Tobit and of Judith, which are genuine, though not inspired; to the latter all the rest of the apocryphal books, both of the Old Testament and the New, none of which are inspired, or can be shown to be genuine.

Horne's *Introduction*, vol. i., Appendix, p. 457; Rainold *Censura Librorum Veteris Testamenti Apocryphorum*, 1611; Eichhorn, *Einl. in die Apocryph.* Schr. d. A. T.; Bretschneider, *De Libri Sapientiæ*, &c., 1804; Josephus, *Cont. Apionem*, i. 8; Hieronymi, *Præfat. in libb. Salomonis, et in Judith et Tobiam*.

SECT. VI.—Languages of the Scriptures.

The greater part of the Old Testament Scriptures is composed in pure Hebrew, the most ancient language of which we have any specimen extant. This language belongs to a class of tongues formerly called, by way of eminence, the *Oriental*, but now more generally discriminated by the term *Semitic* or *Shemitic*, from Shem, the great progenitor of the races by which they are spoken (1). This class embraces three leading tongues, corresponding in general character and relation to the geographical situations of the respective nations by which they are used; the *Aramaic*, abounding in combinations of consonants, and consequently marked by considerable harshness of pronunciation, employed by the nations of the northern and more mountainous districts of Syria, Mesopotamia, and Babylonia; the *Arabic*, remarkable for richness, mellifluousness, and the preponderance of vowels, spoken by the inhabitants of the warm and open plains of Arabia and Ethiopia; and the *Hebrew*, the language of the middle district, possessing an intermediate character between the other two, richer than the Aramaic, poorer and harsher than the Arabic (2). Of the Aramaic in its original form we have no remains. The biblical Chaldaic is a mixture of it, as used in Babylon, with the Hebrew; the Syriac is a more recent dialect, formed by the Christians of Edessa and Nisibis (3). The opinion, that Hebrew was the original language of the world, and the mother of all the other Semitic tongues, is now generally relinquished by scholars, who content themselves with the more moderate hypothesis, that it is the oldest daughter of the primeval tongue, and that which re-

Scripture. tains the most striking resemblances to the mother speech of the antediluvian period (4). The term *Hebrew* some derive from עִבְרִי, *Eber*, over or across, as if = *advena*, *foreigner*, *immigrant*; but others, with far more probability, from עֵבֶר, *Eber* or *Heber*, the ancestor of Abraham. In the earliest books of the Bible, those of Moses, this language appears in its greatest purity; nor did it sustain any decided deterioration till after the Babylonian captivity. The attempts of some Hebraists to divide its history into a golden, a silver, a brazen, and an iron age, are by the most accurate scholars rejected, as much more fanciful than sound (5). The Hebrew of the Scriptures is the pure classical Jerusalem Hebrew, the language of the Temple and of the court. That there were dialects more or less corrupt in the provinces is attested by the sacred writers themselves. Thus they tell us that the Ephraimites could not distinguish between the ו and the ד in pronunciation (Judges xii. 6); Nehemiah was indignant that part of the people should speak "in the speech (dialect) of Ashdod, of Ammon, and of Moab" (Nehem. xiii. 23-25); and the dialect of Galilee is mentioned in the New Testament (Matt. xxvi. 73) (6).

1. The first to use this term seems to have been Nicolas Fuller in his *Miscellanea Sacra*. He was followed by Eichhorn, and ultimately by nearly all the orientalists of Germany. Hävernicks contends for retaining the term *Oriental*. *Introduction to Old Testament*, p. 82.

2. Ewald's *Hebrew Grammar*, translated by Nicolson, p. 1; Gesenius, *Grammatik*, § 1.

3. See Hävernicks, *Gen. Introd.*, p. 99.

4. Morinus, *De Lingua Primæva*; Jahn, *Einleitung*, i. th. s. 244.

5. "As the language appears to us at present in the Scriptures of the Old Testament, there are only two distinct periods characteristically discriminated,—the one comprehending the books written before, and the other those written during and subsequent to the exile." Gesenius, *Geschichte der Hebr. Sprache und Schrift*, s. 21.

6. Compare Horne's *Introd.*, v. ii., p. 2-14, and the works referred to by him.

The portions of the Old Testament not in pure Hebrew are Ezra iv. 8, vi. 18, and vii. 12-26; Jer. x. 11; and Daniel ii. 4, vii. 28. These are in Chaldaic or eastern Aramaic, and have reference chiefly to the history of the Captivity, and the events following its close.

On the Biblical Chaldaic, see Walton's *Prolegomena*, chap. xii. §§ 2, 3; L. Hirzel, *De Chaldaismi Biblici Origine et Auctoritate Comment. Crit.*, Lips. 1830; F. Dietrich, *De Sermonis Chaldaici Proprietate*, Lips. 1839; Winer, *Grammatik des Biblisch. und Targumischen Chaldaismus*, Leipz. 1842, 2d edit.; *Chald. Lesebuch*, 1825.

The language of the New Testament is the κοινή διαλεκτός of the classical Greek, with many Aramaic words and idioms interspersed, and a few Latinisms.

Horne's *Introd.*, vol. ii., pp. 13-30; Schott, *Isagoge Hist. Crit.*, pp. 495-617; Stuart's *Grammar of the New Testament Language*; Winer's *Grammatik des N. Testamentlichen Sprachidioms*, translated by E. Masson, 2 vols., Edin. 1858; Michaelis, *Introd.*, vol. i., p. 97 (English translation), &c.; Davidson's *Biblical Criticism*.

SECT. VII.—History of the Original Text of the Old Testament Scriptures.

The history of the Hebrew text properly begins after the completion of the canon; antecedent to that, we have no materials for arriving at any conclusions. Starting from this point, the history of the Hebrew text may be divided into three great epochs. The first of these reaches from the completion of the canon to the times of Origen, Jerome, and the Talmud, B.C. 300—A.D. 500. During this period we observe,—(1.) Attention paid to the caligraphy of the text, and the adoption of the square character from the Aramaic or Babylonian usage, in place of the old Hebrew or Samaritan. (2.) The attempt to ascertain the correct reading of the text, and the collection of various readings. Of these, it is

natural that a considerable number should have accumulated; for, without resorting to the supposition of any blameable carelessness on the part of the transcribers, still less of any intention to alter the text, there were sufficient causes at work to occasion numerous varieties between one manuscript and another; such as mistakes of eyesight or of hearing, leading to the substitution of one letter for another resembling it, the transposition of letters and even of words, the omission of letters and even clauses, the substitution of like-sounding words for each other, &c.; mistakes of memory, when the transcriber trusted to recollection, leading to substitutions and omissions, the confusion of synonyms, and the exchanging of familiar parallel passages; and mistakes of judgment, where two words are sometimes read as one, abbreviations are wrongly construed, marginal glosses are introduced into the text, and such-like. When the LXX. is compared with the extant Hebrew text, it is evident that its authors must have used manuscripts in many respects differing from those which have come down to us from the Palestinian Jews, and by which the extant text has been determined. With the LXX. agrees the Samaritan Pentateuch, which contains also some variations peculiar to itself, but of no critical value, as they are plainly occasional glosses or unskilful corrections. Nor can any great value be attached to the various readings of the LXX., the most of which are arbitrary and uncritical, though there may be some which are worthy of being considered. Among the Jews of Palestine, the most reverential care was exercised upon the sacred text to preserve its purity; and it would appear from the Talmudists that at an early period the text was fixed very much as we now have it, the variations being adduced merely as *keri* (read) upon *chetibh* (written); i.e., what, for critical, exegetical, or euphonic reasons, was in the reading to be substituted for what was written. (3.) Attention came to be paid to the correct pronunciation of the words and the reading of the text. As Hebrew had ceased to be a spoken language, and as the manuscripts of Scripture were without vowels, it became necessary to call in the aid of tradition to fix the form and meaning of the words; and accordingly in this period commenced those attempts which ultimately culminated in the elaborate system of the Masoretes. Besides this, care was taken to determine one word from another, and to mark the ending of clauses and sentences. (4.) Of the Hebrew text as it existed among the Palestinian Jews some judgment may be formed from the extant fragments of the Hexapla of Origen, and from the Targums. It differs but slightly from the existing Masoretic text. Of great value also is the testimony of Jerome, by means of his translation and his commentaries, to the substantial identity of the text in his day with that now extant.

In the *Talmud, Hierosol. Tract. Thaanit*, fol. lxviii., it is said of certain various readings that "they have come down from the times when the Temple was yet standing." Capelli *Critica Sacra*, tom. i., p. 444-458; Walton's *Prolegom.*, viii., §§ 20-28; Kennicott, *Dissert. Generalis*, p. 275; Horne's *Introduction*, vol. ii., p. 35, 36; Buxtorf's *Tiberias*; Hävernicks's *Introd.*, §§ 41-61, Tr.; De Wette, *Eintl.*, §§ 85-89, p. 126, ff.; Porter's *Textual Criticism*, p. 43, ff.

The second epoch reaches from the times of Jerome and the Talmud to that of Ben Asher and Ben Naphthali; that is, from the sixth to the eleventh century. About the commencement of this period the Masorah, or collection of traditional observations, orthographical, critical, grammatical, and exegetical, which had been accumulating for upwards of three centuries among the Jewish rabbins, began to be made by a college of learned Jews at Tiberias in Palestine. These were originally written on the margin of manuscripts, but as this led to confusion and error, they were ultimately collected in separate books. Of these annotations, some are the result of the comparing of manuscripts, and to this the various lections belong; others are the result of private

Scripture. judgment, and are chiefly of a grammatical or exegetical nature. The Masorah is distinguished into *great* and *little*, according as the remarks are given in full or in an abridged form. The former, from being put by itself at the end, was called *final*, the latter *marginal*. To this mass of scholia additions were continually made, as well as corrections proposed on it, by the *Lords of the Masorah* (בעלי המסורה), as they were called, until the time of Jacob Ben Ha-yim, by whom the whole was completed, and printed along with the Hebrew text, in the year 1526. The commencement of the eleventh century is memorable in the history of the Hebrew text, from the circumstance of two recensions having been issued by the heads, as is supposed, of two celebrated Jewish academies: by Aaron Ben Asher, principal of the academy of Tiberias, and Jacob Ben Naphthali, principal of the academy of Babylon. These, taken in connection with a list appended by Ben Ha-yim, from some unknown source, to the second Bomberg Bible, have given rise to the various readings denominated the occidental and the oriental respectively. By them also the last hand was put to the pointing of the Hebrew text.

Capelli *Crit. Sacra*, t. i., pp. 439-443; Simon, *Histoire Critique*, ch. i., pp. 24-26; Kennicott, *Dissertationes*, ii., p. 279; Buxtorf, *Tiberias*, 1610; Marsh's *Lectures*, lect. viii., ed. 1828; Walton, *Prolegom.*, viii. 12; Horne, vol. ii., pp. 39, 40. Hävernick and De Wette as above.

The *third* epoch reaches from the beginning of the eleventh century to the middle of the eighteenth. About the year 1040 many learned Jews, banished from the East, took refuge in Europe, and brought with them their Scriptures and their critical learning. Maimonides, Jarchi, Ebenezra, Kimchi, and others, rendered additional service as to the interpretation, so also to the criticism, of the sacred text. In the thirteenth century, R. Meir Hallevi, called commonly Todrosius, and in the sixteenth, Menachem and Sal. Norzi, collected various readings. In 1477 the first scriptural book in Hebrew, in 1488 the entire Hebrew Bible, for the first time, was printed; the latter at Soncino, the former at some place unknown. That of 1488 is the first principal edition of the Hebrew Bible; the second is the Complutensian polyglott, 1514-17; and the third, which is of great importance, is the so-called *Rabbinical Bible*, printed at Venice in 1526, and edited by Ben Ha-yim. Among Christian editors, Sebastian Münster was the first who issued an edition of the Hebrew Bible, with various readings, Basil, 1535. The editions of Joseph Athias, Amsterdam, 1661, Manasseh Ben Israel, Amsterdam, 1630, are worthy of notice as critical editions. In 1690 Jablonski published his edition, in which the text follows that of Athias, with some aid from manuscripts. John Henry Michaelis published his edition at Halle in 1720, for which he collated five manuscripts and nineteen editions. In 1753, at Paris, appeared the edition of Charles Francis Houbigant, for which twelve manuscripts were collated, but the value of which is greatly impaired by the editor's propensity to conjectural emendation, and by his attaching such undue importance to the readings of the Septuagint. The splendid work of Kennicott (Oxford, t. i. 1776, ii. 1780) presents the largest mass of various readings yet collected; but the want of scientific discrimination as to their relative value has impaired the usefulness of the collection. The same may be said of the various readings collected by De Rossi, Parma, 1784-1788.

Marsh's *Lectures*, lect. ix.; Horne, ii., pp. 27-46; Augusti, *Einleitung*, §§ 85-92; De Rossi, *De Heb. Typog. origine et primitiis*, Parmæ, 1776; Hävernick, §§ 66, 67.

SECT. VIII.—History of the Original Text of the New Testament Scriptures.

Of the autographs of the New Testament writers no notices have come down to us; what have been supposed

to be allusions to them by some of the fathers are only by mistake so interpreted; while the stories of some of the later writers, such as Theodorus Lector, Philostorgius, Nicephorus, and the Chronicon Paschale, are to be referred to the head of fables. Written on papyrus (3 John 13), they were not calculated to endure long, and as copies of them had been made, no special effort was probably made to preserve them. Of these copies, there is reason to believe the number soon came to be very considerable. But in making them, it was hardly possible to avoid mistakes more or less serious. The text ran on in an unbroken current, without separation of words, without interpunction, and without any of those diacritical marks which appear in printed Greek books: it was in the ancient character where many of the letters resemble each other closely, and the transcription was executed by scribes, who were subject to all the errors arising from imperfect seeing, imperfect hearing, or misunderstanding. Sometimes, also, alterations were intentionally introduced for dogmatical or grammatical reasons. Hence, as early as the second century, it is clear that varieties of reading existed, and these would naturally accumulate during the long period that intervened before the discovery of printing. That attempts were made at an early period to arrive at a correct text is certain, but it is not easy to determine of what kind or value these were. We have the testimony of Jerome, confirmed by that of the decreet of Gelasius, that Lucian, a presbyter of Antioch, and Hesychius, an Egyptian bishop, undertook some sort of recension of the New Testament, but we are left in the dark both as to what they really effected, and as to what influence, if any, their labours had on the accredited documents of the Christians. It is certain also that the labours of Origen were directed with beneficial effect upon this object; and though Jerome sometimes allowed merely arbitrary preferences to overrule his critical judgment, there can be no doubt of his eminence as a textual critic, and of the value of his services towards a just settling of the text of the New Testament.

Modern critics have endeavoured to facilitate and settle critical inquiries by arranging the documents containing the original text of the New Testament into *classes* or *recensions*, as they have been called. Of these documents, some more, and others less, closely resemble each other as respects the nature and selection of their readings, and not unfrequently traces of a common origin in the older codices and versions are apparent. This has led to the idea of arranging these into *classes*, or *families*, or *recensions*, an idea first started by Bengel and Semler (1), and which has been carried out by several more recent inquirers. Bengel concluded that there are two families of manuscripts, the African and Asiatic, of the former of which the Alexandrian manuscript is the sole representative (with which agree the Ethiopic, the Coptic, and the ancient Latin versions), whereas the latter is very numerous. After Bengel came Griesbach (2), who contended for a threefold recension, the Western, the Alexandrian or Eastern, and the Constantinopolitan or Byzantine. Of these, the two former are the oldest, and are by him attributed to the same age. They differ, in that the Western text is more replete with Hebraisms, with explanatory additions, and with occasional substitutions of a perspicuous formula for one more difficult; whilst the Eastern prefers those readings that are accommodated to the classic Greek, corrects phrases that are less pure, and is less deformed by errors of the transcriber, though particles and synonymes are occasionally omitted through haste. The Constantinopolitan has arisen from the mingling of the readings of the other two. It properly consists of *two* recensions: a senior (fourth century), even more fond of pure Greek forms, and richer in glosses, than the Alexandrian itself; and a junior (fifth or sixth century), which appears to have been formed after a new collation of

Scripture. the senior with the Eastern and Alexandrian recensions, by the labours of some learned men of the Syrian Church. Griesbach defends his system with great learning and ingenuity; but it is open, as Schott observes, to the following objections:—1st, His positions respecting the origin assigned to both recensions are destitute of a solid basis; 2dly, Many reasons concur to prevent our admitting that any state of the text of the New Testament peculiar to the Western Church, such as could, from its singular character, be entitled to the name of a recension, existed (3); 3dly, The features of the text followed by the very ancient Peschito version cannot well be accounted for on the principles of Griesbach; and, in fine, all who seek accurately to arrange codices, versions, and extracts found in the fathers, according to different recensions, labour under this difficulty, that none of those documents of the New Testament which are of great age exhibits any such pure and perfect recension (4).

1. Bengel, *Apparatus Criticus ad Novum Test.*, p. 425, Tübingæ, 1763; Ejusdem, *Introductio in Crisin N. T.*, § 26, &c., p. 385, Tübingæ, 1734; Semler, *Vorbereitungen zur Hermeneutik*, Halle, 1760–1769. The term *recension*, though now generally used, is a misnomer. The manuscripts may be reduced to different classes, but there is no evidence that any of these is the result of a recension.

2. Griesbach, *Opuscula Academica*, ed. Gabler, vol. i.

3. From the writings of the fathers of the second century, we learn that those various readings which are said to be peculiar to the western and to the eastern texts respectively, do not, as respects their origin, belong to different recensions. (See Eichhorn, *Einl.*, bd. iv., pp. 265 and 269, &c.) Nor is it probable that the doctors of the Western Church, who were but little skilled in Greek, should have thought of preparing a recension of the New Testament.

4. Schott, *Isagoge*, pp. 562–565.

A different theory of recensions has been adopted by Hug. He thinks that the text which we find in those early codices which Griesbach referred to the Western recension, in the oldest Latin versions, in the Sahidico-Coptic version, in the quotations of the fathers till the time of Origen, and in Origen himself, was the *κοινή* *ἐκδοσις*, or common edition, conformed to no recension in particular, and containing various readings of different sorts and of different origins mingled together, especially such as serve to explain the text. At the same time those codices which were written in Syria and other parts of the East (the inhabitants of which understood better than most others the Hebræo-Greek dialect of the New Testament) preserved the primitive text more correctly; and hence it happened that the oldest Syriac version, though upon the whole belonging to this common edition, not unfrequently dissents from the readings of the other documents of the same edition. About the middle of the third century, Hesychius, an Egyptian bishop, first set about correcting the errors of the recension of the common edition used in Egypt, purging out all interpolations and glosses, restoring words that had been omitted, but aiming too much at producing a text that should be remarkable for its Greek purity and elegance. Almost at the same time Lucian, a presbyter of Antioch in Syria, revised the common edition as it appeared in the Peschito version, following chiefly the authority of this version, but at the same time comparing other codices found in Syria, and produced a text differing from that of Hesychius in this, that it showed less desire to amend the Greek of the New Testament. Besides these, a third recension was undertaken by Origen in Palestine, based upon the common edition used by the Christians there, which conformed in some respects to that of Hesychius, in others to that of Lucian, whilst frequently it differed from both, and which subsequently became the one commonly used in Palestine and the adjoining districts. Of these recensions none is preserved in any of those documents which we now possess, as the transcribers frequently compared their recension with the common edition and with other recensions. Hug's theory rests so far on an historical basis that it ap-

pears certain that, as already observed, Hesychius and Lucian did undertake some such labour as he ascribes to them; but that codices of their recensions were either very numerous or very highly esteemed, cannot be shown. The labour attributed to Origen is more than doubtful.

Hug, *Einleitung*, bd. i., § 126 (Eng. trans. vol. i., p. 134, &c.); Schott, *Isagoge*, p. 566; Horne, ii., p. 56.

Matthæi thinks that no recensions of the text of the New Testament were anciently made, and he prefers dividing the documents from which the text is to be determined into, 1st, *Codices textus perpetui*, in which there are neither scholia nor commentaries, and which excel all the others in the purity of the text they exhibit; 2d, *Lectio varia*, which contain the lessons read in churches, and exhibit a text less free from scholiary interpolation than the preceding; 3d, *Codices mixti*, which contain scholia and interpretations partly on the margin, but chiefly interpolated. Matthæi thought the Moscow manuscripts, which he had himself diligently collated, the best; and this perhaps led him to a very unjust estimate of the worth and authority of many other documents of the text of the New Testament.

Schott, *Isagoge*, p. 570; Horne, ii., p. 50.

Scholz, a recent editor of the Greek New Testament, adopts neither the opinion of Griesbach nor that of Hug. He concludes that there are two classes of critical witnesses for the text of the New Testament, the Alexandrian and the Constantinopolitan or Byzantine; to the former of which belong all the codices executed in Egypt and Western Europe, the most of the Coptic and Latin versions, the Ethiopic version, and the quotations by ecclesiastical writers of these districts; and to the latter all the codices written in Asia Minor, Syria, Palestine, and Eastern Europe, the Philoxenian Syriac version, the Gothic, the Georgian, the Slavonian, the quotations by the fathers living in these regions, and all printed editions. The former he infelicitously calls *occidental*, the latter *oriental*. To manuscripts of the latter class he attributes superior value, because of their greater harmony, and of their having been more faithfully copied from original documents than those of the former, which often exhibit a text altered at the will of grammarians; and especially because they present the text used in the public services of the church. But this last position is far from being certain; and, besides, a twofold difficulty presses upon the theory of Scholz; for, first, the Western text of the New Testament has a character considerably different from that of the Alexandrian; and, secondly, the text divulged at Constantinople by order of Constantine and Constans was, as Scholz himself admits, collated with the Alexandrian text; so that the readings of both recensions were intermixed. It is, moreover, rather assumed than proved that that form of the text which, during the first three centuries, prevailed in Asia Minor and Greece, was the same which was afterwards divulged principally in the Constantinopolitan codices; nor is it sufficiently clear that Alexandria was the primary seat of the arbitrary corruption of the New Testament text.

Scholz, *Proleg. ad editionem N. T.*, vol. i.; Schott, *Isagoge*, p. 570; Horne, ii., pp. 58–66.

The theory of Eichhorn approximates that of Hug. He grants that from a very early age different readings, derived from various sources, existed, and were vastly augmented in the third century by various efforts of an exegetical nature, so that as early as the second century there were two species of texts, the Asiatic and the African, but neither of them was determined by any very certain critical laws. He denies that Origen was the author of a peculiar recension, but admits the services of Hesychius and Lucian in this respect, although he questions the possibility of ascertaining accurately the primitive character of either recension from ancient documents. There thus arose a three-

Scripture. fold text of the New Testament, the African (Alexandrian), the Asiatic (Constantinopolitan), and a mixed, which had its source from this, that many, notwithstanding the authority acquired by the recensions of Hesychius and Lucian in the churches of Africa and Asia, preferred following the authority of older codices. No change of a critical kind took place upon the text thus formed until editions of the New Testament began to be printed. No opinion so fully accords with what may be regarded as best ascertained as this of Eichhorn, though it is still doubtful whether the efforts of Hesychius and Lucian exerted a very wide or lasting influence upon the form of the text of the New Testament.

Eichhorn, *Einleitung in das N. T.*, bd. iv., § 183, &c.; Schott, *Isagoge*, p. 572, from which work the above account has been principally taken; Horne, ii., p. 57.

Of late, a disposition has showed itself in some quarters to rest the text solely on the authority of the oldest or uncial codices. This principle, suggested first by the illustrious Bentley, has been embraced and rigidly applied by Lachmann, a recent editor of the New Testament, who has sought to produce, as near as may be, not the best text of the New Testament, but a contribution towards the ascertaining of that, by the reproduction of the text as it was recognised by the church in the fourth century. Lachmann's attempt is generally considered to be a failure, from the extremely narrow basis on which he forced himself to build; but his principle of confining himself to diplomatic evidence alone, to the exclusion of all considerations of the nature of internal evidence, and to diplomatic evidence drawn from the oldest sources, has been eagerly adopted by several critics. Its principal defender and follower in this country is Mr Tregelles, who is at present (1859) engaged in carrying through the press an edition of the New Testament, of which the text is to be based on ancient authorities alone, with various readings from the ancient manuscripts, the ancient versions, and the early fathers. This principle would be unimpeachable, if it could be shown that a reading found in an ancient authority is therefore older than a reading found in a later codex; but so long as it is possible that a later codex may have been transcribed from one more ancient than the oldest of the extant codices, this cannot be done; and, consequently, to restrict authority to the oldest documents is to narrow arbitrarily the field within which evidence may be legitimately sought for the formation of the text. Hence Tischendorf, the most recent, and on the whole the ablest editor of the Greek New Testament, has in his editions allowed himself a much wider range. Whilst he bases his text on the authority of the older witnesses, he includes among these codices as late as the ninth century, and maintains that the lections furnished by codices of the eighth and ninth centuries are often older than those furnished by codices of the fourth, fifth, and sixth, as tested by concurrence with the testimony of the old versions and the early fathers. Hence he concludes that when "it cannot be determined by learned reason and judgment what the authors themselves wrote, that reading which we know to be best supported by ancient witnesses is faithfully and alone to be followed; but wherever causes of a grave nature, and remote from arbitrariness, conspire to recommend and confirm one rather than another, that is to be preferred; not that which is most attested, but that which is attested and probable."¹

With the exception of some detached portions, the first printed editions of the New Testament were those of the Complutensian Polyglott, 1514, and of Erasmus, Basle, 1516. The next possessing any critical value were those

of Robert Stephen,² viz., that of 1546, 12mo, commonly called, from the first words of the preface, the "*Ō Mirificam*" edition, that of 1549, 12mo, and that of 1550, folio. Beza was the first to issue an edition of the New Testament with a copious critical apparatus; and his edition many of the minor editions for several years followed. The beautiful editions of the Elzevirs, which conform partly to the text of Stephen, partly to that of Beza, became so famous that they formed what has been called the *textus receptus*. In 1707 the edition of Mill was published at Oxford, in which not only is there a larger collection of various readings furnished, but also a more scientific discrimination of these aimed at, than in any preceding edition. His example was followed by Bengel in Germany and Wetstein in Holland, both of whom have rendered important service to the text of the New Testament. All these, however, have been outstripped in diligence, learning, and acuteness by Griesbach, who issued his first edition, which embraced only the historical books of the New Testament, at Halle, 1774-75. In the meantime, the researches of Matthæi, Alter, Birch, and others, had greatly enlarged the mass of materials for a critical revision of the New Testament, and of these Griesbach eagerly and ably availed himself in preparing a critical edition of the whole New Testament. This he published in two volumes large octavo, the former in 1799, and the latter in 1806, at Halle. A new and carefully revised edition was undertaken after Griesbach's death by Dr David Schulz, of which the first volume appeared in 1827. It is to be regretted that this very valuable edition went no further. Passing over those who have merely reprinted the text of Griesbach, or worked solely on his materials, the following editions deserve to be noticed:—Scholz, *Nov. Test. recensuit, lect. familias subj.*, &c., 2 vols. 4to, Lips. 1830-36; Lachmann, *Nov. Test. Græce et Latine*, &c., 2 vols., Berol. 1832-50; Tischendorf, *Nov. Test. ad antiquos testes denuo recensuit*, &c., seventh edition, Lips. 1859. Two useful editions of the New Testament have been recently issued in this country: the one by Dr S. T. Bloomfield, formed upon a careful collation of all previous critical recensions, of which the ninth edition, 2 vols. 8vo, appeared at London in 1855; the other, not yet finished, by H. Alford, B.D.

Marsh's *Lectures*, lects. ii.-vii.; Schott, *Isagoge*, pp. 631-642; Horne's *Introduction*, vol. ii., part ii., pp. 11-35; Michaelis, *Introduction*, by Marsh, vol. ii., pp. 159 and 429; Ernesti's *Principles of Interpretation*, vol. ii., p. 47; Tregelles *On the Printed Text of the Greek N. T.*; Davidson's *Biblical Criticism*, p. 534, ff.

SECT. IX.—*Manuscripts of the Sacred Text.*

Hebrew manuscripts are of two classes, the *rolled* and the *square*: the former prepared for the use of the synagogues, and written only on parchment; the latter for private use, and written sometimes on parchment and sometimes on paper. In all the ancient manuscripts the words are written continuously without any division, and in the square Chaldaic character. They are divided by De Rossi into three classes,—viz., 1. *The more ancient*, or those written before the twelfth century; 2. *The ancient*, or those of the thirteenth and fourteenth centuries; 3. *The more recent*, or those written at the end of the fourteenth or beginning of the fifteenth century. The number of manuscripts collated by Dr Kennicott was about 630, and by De Rossi 479.

Kennicott, *Dissert. Generalis*; Tychsen, *Tentamen de variis Cod. Heb. MSS.*, 1772; Horne, vol. ii., pp. 76-90, pp. 86-103, ed. 1856.

¹ Prologomena to 7th edition of his New Testament, p. xxxii., Lips. 1859.

² This is commonly written *Stephens*, but the correctness of this may be questioned. The French *Etienne*, which was the vernacular name of this illustrious family, is equivalent to our *Stephen*, and the proper Latin form of Stephens would be *Stephanus* and not *Stephanus*.

Scripture. Manuscripts of the Greek New Testament were written first on Egyptian papyrus, and then, as this was found too subject to decay, on skins. Subsequent to the twelfth century, silk paper was used for this purpose, until the thirteenth century, when cotton or linen paper came into use (1). For the first eight centuries the manuscripts were written in uncial letters, large, erect, and not united either by strokes or hooks. From the beginning of the ninth century the cursive letters were employed, which are smaller, more inclined, and united with strokes; they have, moreover, the iota subscribed (2). At first all the words were written without any diacritical marks or separation; but as this was found inconvenient and productive of mistakes, especially in the public reading of the New Testament, a plan was introduced to remedy it by Euthalius, then a deacon at Alexandria, in the fifth century, which consisted in so arranging those words that make one sense as that they should compose one stich (στιχον) or line (3). To save room, subsequent transcribers, instead of arranging these in distinct lines, marked the conclusion of each by a colon or point; and thus by degrees arose a complete grammatical punctuation, which is presented in manuscripts from the tenth century downwards, though it was not till the sixteenth century that it was subjected to fixed rules in the editions then printed. From a very early period the custom prevailed of dividing the text into sections (κεφαλαια), but until the time of Euthalius no uniform order was observed in this respect. About the middle of the third century, Ammonius of Alexandria, in preparing a Diatessaron or Harmony of the Evangelists, divided the text into a number of very short sections; and these having been adopted with slight variations by Eusebius (4) (whence they are frequently denominated κεφαλαια *Ammoniano-Eusebiana*), they were in many manuscripts conjoined with the Euthalian divisions. In the sixth century, some finding use for a division of the text into larger portions, introduced the arrangement by *τιτλοι* or *breves*; but in the course of time these two modes led to so much confusion that in the thirteenth century Hugo de Santo Caro, a Spanish cardinal, introduced as a remedy the division into chapters and verses, which was afterwards perfected by Robert Stephen into that now in use. Besides these divisions, there was another for church purposes into *περικοπαι*, *αναγνωσεις*, or *αναγνωσματα*, containing the sections of the New Testament appointed for lessons in the public service of the church on Sundays and festivals. The commencement of each of these was marked with an *α* (*αρχη*), and the close with a *τ* (*τελος*) (5).

1. Montfaucon, *Palæographia Græca*, p. 15.
2. *Ibid.*, pp. 151–177, 269, 33, 134.
3. Zacagni *Collectanea Monument. Vet. Eccl. Græcæ*, 1698, tom. i., p. 403, &c.; Eichhorn, *Einleit.*, bd. iv., p. 164; Marsh's *Notes to Michaelis*, vol. 1.
4. See Mill's New Testament, p. 181.
5. Marsh's *Michaelis*, vol. ii., p. 889, et seq.; Horne's *Introduction*, vol. ii., p. 71; Schott, *Isagoge*, pp. 577–584.

These historical facts are of service in determining the age of the New Testament codices.

The MSS. containing the New Testament, in whole or in part, at present known to scholars is very great, upwards of 1400, including Evangelistaria, or copies of the Gospels transcribed for use in the churches, and containing the *περικοπαι*, or portions to be read in the service; and Lectionaria, which differ from the Evangelistaria only in that they contain portions from the Acts and the Epistles, in some cases along with those from the gospels. Of these codices, 41 are uncials, written from the fourth to the tenth century. The oldest is believed to be the Codex Vaticanus (B),¹ containing the Gospels, Acts, Catholic and Pauline

Scripture. Epistles, of which a facsimile has been issued at Rome, edited by the famous Cardinal Mai, and published in 1858 in 4 vols. folio, which comprise also the LXX. version of the Old Testament. Next to this in age comes the Codex Alexandrinus (A), long believed to be the oldest: it is preserved in the British Museum, and has been published in facsimile under the editorship of Charles Godfrey Woide, London, 1786; and still more accurately, along with the Old Testament, by Henry H. Baber, 4 vols. folio, London, 1816–28. This MS. contains the whole of the New Testament except Matthew i.–xxv. 5; John vi. 50, viii. 52; and 2 Corinthians iv. 13, xii. 6. It is ascribed to the second half of the fifth century. To the same century belong three others: the Codex Ephraïmi (C), or the Parisian palimpsest (Cod. Par. Rescript. Cod. Reg. 9), so called because over the original writing some treatises of Ephraim the Syrian have been inscribed, and because it is preserved in the Royal Library at Paris; edited in facsimile by Tischendorf, Lips. 1843. A palimpsest containing 28 leaves, over-written in Armenian characters, comprising the Gospels, Acts, and fragments of Paul's Epistles, brought by Tischendorf from the East, and published by him; and a MS. (T) belonging to the college of the Propaganda at Rome, containing fragments of three chapters of John's Gospel. Of the other MSS. it may suffice here to mention only the following:—Codex Bezae, or Cantabrigiensis (D), a MS. of the middle of the sixth century, formerly in the possession of the reformer Beza, and sent by him as a gift to the University of Cambridge, containing the Gospels and Acts, edited in facsimile by Th. Kipling, Cantab. 1793, 2 vols. folio; Cod. Claromontanus (††D), also formerly possessed by Beza, containing the Pauline Epistles, belonging to the second half of the sixth century, edited in facsimile by Tischendorf, Lips. 1852; three fragments of a MS. (N), on purple parchment with gold letters, preserved at Rome, London, and Vienna respectively, edited by Tischendorf, Mon. Sac. Ined., 1846; Cod. Basilienensis (E), containing the four Evangelists, with a few gaps; Cod. Augiensis (F inter Codd. Paulinos), purchased by Richard Bentley, and presented after his death by Thomas Bentley to Trinity College, Cambridge, containing the Pauline Epistles, nearly entire, in Greek and Latin; Cod. Coislinianus (H int. Codd. Paul.), belonging to the Imperial Library at Paris, of the sixth century; Cod. Cyprius, formerly Colbertinus (K), containing the four Gospels, belonging to the ninth century; Cod. Basilienensis (B vi. 27), and Cod. Basil. (B vi. 25), two MSS. belonging to the library at Basle, much used by Erasmus for his edition of the New Testament, of the tenth and fifteenth centuries respectively; Cod. Dublinensis (Z), a palimpsest belonging to Trinity College, Dublin, of the sixth century, edited in facsimile, splendidly but carelessly, by Dr Barrett in 1801.

See prolegomena to Tischendorf's last edition of the Greek New Testament; proleg. to Alford's do.; Schott, *Isagoge*, pp. 591–599; Hug, *Introd.*, p. 156, ff., Fosdiche's trans.; Horne, *Introd.*

SECT. X.—Ancient Versions of the Sacred Scriptures.

These may be arranged either with respect to their history, as *immediate* and *mediate*, according as they have been made directly from the originals or from other translations; or with respect to the languages in which they exist, as *Oriental* and *Occidental*. We shall follow the latter arrangement, as the more convenient; at the same time intimating, when it is possible, what place each version has in the former.

I. ORIENTAL VERSIONS.—1. *Chaldaic Targums*. After the return of the Jews from Babylon they brought with

¹ These letters refer to the nomenclature of the manuscripts adopted by Tischendorf.

Scripture. them so much of the language of Chaldaea that they were unable to understand their own Scriptures. Hence arose the necessity of accompanying the reading of these in the synagogues with an interpretation; a practice first introduced by Ezra (Nehem. viii. 8), and which continued to be followed as long as the Jewish service was maintained. These interpretations were at first merely oral, and confined to a literal version of the original into the popular dialect; but gradually they became more paraphrastic, and the idea naturally arose of committing the more valuable of them to writing. From this sprung the Chaldaic Targums, or paraphrastic versions of the Hebrew Scriptures. There is reason to believe that there were written Targums as early as the time of Christ. The oldest now extant is that of Onkelos on the Pentateuch, composed according to some in the first, and to others in the third century of the Christian era. It is the least paraphrastic and the most correct of any we possess. Next in point of age and value is that of Jonathan Ben Uzziel on the Prophets. The Jews make him a disciple of Hillel, and in this case he must have flourished shortly before the Christian era; it is probable, however, that he was somewhat later. His Targum is more diffuse and paraphrastic than that of Onkelos, but contains much that is valuable. Both of these are printed in Walton's Polyglott. The remaining Targums, nine in number, are of comparatively recent date, and of little value. Their renderings are very harsh; and they are filled with idle and foolish fables.

Winer, *De Onkeloso ejusque Paraphrasi Chaldaica*, Lips. 1820; Jahn's *Einleitung*, i., §§ 46, 47; Bauer, *Chrestomathia e Paraphrasis Chaldaicis et Talmude delecta*, 1792; Horne, vol. ii., p. 198, pp. 69-75, 10th ed.; Hävernick, p. 328.

2. *Syriac Versions.* Eight versions of the whole or parts of Scripture into the ancient Syriac tongue are known to critics, but of these only two deserve particular notice. These are,—1. *The Peschito*,—that is, *simple* in the sense of *literal* as opposed to allegorical,—not later than the third century, probably as early as the second. It contains the whole Bible, is pure in diction and faithful in version, and appears to have been made immediately from the original. 2. *The Philoxenian*, so called from Philoxenus, Bishop of Hierapolis, under whose direction it was executed by Polycarp, rural bishop of the same district, A.D. 508. About 100 years later it was revised by Thomas of Harkel (Harcleia), from whom this recension came to be called the Harklensian. Among the MSS. lately brought from the Nitrian monasteries is one containing parts of the four Gospels in Syriac of a version differing considerably from the Peschito, and supposed by some to be still older than it. This has been published by Mr Cureton, Lond. 1858. It contains only the New Testament, and is literal to servility; but its renderings are not good. Its chief value is to the critic, in helping him to judge of various readings.

Hirzel, *De Pentateuchi Vers. Syr. indole*, Lips. 1825; Michaelis, *Introd.*, vol. ii., pp. 4-76; Horne, vol. ii., pp. 320, 75-77, 10th ed.

3. *The Samaritan Pentateuch.* This must not be confounded with "the Pentateuch of the Samaritans," which is merely a copy of the original Hebrew in Samaritan characters; whereas the other is a translation of the Hebrew into the Samaritan dialect. This version bears a strong resemblance to the Targum of Onkelos, and some have even deemed it a translation of that. It is probably, however, from the original, with interpolations from Onkelos, but cannot be dated earlier than the second century.

Winer, *De Versionis Pent. Samarit. indole*, Lips. 1817; Horne, ii., p. 42; Gesenius, *De Pent. Samarit. origine, indole, et auctoritate*, Halæ, 1815; De Sacy, *Mem. sur l'état actuel des Samaritains*.

4. *Other Oriental Versions.* These are,—1. *The Egyptian*, embracing the *Coptic* or *Memphitic*, in the dialect of Lower Egypt, probably of the third century; the *Sahidic*,

or *Thebaidic*, in the dialect of Upper Egypt, ascribed to the second century, and, with the exception of fragments, still existing only in manuscript; and the *Basmuric*, in the dialect of the province of the Delta, Bashmur, on the east side of the Nile. 2. *The Ethiopic*, ascribed to the fourth century, and printed in Walton's Polyglott, but with many inaccuracies. 3. *The Armenian*, made by Miesrob in the beginning of the fifth century,—very faithful, but supposed to be in many places interpolated from the Vulgate. 4. *The Arabic*, comprising the Pentateuch and Isaiah, translated by Rabbi Saadiah, Haggaon (called from his birthplace Fajum, the ancient Pithom, Phijumensis), in the tenth century; the Pentateuch in Samaritan-Arabic by Abusaïd; the anonymous version of Joshua in the London Polyglott; and the Acts and Epistles published by Erpenius. 5. *The Persic* version of the Pentateuch, by Jacob Ben Joseph, surnamed Dawusi, a learned Jew of the ninth century. All these are mediate versions from the Septuagint or Syriac, with the exception of the Arabic and Persic.

Horne, vol. ii., pp. 226-234; Comp. Walton, *Prolegom.*, ix.-xv.

II. WESTERN VERSIONS.—1. *Greek Versions of the Old Testament.* The most important of these is the Septuagint, as it is commonly called, or more properly the Alexandrian. Respecting the origin and early history of this version much uncertainty prevails, of which advantage has been taken to clothe the whole in the mist of fable. The common story of Ptolemy Philadelphus having sent, at the instigation of his librarian Demetrius Phalereus, to Judea for a correct copy of the Hebrew Scriptures, and for seventy-two men of learning (six out of each of the twelve tribes) to translate these into Greek; of his having shut them up in the Isle of Pharos, apart from each other; and of their having produced versions *verbatim et literatim* the same, is now rejected by all scholars. All are agreed that the date of the version is to be referred to the time of Ptolemy Lagus and his son Philadelphus; but there is a difference of opinion as to whether a religious or a purely literary motive led to its production. Those who take the latter view adopt the testimony of Aristobulus, who ascribes this to the literary taste and desires of Demetrius Phalereus. Those who take the other view are of opinion that the motive prompting to it was the multitude of Jews in Alexandria and throughout Egypt, who were ignorant of Hebrew, and needed the Scriptures in Greek; and that it was undertaken under the auspices of the Alexandrian Sanhedrin or council of the Jews, who probably consulted their brethren in Judea about it, and from whom, being seventy-two in number, in all likelihood the version took its name. It seems evident that the different books were executed at different times and by different persons, from the varieties in point of accuracy and purity which they present, the Pentateuch being the first executed; and that the translators of the Pentateuch were Egyptian Jews, from their introducing into their version many Coptic words, and rendering many Hebrew expressions, not into their Greek equivalents, but so as to give an Egyptian hue to the idea. The version thus executed soon acquired great vogue, not only in Egypt, but also in Palestine, where, in the days of our Lord and His apostles, it had mostly superseded the use of the original Hebrew. In the Christian church it acquired the same reputation. Few of the Fathers understood Hebrew, and consequently almost all their quotations from the Old Testament are made through the medium of the Septuagint. The best editions of this version are those of Græbe, Oxon. 1707, 1709, 1719, 1720, 4 vols. folio and 8 vols. 8vo, reprinted, with the addition of various readings from the Vatican manuscript, by Breitinger, Tiguri Helvet., 1730-31-32, 4 vols. 4to; of Bos, Franequære, 1709, 4to; of Holmes, vol. i., Oxon. 1798, vols. ii.-v., edited

Scripture, after Holmes's death by J. Parsons, Oxon. 1818–1827, folio; and of Tischendorf, 2 vols., Lips. 1856.

See Aristææ, *Historia de Legis Div. ex Heb. Lingua in Græcam Translatione per LXX. Interpretes*, Frankfort, 1610; Van Dale, *Disser. super Aristæam de LXX.*, Amstelod. 1705; Josephus, *Antiq.* xii., c. 2; Hody, *De Bibliorum Textibus Original.*, Oxon. 1705; Walton, *Prolegom.*, ix.; Toepler, *De Pentateuchi Interpret. Alexandrinæ indole*, Halæ, 1830; Horne's *Introduction*, vol. ii., p. 203, pp. 47–55, ed. 1856; Hävernicks, p. 300.

Of the other Greek versions, eleven in number, we have only fragments or traditional information. That of Aquila, a proselyte Jew of Sinope, a city of Pontus, was executed in the first century, and was preferred by the Jews to the Septuagint; it is very literal and Hebraistic. That of Symmachus, an Ebionite, time uncertain, seems to have aimed chiefly at elegance and purity of style; it is very free. Between these stands that of Theodotion, also an Ebionite, and nearly contemporary with Aquila; more elegant and idiomatic than that of Aquila, more literal and correct than that of Symmachus. All of these aim at greater closeness to the original than the LXX.; sometimes they all three agree against the LXX. These, with three anonymous versions, enumerated as *editio quinta*, *sexta*, and *septima* respectively, were included by Origen in his splendid work the Hexapla, a sort of Polyglott, which that distinguished Biblical scholar drew up for the use of those who wished to understand accurately the Old Testament, and which contained in parallel columns the Hebrew in the original character, the same in Greek characters, and the Greek versions above enumerated, including the Septuagint. The versions designated as *ὁ ἑβραῖος*, *ὁ σινπρος*, *το σαμαρειτικόν*, *ὁ ἑλληνικός*, are known to us only from being occasionally referred to on the margins of manuscripts. The extant fragments of these versions may be found in the sixth volume of the London Polyglott, under the title of *Flaminii Nobilii Notæ*, and in the edition of the Septuagint by Bos.

Dathe, *Diss. Phil. Crit. in Aquilæ Reliquias*, Opuscula, p. 1, &c., ed. Rosenmüller, 1796; Walton, *Prolegom.*, ix.; Horne, vol. ii., p. 216.

2. *Latin Versions.* Translations of the Scriptures into the Latin tongue from the LXX. began to be executed at a very early period, for the benefit chiefly of the Christians in Africa, and those parts of Europe where that language was used. Some have supposed that, as early as the second century, there was a commonly received or authorized version in the Latin churches, but this opinion is hardly tenable. All we know for certain is, that there was one which bore the name of *Itala* which was preferred by Augustin to the rest. Of this ancient version a few fragments are still extant. Towards the close of the fourth century Jerome set himself to revise and correct these versions, and in pursuance of this design issued revised editions of the Psalter, the books of Chronicles, Job, and the writings of Solomon. Unfortunately, the manuscripts containing his revised copies of the other books were lost, either through negligence or fraud on the part of some one to whom he had entrusted them. Satisfied, however, that something more than a correction of existing versions was necessary, he undertook a new translation from the original; and this he executed at intervals, and in the order in which particular books were requested by his friends. At first his undertaking was viewed with no small jealousy, and even St Augustin sought to discourage it, from a fear that a new translation, especially one from the Hebrew, would shake the faith of the ignorant in the certainty of Scripture; nor was it till the sanction of Gregory the Great had been given to it that the version of Jerome was able entirely to supersede the old *Itala* (1). This version is that commonly denominated the *Vulgate*, of which the Council of Trent decreed an immaculate edition; a decree which gave rise to a Papal dissension, to which Christians

have not been slow to point as fatal to the claims of the Scripture supreme pontiff to infallibility (2).

1. Augustin, *De Doctr. Christiana*, lib. ii., c. 11, c. 15; *Ep.* 88; *Ep.* 97; Jerome, *Præfat. in Iobum*, &c., ad Sophron., Opp. i., p. 833, ad Damasum, ii., 563; Hody, *De Textibus*, &c.; Walton, *Prolegom.*, x.; Horne, ii., pp. 234–240.

2. See James, *Bellum Popale, sive Concordia Discors Sixti V. et Clementis VIII. circa edit. Hieronymianam*, London, 1600, 4to, 1678, 8vo.

3. *The Gothic Version.* Of this, which was executed by Ulphilas, bishop of the Gothic tribes in Wallachia, about the middle of the fourth century, only the four Gospels, part of the Epistle to the Romans, and fragments of the other Epistles and of the Old Testament, are extant; the first in the famous Codex Argenteus, a manuscript in silver letters of the fifth or sixth century; the second in a Codex Rescriptus belonging to the library of Wölfenbützel; and the third in certain Codices Rescripti recently discovered by Mai in the Ambrosian Library at Milan. This version appears to have been made from the Greek, and particularly from the Constantinopolitan text, but to have been subsequently altered after the Vulgate. The best edition of the gospels is that of Lye, Oxon. 1750, 4to. The fragments were edited by Knittel in 1762, 4to, and by Ihre, Upsal, 1763, 4to, by Mai in 1819, and by Castiglioni in 1829–39, and the whole by Gabelentz and Loebe, 1836–46.

Horne's *Introduction*, vol. ii., p. 240; Hug's *Introduction* (Eng. trans.), vol. i., p. 487; Schott, *Isagoge*, p. 613.

4. *The Anglo-Saxon Versions.* The history of these is by no means accurately known. It appears that, as early as the year 709, the Psalter was rendered into Saxon by Adelme, Bishop of Sherborne. A few years later Aldred, who styles himself "Presbyter indignus et miserrimus," "over-glossed in English" the Latin of a copy of the four Gospels, which had been written by Eadfrith, bishop of the church of Lindisfern, "out-attired, and blazoned as well as he could," by Ethilwold, bishop of the land of Lindisfern, and "smoothed, ornamented, and overgilded," by Billfrith the anchorite (1). Nearly about the same time Beda translated the whole Bible into Saxon-English. About two hundred years after this the Psalter was translated by King Alfréd. A Saxon translation of the Pentateuch, Joshua, part of the books of Kings and Esther, is attributed to Ealfric, Archbishop of Canterbury, in 995. The entire Anglo-Saxon Bible has never been published. Alfréd's Psalter was edited by Spelman in 1640; and a translation of the Gospels made from the old Latin of the *Itala* has been thrice edited (2). The best edition is that of Thorpe, London, 1842.

1. See Henshall's *Disquisition* prefixed to his edition of the Gothic Gospel of St Matthew, with the corresponding English or Saxon, &c., London, 1807, 8vo.

2. Newcome's *Historical View of the English Biblical Translations*, p. 1, Dublin, 1792; Horne's *Introd.*, vol. ii., p. 246.

5. *The Slavonic Version.* The authors of this version were Cyrill of Thessalonica, and his brother Methodius, who in the ninth century introduced the gospel among the Slavonians inhabiting Moravia. It seems to have been made from the Greek, and from manuscripts having the Constantinopolitan text. It embraces the whole Bible, and has been frequently printed.

Henderson's *Biblical Researches and Travels in Russia*, pp. 60–102, London, 1826; Horne's *Introd.*, vol. ii., p. 245.

These ancient versions are useful, both to the critic and the exegete: to the former, as supplying not a few various readings which are wanting in all or in most of the codices containing the original text, as serving to determine more accurately the age and country of any particular form of the text, and as helping to confirm or refute particular readings occurring in the Greek codices; to the latter, inasmuch as every faithful version is not only a perpetual

Scripture. interpreter of the sentiments of the original into another tongue, but the authors of these ancient versions, from the time in which they lived, and the locality they inhabited, had peculiar advantages, both philological and historical, for the successful interpretation of the sacred books.

Ernesti's *Principles of Interpretation*, by Terrot, vol. ii., p. 146.

See on the whole of this section, Davidson's *Biblical Criticism*, p. 206; Tischendorf, *Proleg. in Nov. Test.*, p. 228, ff., seventh edition.

SECT. XI.—*Quotations by the early Ecclesiastical Writers from the Sacred Scriptures.*

Besides the object to which these have been already applied, as showing the authenticity of the sacred documents, they serve also a useful purpose to the critic, in furnishing him with numerous readings, in assisting to determine the age, origin, and country, of remarkable readings, and in illustrating the whole history of the Greek texts of Scripture. Care, however, must be taken to discriminate between passages quoted freely from memory, or adapted to the construction and sentiment of the writer himself who quotes, and those which are formally cited from the codex. We must also be sure that the work in which the quotation occurs is genuine, and that the common text of the places in which the citation occurs is correct.

Ernesti's *Principles of Interpretation*, by Terrot, vol. ii., pp. 90-113; Schott, *Isagoge*, p. 629.

SECT. XII.—*Laws for the Determination of various Readings.*

1. That reading is to be regarded as true which is supported by far the greater number of copies and witnesses; but still readings supported by a few books are not entirely to be disregarded, especially when they harmonize with the *usus loquendi* of the author. 2. That reading which the better copies exhibit, unless special reasons prohibit it, is to be preferred to the one which the inferior copies exhibit, although most numerous. Neither the antiquity nor propriety of a reading, solely considered, always proves it to be a true one. 3. That reading which is more harsh, obscure, difficult, unusual, or delicately chosen, if supported by the authority of a proper witness, is preferable to one which is plain, easy, usual, and common. 4. That reading which approaches nearest to the popular and familiar method of speaking, if it be supported by external testimonies, is preferable to one which is more artificial and subtle. 5. The shorter reading, when supported by testimony of importance, and if not incongruous with the style and design of the writer, is preferable to a more verbose one. Still there are cases where the more copious reading is to be preferred. 6. That reading which gives the best sense is peculiarly preferable. But to determine this, the nature of the whole passage, and the genius of the writer, not the mere opinions and sentiments of particular interpreters, are to be consulted. 7. The reading which produces an unworthy or incongruous sense is to be rejected. Good care, however, must be taken not to condemn a reading as unworthy or incongruous which a more correct grammatical and historical investigation would prove to be true reading, or at least a probable one. 8. A reading which agrees with the *usus loquendi* of the writer is preferable to that which disagrees with it. It must be remembered in judging here that the style of an author sometimes varies with increasing age. 9. A reading is to be rejected in respect to which plain evidence is found that it has undergone a *designed* alteration. Such alteration may have taken place, *first*, from doctrinal reasons, Mat. i. 18; Mark viii. 31, xiii. 32; *second*, from moral and practical reasons, Mat. v. 22; *third*, from historical and geographical doubts, Mat. viii. 28, comp. Mark v. 1; *fourth*, from the desire of reconciling passages inconsistent with each other, Mark viii. 31; *fifth*, from

Scripture. desire to make the discourse more intensive,—hence many emphatic readings have originated; *sixth*, from the comparison of many manuscripts, the readings of which have been amalgamated; *seventh*, from a comparison of parallel passages. Corrections of the more celebrated manuscripts have been sometimes detected. 10. Various readings are to be *rejected* which spring from the mere negligence of copyists, and from those errors which are very common in all kinds of books. To these belong, *first*, the commutation of unusual forms for those of the common dialect; the Alexandrine or common form, however, has the preference over others in the New Testament; and this dialect itself also admitted some Attic forms: *second*, the commutation of single letters and syllables, by an error of either the eye or the ear; the former resulting from obscure and compendious methods of writing, or from the similarity of certain letters, such as A Δ Λ, O Θ, &c.; the latter from copying after the reading of one who was misunderstood, or who read erroneously: *third*, the commutation of synonyms: *fourth*, from transferring into the text words written in the margin of copies, and thus uniting both readings, James v. 2: *fifth*, from the omission or insertion of a word or a verse, by an error of the sight: *sixth*, from the transposition of words and passages, whence it may have happened that some error has crept into most of our books: *seventh*, from words which ended with the like sound, or appeared alike; and from proximate words, one ending and the other beginning with the same syllable; *eighth*, from incorrectly uniting or separating words, which naturally resulted in some cases from the ancient method of *continuous writing*: and, *ninth*, from an erroneous interpunction and distinction of passages. 11. A reading is to be rejected which plainly betrays a gloss or interpretation. This may be a word or a whole passage. Sometimes these glosses are united to the true text, and sometimes they have thrust it out. All interpretations, however, are not spurious glosses; for authors themselves sometimes add them, in order to explain their own language. 12. Readings deduced merely from versions or the commentaries of interpreters are to be rejected.

To these which are taken with a few alterations from Beck's *Monogrammata Hermeneutices*, *Libb. Nov. Test.*, Lips. 1803, may be added the rules laid down by Tischendorf, the greatest living authority on such points, for his own guidance as an editor of the New Testament. These are: 1. Readings are to be held doubtful which are peculiar to one or other of the codices, or which betray in what seem classes the predominant influence of some learned man. 2. Those are to be rejected which, though supported by several witnesses, are manifestly or probably the result of an error on the part of the scribes. 3. In parallel passages, as well of the Old as of the New Testament, and especially of the synoptical Gospels, which the ancients were very anxious to render uniform, those witnesses which preserve a discrepancy are to be preferred to those which present a consent, unless some grave reason persuade otherwise. 4. That reading is to be preferred which seems to have given occasion for the others, or which contains the elements of them in itself. 5. Those are to be studiously retained which are commended by the analogy of the Greek dialect proper to the authors of the New Testament, and not less those that are commended by the usage of any one of them. (*Prolegomena*, p. 32.)

See also Michaelis' *Introd.*, vol. i., pp. 246-339; Ernesti's *Principles of Interpretation*, by Terrot, vol. ii., p. 114; Marsh's *Lectures*, lect. iii; Horne's *Introd.*, vol. ii., pp. 251-260; Davidson's *Bib. Crit.*, p. 820, ff.

(For remarks upon particular books of the Bible, see the articles in this work under the names of the different books, or their authors, as PENTATEUCH, MOSES, JOSHUA, PAUL, PETER, &c.) (W. L. A.)

Scrofula
||
Scudéri.

SCROFULA, or KING'S EVIL, a tedious and multifarious disease, of which one of the most characteristic marks is a tendency to a swelling of glandular parts, which, when they come on to inflammation and suppuration, discharge an unhealthy, curdy, mixed matter, and form ulcers very difficult to heal. This tendency to glandular swelling is the mark of a peculiar constitution, derived from parents or ancestors, or acquired afterwards during life; and in such constitutions, the diseases and accidents that happen with comparatively little inconvenience to others, are productive of very troublesome and alarming consequences to them. Scrofulous persons, though frequently very beautiful, are seldom robust or able to endure much fatigue. The hair in scrofulous children varies very much in colour; the body is generally pale and flabby, and the belly prominent; the upper lip is tumid; digestion is generally bad; the voice is husky, and there is great liability to colds, with sore throat and enlarged tonsils. Those who are obliged to live in damp, uncomfortable dwellings, exposed to many privations, who are badly clothed, who live on scanty and unwholesome food, deprived of exercise in the open air, and who are inattentive to cleanliness, are the most subject to this disease. Scrofula is one of those diseases that are manifestly hereditary; and families that are scrofulous ought to be particularly careful as to the way in which they bring up their children. Long and anxious inquiries have satisfied medical men, that scrofula is a disease of debility; and that while everything is to be avoided which has a tendency to over-stimulate and inflame the system, such diet and regimen are to be adopted as have the tendency to strengthen and invigorate it. Children who show any predisposition to scrofula, should be brought up on plain, but nourishing and easily digestible food, such as good broth, with a moderate allowance of solid meat.

Scrofula generally first shows itself between the third and seventh year of a child's age; but it may arise at any period before the age of puberty, after which it rarely makes its first appearance, at least externally. The attacks of scrofula usually begin some time in winter or spring, and get better, or disappear in summer or autumn. The first appearance of the disorder is the occurrence of small round tumours under the skin of the neck, about the ear, or below the chin, without any pain or discolouring. In some cases, the joints of the elbows or ankles are the first parts affected. After some time, the tumours acquire a larger size, the skin which covers them becomes more purple and livid; and they inflame, suppurate, and break into little holes, from which a mixed pus-like fluid, intermixed with curdy-looking matter, at first proceeds, which soon changes into a thin serous discharge. In some scrofulous habits, the eyes and eyelids are the principal seat of the disease, shown by the incessant inflammation of the ball, and the raw and painful state of the eyelids. The bones of scrofulous persons are liable to disease, namely, to partial or general enlargement, to inflammation, suppuration, and exfoliation. Diseased spine is also much connected with a scrofulous constitution. Many internal parts, also, are subject to disease in scrofulous habits.

The constitutional treatment, which is by far the most important, should be as healthful and invigorating as possible; good diet, air, and exercise, are necessary; a residence in the country, or sea-bathing, are useful auxiliaries. Sponging the skin with tepid salt and water, or the use of cold sea-water, if it can be borne, followed up by diligent rubbing with coarse towels and the flesh-brush, is most beneficial. The bowels must be regulated, and occasional doses of rhubarb and grey powder may be useful. A steady and long-continued course of tonics and alteratives will do most good in the way of medicines. Great benefit is often derived from taking cod-liver oil.

SCUDÉRI, GEORGES DE, a French litterateur, was born at Havre, in Normandy, about 1601, where his father held

the post of governor. He at first followed the profession of arms, but subsequently, in 1630, exchanged the sword for the pen, and took to the writing of dramas. He rose to a wide notoriety, and could, at one time, count more admirers than Corneille, the greatest dramatist of France. But men's minds gradually changed, and Corneille is now recognized as the greatest tragedian France has known, and Georges de Scudéri is entirely forgotten. De Scudéri could not bear the rising reputation of his rival; and on the publication of the *Cid*, so strong was his vanity and so urgent his animosity, that he wrote *Observations sur le Cid*, in which he laboured industriously to tear to pieces that superb drama; but its author could afford to smile on all such petty animosities, and he contented himself by a stinging epigram, which he flung at the head of the "solemn fool," his late friend, De Scudéri. He got into disrepute; and despite all the exertions of Cardinal Richelieu, he could not regain his position with the French public. He was appointed governor of Notre Dame de la Garde, a small fort situated on a rock adjoining Marseilles; but he soon returned from that retirement, and died at Paris, on May 14, 1667, after having been elected a member of the French Academy in 1650.

His plays, which number sixteen in all, are as follows:—*L'Amour Tyranique*; *Armenius*; *Orante*; *Lygdamon*; *Le Vassal Généreux*; *Le Trompeur Puni*; *La Mort de César*; *L'Amant Liberal*; *Didon*; *Eudoxe*; *Andromire*; *Axiane*; *Le Fils Supposé*; *Le Prince Deguisé*; *L'Illustre Bassa*; *La Comédie des Comédiens*. He likewise wrote *Poesies Diverses*, Paris, 1649; and an heroic poem, called *Alarie, ou Rome Vaincue*.

SCUDÉRI, Madeleine de, sister to Georges de Scudéri, was born at Havre on the 15th of June 1607. Few names in literature have afforded a subject for more frequent epigram than that of Mademoiselle de Scudéri, and few works are now less read than hers. Having gone to Paris shortly after she had finished her education, she became connected with the Hotel de Rambouillet, where she met with many persons of the first reputation. Mademoiselle de Scudéri had not resided long among this distinguished circle, when she began to use her pen, to correct, if possible, the wrongs which fortune had done her. Her principal romances are:—*Ibrahim*, 4 vols., Paris, 1641; *Artamène*, 10 vols., Paris, 1650; *Clélie*, 10 vols., 1656; *Almahide*, 8 vols., 1660. She likewise wrote a great many volumes of *Conversations*, besides some fables in verse. She at once met with a great success. Not that this prosperity arose from any very remarkable method which the fair writer had adopted in the construction of her tales; on the contrary, they were about as full of rhodomontade as could well be conceived; but then they were love all over. No doubt she has given us tolerably exact portraits, so far as they go, of the chief *habitués* of the Hotel de Rambouillet; but the attention of the reader is constantly confounded by the unceasing interruption of episodes, anecdotes, and frivolities, and his patience is quite exhausted by the elaborate exquisiteness with which everything is gone about, from the fastening of a shoe-buckle to the decorating of the person of a hero with his coat of mail. No doubt, all this was infinitely admired by the elegant beauties among the Parisian bluestockings; and there were numbers of the other sex down upon their knees before the writer, who was by no means a miracle of beauty. This method of writing was the rage of the day; and there was just one man then living who had the audacity to hold up the whole tribe to the unmitigated laughter of the citizens of Paris. The *Précieuses Ridicules* of Molière sent a shaft through the heart of these absurd coteries, from which they never afterwards recovered. Mademoiselle Scudéri was held in the highest honour by these "Précieuses" till her death, which occurred on the 2d of June 1701, in her ninety-fourth year.

Scudér.

SCULPTURE.

Sculpture. SCULPTURE (Lat. *sculpto*, to cut out, to carve), the art of cutting or carving any substance into a proposed form. In its strict sense it is confined to carving, but in the fine arts it is generally applied to all those processes by which the imitation of objects is effected. First, in carving proper; also in modelling, or the plastic art; in ordinary casting; and in founding or metal-casting, and in gem-engraving.

Carving, as is well known, is simply the art of cutting any comparatively hard material by the best-adapted instruments, as chisels, gonges, files, &c., into different shapes. Modelling is practised upon soft and yielding substances, as clay or wax, which are formed into the desired shape by the hand and different kinds of modelling-tools, generally made of boxwood or ivory.

Every substance that could by possibility be used for carved works has been employed by sculptors of all times. Among the Egyptians especially the hardest were preferred, as basalt, porphyry, and granite; though they also worked extensively in other materials. Marble, various kinds of alabaster, stone, ivory, bone, and wood of all kinds, were used according to circumstances. The variety of marbles is almost infinite. Pliny (*Hist. Nat.* xxxvi. 7) supplies us with an interesting catalogue of those most generally employed. The chief Greek marbles were the Parian and the Pentelic. The former was found in the island of Paros, whence its general name; but it is also alluded to as the marble of Marpessus, from the particular mountain where it abounded. Its colour is a warm or creamy white, and it is remarkable for a sparkling quality in its crystals, from which it is supposed it received its epithet of *lychnæum*. The Pentelic marble came from Mount Pentelicus, in the neighbourhood of Athens. Its colour is white, but it often has blue or gray, and even green streaks running through it, which give it a cold tone compared with the Parian marble. The ancients also much esteemed a marble procured from Mount Hymettus in Attica. It bore a close resemblance to the Pentelic. A great quantity of this marble was imported into Italy after the conquest of Greece by the Romans. A marble of Thasos was also much used, but more for architecture than for sculpture. It was employed for baths, fish-ponds, and for encasing buildings. Italy produces very fine marble. That spoken of as the marble of Luni was procured from the range of mountains near which are situated the modern towns of Massa and Carrara. It does not appear that it was known, or its quarries worked, before the time of Julius Cæsar, in the century before the birth of Christ. In many respects it is superior to the Parian and Pentelic marbles. The grain of the Carrara marble is finer than that of Greece, and its colour, when pure, is a rich white. Remains of the former working in the quarries of Luni may be traced; and it is thought the material was of a somewhat finer texture than the more modern produce. The Carrara marble, now so generally used by sculptors, is not often found quite pure in very large blocks. Veins and spots of gray and blue-black, and red and yellow streaks (probably oxides of iron), occur in it. The quality varies also in different quarries. Occasionally large crystals are found which resist the chisel. The Romans procured white marble from some quarries they worked in Africa. Marble is no longer procured, except by mere accident, from Greece; and the only supply for general purposes of sculpture is from the above-named source, the mountain quarries in the duchy of Massa and Carrara, on the west coast of Italy. Among the varieties of wood used by the ancients for sculpture, the oak, cypress, cedar, box, sycamore, pine, fig, and ebony

occur. Pausanias mentions, in his Travels in Greece, numerous statues made of wood. This to us apparently humble material seems to have been employed for statues of the most elevated personages. The above writer mentions, among several, those of Apollo Archegetes and of Diana Limnitis, which were of ebony. The statues of Castor and Pollux, with those of their children and of their mothers, in the temple dedicated to Castor and Pollux at Argos, were also made of this material. At Lacedæmon was a statue of Venus of cedar. In the treasury of the Sirgonians, at Altis, was a statue of Apollo made of box. Pliny (*Hist. Nat.* xvi. 40) especially mentions cypress, cedar, ebony, and box for their capability of resisting the effects of time; and he says cedar was on this account preferred for images of the gods. Yet all these works have perished, notwithstanding the above writer's anticipation of their everlasting durability, when he says, "*materiæ ipsæ æternitas*." Some figures of small dimensions have been found preserved in tombs. They are of great antiquity, and chiefly represent Egyptian idols. The material of which they are made is usually sycamore wood.

For ordinary casting, as well as for founding (metal-casting), all materials were used that were capable of being solved and again hardened, whether by the action of heat or by mixture with liquids. Among these may be mentioned gold, silver, iron, tin, copper, lead, and their compounds (as bronze), among the metals; and wax, plaster, and stucco among the inferior materials. The ancients used a composition called *electrum*, which was a mixture of gold and silver, in the proportion of one of the former to five of the latter. Helen is said by Homer to have dedicated a cup made of electrum, of the exact size and form of one of her breasts, in the temple of Minerva at Lindus. That composition which was so extensively used by the ancients for statues,—called by the Greeks *chalcos* (χαλκος), the Romans *æs*, and the moderns *bronze*, from the Italian *bronzo*,—is a mixture of copper and tin, with sometimes small portions of other metals. The composition of this material, so extensively used by the artists of antiquity, appears to have been a subject of great care. There were rival schools for its preparation. Pliny especially records those of Ægina and Delos; and says (*Hist. Nat.* xxxiv.) the highest honour was given to that of Delos, and the next to the Æginetan bronze. The mere list of names of the different kinds of bronze known to and used by the ancients is curious. Pliny says there was rivalry (*emulatio*) between two of the greatest sculptors of the best period of the art in the material each employed. Myron used the bronze of Delos, Polyclethus that of Ægina. Besides these bronzes of Delos and Ægina, there was the Corinthian; that of Tartessus; then another kind called the "*æs Demionnesium*;" also the "*æs nigrum*" (black), and the "*æs candidum*," or light-coloured, supposed to have had silver in it. There was also a bronze of a liver colour, called "*æs Hepatizon*," which probably resembled the brown or true *bronze* colour of the *cinqe cento* works. There were other modes of working in metal besides casting used by the ancients. Such was the solid and the hollow hammer-work (*σφυρήλατον*) described by Pliny and others. The earliest metal-works were doubtless produced in this way. There were various modes of exercising this art. Pausanias saw several works of the kind, and explains the different processes. Pliny also furnishes some very curious information upon the subject. Either solid pieces of metal were beaten into shape, and fastened together by means of pins or keys; or the metal was beaten out into plates, and then worked into

Sculpture.

Sculpture. the desired form over a core or nucleus of wood. A small head of Osiris, in the British Museum, exhibits an instance of this practice. The form is bronze; and the centre, of wood, is still remaining. Of entirely solid statues, Pliny¹ mentions an interesting example in the statue of Diana Anaitis. Other instances might be quoted, but the above are sufficient to prove the practice. Ancient authors allude to some very remarkable effects produced by the mixture or fusion of metals, by which the complexion of the countenance could be given. Callistratus speaks of a *bronze* statue of Cupid, by Praxiteles, on the countenance of which was a vivid blush. He mentions another, by Lysippus, in which the cheeks were coloured like a rose. Pliny refers to a statue of Athamas sitting overcome with remorse after the murder of his son; and, says the artist, in order to express the effect of shame, had mixed iron with the bronze, which caused, "by its redness shining through the bronze," the appearance of a blush. Pliny does not say he saw this work himself. Plutarch, again, refers to a statue made by Silanio, of Jocasta dying, and tells us that by a peculiar mixture of the metals used a cast of *paleeness* was given to the complexion. Too much dependence must not be placed upon these general statements. That the works above referred to, and others that might be mentioned, exhibited colour is likely enough; but that those tints were produced in the way suggested, namely, by the fusion of metals, is next to impossible. Neither of these writers were practical artists, and, except Callistratus, they lived very long after the times at which the works they describe were executed. Silanio, for instance, flourished about 320 B.C.; Plutarch, who describes his work, between five and six hundred years later. These accounts, then, so far as they assert that these expressive tints were produced by any possible fusion of metals, are not deserving of credit; but as indirect testimony to the ancient practice of colouring sculpture, they may require further consideration in the course of our history. The Egyptians, according to Pliny, coloured their bronzed statues after they were cast, and the Greeks may have done the same. The method above described, of producing various tints of colour, is quite distinct from the *Toreutic* art (*Τορευτική*) of the ancients. This seems to have been the combination of distinct materials, always including metal, worked or chased together. The shield of Achilles, as described in Homer, exhibiting different colours, may most probably have been an example of *Toreutic* art. There are instances existing of inscriptions, in a different metal from the statue, being inserted into the figure. Cicero in (*Verr. Or.* iv.) speaks of an Apollo inscribed thus with the name of its author Myron. There is a bronze statue in the Musée in Paris of a youth, on the left foot of which are the remains of two Greek words in silver letters. Many examples occur of the introduction of foreign substances, either metal, precious stones, glass, or paste, in statues and busts of the best period of Greek sculpture. The practice is not limited to the eyes, but instances occur of the lips being thus inlaid. There are examples of it in the fine collection of bronzes in the Museo Borbonico at Naples, and some instances may also be seen of it in our national collection in the British Museum. Among barbarous nations the introduction of varied and rich materials and colours is universally met with in their sculpture. It might cause surprise to find the same custom patronized among the refined Greeks when their art had reached its highest perfection, if it were not known that certain forms of art were prescriptive, from their antiquity, and that in all works connected with religion (and almost all sculpture was directly or indirectly so applied) the artists were bound by established regulations, strictly en-

forced by the priests and supported by public opinion. **Sculpture.** Before quitting this branch of our subject, referring to combinations and mixtures of materials, it may be right to notice that, when different kinds of stone or marble were used in the same work, it was called *poly lithic* sculpture; to distinguish it from sculpture in one kind of marble, which was called *monolithic*. Marble and bronze and wood were occasionally used in these combinations.

For modelling, clay, stucco, plaster, and wax were used. Works of great antiquity formed of these substances are still preserved in the different museums of art. Models in clay were usually dried and then baked in an oven, by which they became as hard as stone, and were very durable, as they were unaffected by atmospheric changes. Moulds were then made, by a similar process, into which soft clay could be pressed, and objects were thus multiplied with facility. Clay thus treated is called *terra-cotta*. The ancients must have used it extensively, as may be seen from the countless number of figures and reliefs, lamps, architectural ornaments, vases, domestic utensils, stamps, and other objects which exist, and are still constantly being found in this material. Usually such works are of small size; but there are some statues in the museum at Naples which prove it was also used for statues of large dimensions. There are two figures there, especially deserving attention, of Jupiter and of Juno, full life-size; also two others about four feet high, with masks, representing an actor and an actress, which probably formed the decoration of a theatre. The specimens in England of ancient *terra-cottas* are for the most part of small size. They are chiefly reliefs. Some of those in the British Museum are, however, extremely interesting, both for subject and execution. As such works were usually, if not always, designed for architectural decoration, it is probable they were painted. They were first washed with a thin coating of stucco, and the colour was then laid on with a brush, the preservation of the original surface evidently not being considered of importance. This at least appears to have been the process, judging from several remaining specimens. The employment of wax for modelling and casting is very ancient. Roman families of distinction preserved a collection of statues and busts of their ancestors, which, on particular occasions, were carried in procession at certain festivals or ceremonies: these were sometimes dressed in real drapery. Pliny (xxxv. 2) alludes to this employment of figures of wax. Plaster or stucco is found in the ornamental parts of buildings. At Pompeii there were, some few years ago, two stucco *bassi-relievi* of considerable size and of good design, on the outer walls of a small inner temple in the court of the temple of Isis. The material was extremely hard, and the colour a creamy white. We possess several specimens of the *stucco*-work of the ancients in the British Museum. They exhibit great delicacy and sharpness of execution. Many are painted, red being the prevailing colour.

Statues were not only made of the above-named materials, but occasionally of those which would seem to be but little adapted to the purpose. There was a statue of Augustus of amber. Statues were also sometimes made of gum and aromatic substances, as well as of others of a combustible nature, to be used on particular occasions. Even hay is mentioned. At the funeral ceremonies in honour of Sylla statues of this kind were used. Sometimes strange conceits were illustrated in these performances. There is mention of a statue of Venus, the fascinating goddess of beauty and love, made of loadstone, which attracted to it a figure of Mars made of iron.

Having made these few preliminary observations upon the materials used for sculpture, it may be proper to describe

¹ "Aurea statua nullâ inanitate, in templo Anaitidis posita," &c. (*Nat. Hist.* xxxiii. 4.)

Sculpture. briefly the different modes of practice. *First*, there is the representation of insulated objects, whether in single figures or groups. As these may be seen all round, like the statue of the Apollo or the Gladiator, or the group of Laocoon and his sons, such works are technically called in sculpture "in the round." When objects or figures are attached to a background, they are called "in relief." The degrees of relief are defined by modern writers and artists by the expressions *alto* or high relief, *basso* or low relief; and the Italians have used a middle term, *mezzo-relievo*, which is intended to describe something between the two extremes. However slightly a figure may be attached to a plane behind it, the mere fact of its touching it constitutes it a work in *relief*. There is a peculiar mode of working in relief chiefly found in Egyptian sculpture. The outline is sunk or hollowed slightly into or below the surface of the ground, and the figure is then formed and rounded on the principle of a very flat *relievo*. Of course, in this mode of execution there is no projecting part above the original plane of the material. It is, in fact, a kind of relieved *intaglio*; but, unlike works in legitimate *intaglio*, the forms are correctly relieved or rounded within the limits described. In *intaglio* all the sinkings are inwards, as is seen in seal engraving, and have not their true appearance till an impression of them is taken.

Various speculations have been offered with respect to the comparative antiquity of sculpture and painting. The story of the daughter of Dibutades having traced the outline of her lover's profile cast by shadow on the wall, and this outline having been afterwards filled in with clay by her father, would give the priority to drawing; and it seems obvious that drawing must be antecedent to modelling or carving in *relief*. But it is probable that *insulated* objects were made in the earliest times. The above is simply a Greek traditional romance; and, referring to a circumstance of comparatively late date, cannot be taken as historical authority for the origin of sculpture. There can be little doubt that rude attempts at forming clay or any other plastic substance into defined shapes were amongst the first exercises of the natural imitative faculty of man. The comparatively easy task of copying the real form of an object to representing its partial appearance by lines on a flat surface, suggests the inference that this must have been the earliest mode of imitation.

The attempts of some, indeed most, writers on art to trace the origin of sculpture to a common or single source have not led to any satisfactory results. The great antiquity of the art renders it most difficult, in the first place, to trace its backward history through the obscurity of ages; but the difficulty is further increased when the question arises, whether it is quite reasonable to attribute its origin to one nation, from which all others have necessarily derived its practice. The faculty or desire to imitate is instinctive in man; and the earliest nation, therefore, would probably have first exercised this natural tendency. When we come to consider sculpture as a refined art, we must seek further for the principles which gave it its distinctive character than in the mere bald fact of a people having imitated objects by form. There can be no doubt that the intercourse of nations had its influence on the style of any existing art; or, where it was not known, that its practice may have been introduced; but the discovery of specimens of rude imitative art in countries that cannot by any apparent possibility have had communication, proves that its existence in its primitive forms may have been quite independent of any such intercourse. When the very late date of the oldest ancient writers who refer to the history of sculpture, compared with the undoubted remote antiquity of the art, is taken into consideration, there is enough to account for the difficulties they had in collecting any evidence to be relied on upon this intricate subject.

Where the writers are Greeks, the bias in favour of their country's glory would lead them to lay stress upon every little tradition that would flatter their patriotism. Of this the inventions and works of art attributed to one Dædalus afford an instance, and show the limited knowledge that existed of the first artist who is noticed in the annals of Greek sculpture. The progress and improvement of various useful arts must have been gradual, and due not to one, but to a series of ingenious artists and inventors. These, however, have all been attributed to one individual, who bore a name which, in all probability, was a general appellation given in early times to any workman or artificer remarkable for his skill. In the same manner, we find the introduction into Italy of the simple art of modelling attributed to one Demaratus, a fugitive from Corinth, about 600 B.C. He was accompanied, it is said, by two artists, Eucheir and Eugrammus; whose names appear rather to be epithets of skill than the simple names of persons. Again, some ancient images are spoken of as having fallen from heaven; showing, unless this is to be treated in the same way as some similar modern instances of superstitious credulity, how little real historical knowledge existed of the origin of the earlier sculpture. This is not the case at a later period, when the art held a more defined position, and when, fortunately, epochs in its history were marked by changes in style which enable the archæologist to classify schools and fix important dates. Passing by, then, the first rude attempts at mere objectless imitation, the inquiry into the history of sculpture as an art having a definite purpose becomes a subject of great interest.

The desire to record in some palpable form the memory of extraordinary events and persons, and to hand down to posterity some enduring monument of the great or useful deeds of benefactors, was doubtless the first impulse which led to the use of sculpture. The first works applied to these objects were probably of the rudest description, and will not come under the conditions of art. Still, from these simple beginnings we probably may trace the development of great results. The oldest histories make mention of what may truly be called monuments erected to mark the scene of any remarkable incident. They were composed simply of heaps of stones, sometimes of blocks of large size; but even these rude forms indicated at a later time ideas of pregnant meaning. A heap of stones was set up at Bethel by Jacob, to mark the spot where he had seen the vision of angels ascending to heaven (Gen. xxviii. 18). The agreement or covenant entered into between Jacob and Laban was recorded in the same simple way, by a pillar and heap of stones (Gen. xxxi. 44). A similar monument was built over the grave of Rachel; and other instances of the kind might easily be quoted. Pausanias (vii. 22) mentions, that as late as A.D. 170 certain of the divinities of Greece were worshipped under the form of mere columns or blocks of stone set upright.

The tradition handed down from generation to generation of feats of arms, the prowess of a warrior, or of the founder of a nation, led in all probability to the first attempt at individualizing in some way the representation of the hero whose fame was thus repeated from mouth to mouth. The people, associating with this object feelings of respect and admiration, the transition, or rather development, of the higher sentiment of veneration is easily understood. Profound respect, and the desire to show gratitude for real or supposed benefits, would soon lead to the payment of extraordinary honours; and the elevation of these heroes or public benefactors to the grade of beings above the ordinary class of mortals became the natural course,—especially, too, when the real existence and individuality of the person so honoured had become obscured by the lapse of time. Thus, the record of great and good actions of men

Sculpture. led to hero-worship, and hero-worship further led to giving men the attributes of supernatural beings.

It has been said that the history of sculpture is almost the history of idolatry. It is true in part. Religious feeling had much to do, as will be seen, with the progress of the art in its more advanced condition; but it is probable that the first defined images or statues were of men and not of gods, and that human idols, so to speak, preceded those of divinities. As far as can be ascertained, the heavenly bodies were among the earliest objects of worship among the heathen nations; and the symbols that represented them were most likely merely pillars of a conical or pyramidal form, and not imitations of any human figure. It has been ingeniously supposed (Landseer, *Sabaean Researches*) that when such objects or images are referred to by Moses as "graven," that it is in allusion to signs (or hieroglyphics) that were inscribed or cut upon them. Thus the sun was worshipped at Emessa under the form of a black conical stone, with marks on it to represent that luminary.

The oldest record of the existence of objects which it may be assumed were imitative is in the sacred writings; and the first intimation found of the existence of sculpture, in connection with the idolatrous worship, is among the Chaldeans. Some early Christian writers have declared that Terah, the father of Abraham, made images, but Scripture gives no authority for the supposition. We read, however, that when Rachel, in company with Jacob and Leah, quitted her father's dwelling, she carried away with her certain images upon which Laban set so much value that he immediately followed her in order to recover them. There are no particulars of what these images were like, or of what material they were made. They must have been small and light, from the facility with which Leah contrived to carry them away unobserved, and from the care with which she concealed them, when Laban "searched all the tent, and found them not." Images are referred to in another place, where Jacob is described as taking the "strange gods," and hiding them under an oak (Gen. xxxv. 4). In the book of Joshua, allusion is made to the corruption of the Israelites by the superstitions of the people among whom they had so long dwelt, and after the exodus they are solemnly warned against this influence, and exhorted to return to a more pure and simple form of worship.

The earliest known names of sculptors are found in the Old Testament. They are of the artists employed to make the ornaments of the tabernacle. One of them was Bezaleel, the son of Uri, of the tribe of Judah; the other Aholiab, the son of Ahisamach, of the tribe of Dan. Their date, therefore, is about fifteen hundred years before the Christian era. No remains of the sculpture of those early nations are known to exist; so that no useful speculations can be offered upon the character of their arts, nor upon the original sources of their knowledge. Of course, much of their late improvement may be attributed to their intercourse with that wonderful people the Egyptians. That they were considerably advanced in various branches of scientific discovery must be assumed from the accounts handed down to us; and they must have been acquainted with some difficult processes of art to be able to set up the image of the molten calf, and to make the brazen serpent.

The important and interesting discoveries that have been made of late years of the remains of some of the ancient cities of Assyria have opened a wide field of observation to the antiquary, while they have also afforded most valuable examples of the character of the sculpture of that nation. The light these will throw upon the early history and chronicles of this remarkable people can scarcely be over-estimated; and the successful researches of scholars and travellers, amongst whose names those of Rawlinson, Botta, and Layard will always be remembered with honour, are

daily supplying new and most valuable information upon these hitherto obscure subjects.

Herodotus had an opportunity of personally inspecting the wonders of Babylon. He speaks of the hundred gates in the walls "all of bronze," and of the temple of Belus, which had bronze gates. He describes also a statue of gold in this temple; the god, he says, was represented seated, and a golden table stood near, and the step or footstool, and the throne itself, were of gold. He alludes also to another statue of *solid* gold, 12 cubits high; but with his usual conscientious reserve, he admits he did not see this, but only repeats what he was told. Darius, the son of Hystaspes, wished to possess this valuable statue, but did not remove it; but his son Xerxes seized it, and, it is said, slew the priest who attempted to prevent this act of spoliation. Diodorus Siculus refers to numerous works, showing the grand scale of magnificence of the Babylonians, and gives the names of the various sovereigns of the earliest dynasties under whom the respective works were said to be produced. These details are not, however, received by scholars as entirely worthy of confidence; but although much exaggeration may have crept into the account given by Ctesias, from whom Diodorus derives his information, there can be no doubt that the most astonishing splendour and luxury prevailed, especially in the gorgeous decoration of these palaces and other public buildings; and from which it may be inferred that the arts of design had been practised by this people for a very long period. From whence the Babylonians derived their first knowledge of art we at present have no means of judging; and any speculation upon so difficult a subject would carry us beyond the limits to which our immediate inquiry confines us. But without attributing the works mentioned by Diodorus to such a remote date as the earlier Semiramis, recorded by Ctesias, or to that mythical personage Ninus, there can be no question that the arts must have existed in Assyria for a long series of years before they could have reached the high condition described by the various writers referred to.

There is a curious custom connected with the art-practice of the Babylonians at a somewhat later period of their history mentioned by the prophet Baruch, who wrote about 607 B.C. In the sixth chapter (ver. 4-8) he says, "Now shall ye see in Babylon gods of silver, and of gold, and of wood, borne upon shoulders, which cause the nations to fear; they themselves are gilded and laid over with gold, and covered with purple raiment." This practice of using real drapery upon sculpture was not uncommon among ancient nations, and exists even in our own times in some countries.

The most remarkable results of the researches of travellers in Assyria are the extensive sculptured monuments that have been found in the ruins of the ancient Nineveh and neighbouring places. They seem to have been intended to serve the double purpose of decorating rooms and as records of remarkable incidents in the history of the nation, or of the prowess or habits of the sovereign. The most striking objects, from their size and character, are some colossal figures in which the human is combined with the animal or brute type. These are evidently mythological personations, in which the union of intelligence with force is characterised. The grand effect of these gigantic figures is very remarkable; and standing, as they appear to have done, at the entrance to sacred or royal buildings, they must have produced an awful impression on the people. The treatment or art-quality varies in these, showing that some of them were of earlier date than others. Although of very peculiar style, they generally exhibit an intimate knowledge of animal character in the action and expression. Whether the imitation be of the lion or the bull, the animals which occur in these larger works, the individuality of each is successfully marked. There is one peculiarity

Sculpture. which deserves especial remark in the execution of these portal or gate sculptures. Each animal is represented with his fore legs firmly planted under him. In the front view these are clearly defined, but in the profile, from their parallel position, one is, of course, entirely concealed by the other. To obviate the appearance of the animal having but three legs (for of the hind legs one is advanced before the other), a supplementary fore leg is added, which can only be seen when the spectator looks at the sculpture sideways or in profile: all the four legs are then clearly defined. These colossal figures have backgrounds; but the relief from the wall is very high, and they almost have the effect of entire statues. The reliefs that decorated the walls of the apartments represent battles, sieges, crossing rivers, lion-hunting, and endless details of the ordinary occupations of the people. The most minute circumstances are noticed. The vegetation of the country in trees and shrubs is shown, as well as the animals in common use; persons are represented crossing rivers, swimming on skins filled with air; in other slabs are buildings being erected, showing all the implements of the artificers: these objects, with the ornaments on the dresses of people, as well as on the accoutrements of the horses, are all copied with the most marvellous ease and accuracy. The execution of some of these works is also evidence of most skilful practice in the workmen, affording proof, again, of long experience in this class of art. The peculiar mode of treating the human figure shows that here, as well as elsewhere, there was a prescribed form established. However crowded the composition,—whether in the battle-field, or scaling the enemy's walls, or in the hunting-field,—the same outline, as of one family or even of one individual, is met with in all the faces. They also have an expression given them which, it will be seen, is preserved in all early representations of historical and mythological subjects; namely, that of a complacent smile, which lights up the countenance, however seriously or even savagely the person is occupied. This very curious characteristic of all very ancient sculpture will be further exhibited as our history proceeds. Numerous reliefs, and other objects procured from these excavations, are safely deposited in the British Museum; and they afford a most interesting illustration of the arts and habits of a nation whose history is connected with our most serious reflections. Nineveh, it is well known, was utterly destroyed so early as 606 B.C.; so that in these works, allowing for the time necessary for the execution of the latest, we contemplate productions of nearly three thousand years' antiquity. Some of them appear to have been executed at no very long period before the fall of this great city; for, from the inscriptions which have been deciphered, they appear to represent the history and actions of Esarhaddon, who succeeded his father Sennacherib. The latter was, as we read, murdered by two of his sons "as he was worshipping in the house of Nisroch, his god;" and "Esarhaddon reigned in his stead." Others are evidently of a more remote antiquity. The progress that is being made in conquering the difficulties of understanding inscriptions, in a language that has long been obsolete, is daily furnishing new and most valuable information respecting the subjects represented in these reliefs. The slabs are inscribed with letters or characters in close lines, which often pass entirely over the figures. The engraving does not, however, materially affect the sculpture in its general effect; while great advantage may be derived from this double mode of recording events, as each may mutually throw light upon the other, and thus enable scholars to define with greater accuracy the meaning of the whole series of illustrations.

Among the remains of art brought away from these excavations are many of undoubted Egyptian character. These may be considered as quite distinct from the pure or

true Babylonian and Nineveh type. That the sculpture and art generally of each people was influenced by their mutual intercourse may be accepted as a very probable and natural consequence; but a careful comparison of the character of form in the earlier works of both nations seems to exhibit peculiarities which indicate an originality of feeling in both schools; although in a certain quaintness, or primitive simplicity in the composition of the figures, there may be a resemblance between them. These Assyrian sculptures cannot be put forward as successful works of fine art. They are of a prescribed style and type; and though some are of greater excellence with respect to their execution than others, they are of a fixed and not progressive school of art. The superiority observable in some of them is of a practical kind; but there is little feeling for beauty, no improvement in the anatomical construction of the figures, as exhibited in the articulations of the joints, or knowledge in the arrangement and flow of drapery, or in the graceful composition of the groups of figures. Still, they are works of immense interest; and their recovery, after so many ages, is an event of great importance to us on every account. Chiefly they claim the attention of the scholar and the antiquary for the light they throw upon the long-lost history of one of the greatest nations of the earth; but these curious works will also suggest some very interesting subjects of speculation with regard to the influence they exercised on the sculpture of that remarkable people who, long after Babylon and Nineveh had ceased to exist, carried this art to its highest perfection.

It is much to be regretted that no ancient works of Phœnician art remain. It may be assumed, however, from their geographical position, and the constant intercourse that existed between the several nations which were located between the two great rivers of Assyria and the sea-coast, that such sculpture as they had must have partaken of the general character of the art above described. The enterprise and skill of the Phœnicians gained for them especial notice at a very early period. Homer speaks of the Sidonians as remarkable for their skill and ingenuity, and calls them *Σιδόνες πολυδαίδαλοι* (*Il.* xxiii. 743). A Phœnician artist of Tyre was selected to execute some of the most important works required for the temple built by Solomon. This king, we read (2 Chron., and 1 Kings vii.), applied to Hiram, King of Tyre, for workmen, and he sent him "a cunning man, skilful to work in gold, silver, brass, iron, stone, and timber." The temple was built about one thousand years before the Christian era. The position of the Phœnicians gave them the command of the commerce of the ancient nations, and they extended their dealings to the most remote known boundaries of the earth. There is no doubt that at an extremely early period they traded with the British Isles, and procured tin from Cornwall, the Cassiterides of the ancients; while the coast trade of all the nations of the Ægean and Mediterranean seas must have been in their hands. Tyre is finely apostrophized by the prophet Ezekiel with reference to its great commercial importance. He calls it "the merchant of the people for many isles;" "the ships of Tarshish," he says, "did sing of thee in thy market; and thou wast replenished and made very glorious in the midst of the seas." Carthage was a colony of Phœnicia; but although there are coins existing of this settlement, they are of too late a date to throw any light upon the true early art of their ancestors.

The history of sculpture receives little assistance from the remains of art found in Persia. There is no trace of any original design among them, and the earliest monuments bear so close a resemblance to those of Assyria, both in the character of the forms and in the types, in the arrangement of reliefs against the walls and entrances flanked by gigantic winged animals with human heads, and other peculiarities, as to leave no doubt of their derivation.

Sculpture. It is thought that the earliest existing remains of Persian art are the buildings of Persepolis, and that these are to be attributed to the date of Darius, or about that time. The art of the Persians has, however, some peculiarities that so far give it a character of its own. The processions of warriors, captives, tribute-bearers, and others, are in every respect similar to those found at Nimroud and Khorsabad; but while the Assyrian dresses show no movement or folds, the Persian work exhibits these accidents in the draperies. The conquests of the Persians over the Egyptians, and their intercourse with different parts of Asia Minor, would account for some slight changes in their art, but sculpture was never developed by the Persians into an art of beauty. Strong national prejudices prevented this, and led at one time to the destruction of the works of art they met with in other countries. Xerxes was instigated to destroy the temples in Greece, because it was urged it was impious to inclose within walls the immortal gods, whose appropriate temple or dwelling-place is the entire universe; and statues were defaced under the same feeling of religious prejudice. Under these circumstances, notwithstanding the great interest and importance that must attach to the history of this great nation, in its influence upon those countries with which it became associated, Persia cannot take the position of a school of sculpture in the sense in which that term may be applied to Assyria, Egypt, and various parts of Asia Minor, where the art had a distinctive character.

There is no temptation to dwell upon the sculpture of Hindustan or China. It affords no assistance in tracing the history of the art, and its debased quality deprives it of all interest as a phase of fine art, the point of view from which it is here to be considered. It must be admitted, however, that the works existing have a sufficiently distinct character to stamp their nationality; and although they cannot tempt the historian of art to dwell upon them, they offer very curious and important subjects of inquiry to the scholar and archæologist, who may trace their influence in regions where it is difficult to conceive these nations could ever have penetrated. The sculptures found in India, at Ellora, Elephanta, and other places, are of a strictly mythological character. They usually consist of monstrous combinations of human and brute forms, repulsive from their ugliness and outrageous defiance of rule and possibility. They are remarkable for their extent and their dimensions, many of the works being colossal; and they often are elaborately ornamented, the carving being very careful and minute. The striking feature in these works is that which pervades nearly all the monuments of the East,—vastness of scale, and a tranquil character of expression. Repose, unless in exceptional cases, where the actions of gods or heroes are being represented, seems to be the ruling sentiment of all early sculpture. The above remarks are intended to apply to the art of the Hindus. Of ancient Chinese sculpture much less is known, from the difficulty that hitherto has existed in penetrating into the interior of the country.

What has been observed above of Hindu and Chinese sculpture, in its relation to the history of the art, is equally applicable to the quaint and grotesque specimens that have been met with by modern travellers in some parts of South America. There is sufficient in their design and execution to make them objects of great interest to the inquirer into the early history of the localities in which they have been found, but they afford no indications at present to guide the archæologist in connecting them with the progress of art. They exhibit proofs of considerable facility in execution in the artists who produced them: an argument for their long practice; but of their real date it is almost impossible to form any acceptable conjecture.

The sculpture of the Egyptians, though it never reached the perfection the art attained in Greece, has great claims

on our attention. The extent of their works, in architecture, painting, and sculpture, of an antiquity so remote that it seems to defy research, and exhibiting at the same time all the characteristics of long practice, show that this remarkable people were an established nation at a very early period in the world's history. When Abraham visited Egypt he found there an organized form of government; and the most ancient sacred writings speak of the "wisdom of the Egyptians." These old traditions of the learning, the prowess, and the greatness of this people are daily receiving confirmation from the discoveries of modern travellers and scholars; but still it seems impossible to penetrate the darkness which obscures the earliest history of the nation. The dates of the foundation of some of their most celebrated cities, as Thebes and Memphis, can only be conjectured, no sufficient authority having yet been discovered among the monuments or inscriptions for fixing their precise era. The sculpture and other remains found at Karnak, a portion of Thebes lying on the Arabian or eastern side of the Nile, bear inscriptions in which is read the name of Osirtasen, who is said to have been contemporary with Joseph, about 1700 B.C.; and some of the ruins are believed to be of a date long antecedent to that king. Wilkinson (*Ancient Egyptians*, vol. i.) considers the pyramids to the north of Memphis to be the most ancient monuments in Egypt, and probably of the world, and thinks they were erected about 2120 B.C.

The characteristics of Egyptian sculpture are very peculiar. It exhibits extreme simplicity of design, great breadth of treatment, to the exclusion generally of minute details, and a solid largeness of form. There is little or no variety of expression in the heads, especially of the superior personages represented: a benignant, placid smile appears on all the countenances. Where dress is introduced, there is no composition of drapery in the way of movement, nor any indication of folds. The action of the figures, however important or exciting their occupation, is limited by the most severe conventionalism. If sitting or standing, they have the legs parallel, the arms close to the sides, while the heads always look directly in front. Our national collection of antiquities boasts some extremely valuable examples of Egyptian sculpture, and the student may easily consult original specimens, by which he may become acquainted with the style of art of this extraordinary school. Considering the great antiquity of the Egyptians, and their long duration as a nation,—taking into account, too, the various fortunes of the country, both from their own conquests and from the invasion of foreigners,—it is remarkable how little change occurred in the leading characteristics of their art. Whether the monuments be of the most remote archaic period, or of the more recent ante-Roman time, no sufficient alterations were introduced to destroy that peculiar and distinctive character which stamps all Egyptian art with its national individuality. Certain antiquaries have attempted to define marked epochs in the history of Egyptian sculpture; but, though certain changes may be detected in the mode of representation in monuments attributed to different dynasties, they do not afford sufficient authority for anything like a strict chronological classification. From the high finish and more careful execution of the works of the time, it is thought that the national prosperity, and therefore the condition of art, were highest during the reign of Rameses, about 1350 B.C.; and, judging from other remains, that the country and its art were most depressed from the date of the Persian conquest; that is, from 525 to about 414 B.C. Of the latter fact there cannot be any doubt; and although the nation freed itself after a time from the hateful rule of Persia, Egypt never again recovered its ancient renown, nor did she long retain her national independence.

The attachment of the Egyptians to that peculiar style

Sculpture. which has made their art so remarkable, may be traced to the same influence that was exercised on all the earlier nations where sculpture was employed for religious purposes. It was a means of direct appeal to the prejudices and the understanding of the people, and, as such, was used and controlled by the ruling powers. This power was exercised in Egypt by the hierarchy, and, as the kings or Pharaohs were also priests, all the acts of the sovereign were associated in the public mind with sacred influences. Thus the conquests of the king in battle, the submission of foreign nations, the paying of tribute, the execution of prisoners and captives, were all represented in their sculpture and painting, with the accompaniments of overruling divinities, either expressed in form or implied in emblems. The decorations of tombs were also equally associated with these feelings; and the solemn, colossal statues of lines of kings, attended by the most sacred symbols of their mythology, made the most profound impression upon a population which, from its earliest infancy, had been educated to believe in the divine appointment of its rulers. In art, then, the priesthood permitted no innovations; and the division of the population into castes or callings secured among the artists, who no doubt were especially attached to the sacerdotal institutions, a strict conformity to established types. According to a passage in Synnesius, the profession of an artist was only allowed to be exercised by persons properly qualified, lest, in ignorance, they should transgress against the old laws which regulated the representation of the gods and sacred subjects. Plato also says the artists were not allowed to innovate; "hence the art remains the same, the rule of it the same." This, then, may be taken as the real cause of the long duration of Egyptian art under its peculiar form or style. Some stress has been laid on the recorded fact, that the Egyptians were ill-favoured in point of personal attractions; and that they were without the advantages enjoyed by the Greeks, of having public games and exercises. But even if these statements of the want of beauty among the general population are trustworthy, they are insufficient to account for the stationary condition of their sculpture. The true ground of the unprogressive character of their art, as regards its style, is found in the nature of their institutions. That the Egyptians were not incapable of conceiving an *ideal* of beauty, is shown in some of the heads of colossal and other statues that have reached us, where, within the limits to which we have adverted, a very decided character of beauty of expression, and even of form, is met with. No better example of this can be found than in the head, in the British Museum, of the (so-called) young Memnon; but which, more probably, is a portrait of Rameses II.¹

The Egyptian artists employed every available material for sculpture, with the exception of iron. For colossal works they used basalt, porphyry, granite, lime and sandstone, alabaster and wood; for smaller works, ivory, alabaster, and various metals. Clay was also extensively used, baked, and covered with a peculiar vitrified varnish, which was burnt into them. Figures, and animals, and other objects, worn as amulets, or used as lares or household gods, executed in this material, abound in all collections of Egyptian antiquities. The remarkably clean and finished execution observable in Egyptian sculpture in the hardest materials—basalt, granite, or of other substances most diffi-

cult to deal with—has always excited the attention of the curious, as a proof of the wonderful proficiency of this people, even at a very remote date, in some of the processes of handicraft, and especially in the hardening of the metals of which their tools was made.

With respect to the origin of the nation, and of the character of its religious sculpture, it is almost useless to offer any conjecture. Such authority as can be derived from analogy, from indirect testimony, and also from great care in examining the peculiarities of their monuments, would strengthen the belief that the grand and simple scheme of their art, as it is exhibited in the massive architecture of their temples and other public works, and in the colossal scale and severe tranquillity of their statues, claimed kindred with the Asiatic nations. The most important settlement of the Egyptians seems to have been in the Thebaid or Upper Egypt; and it is supposed that civilization advanced northwards from thence. To the south was the country called in the Scriptures and in the Egyptian language the "foreign land of Cush;" and its natives, with whom the Egyptians were constantly waging war, are generally represented in the monuments as captives or as bearers of tribute to the Pharaohs. They were a black people, and of distinct physical character from the Egyptians; and, as is proved by the difference in the form of the skull of the two nations, of a totally different race. Without speculating upon the origin of the more civilized and intelligent people by whom the inhabitants of Upper Egypt were eventually subdued, the above simple facts are sufficient to establish the belief in the colonization of the Thebaid by a foreign, and, in all probability, an Asiatic race.

The next school of sculpture which demands notice in the history of the art is the Etruscan. Of the earliest inhabitants of this portion of Italy nothing is certainly known, though the subject has occupied the attention of the learned of all times. The architectural remains which are found scattered about that which was considered Etrurian territory, are evidence of a very remote antiquity, but no examples of imitative art can be assigned to the earlier period of the existence of this people. Whether the first colonization was from the east or from the south, from Phœnicia, from Asia Minor, or from Egypt, it is at present impossible to determine. The colossal character of construction, observable in their building of the Cyclopæan walls, still remaining, is characteristic of the earlier erections of all these nations. In the greater part of the works in sculpture that have reached us there is undoubted evidence of Greek influence, though in the style there is an exclusive and individual character; but it must be admitted also that there are examples of sculpture as well as of painting in tombs, evidently of a very remote antiquity, and that appear to be quite original in their subjects, and, as far as we can judge, totally independent of Greek fable and mythology. It has been a common error to suppose, because the earlier works of different countries show considerable resemblance in their forms, that it is an indication of their derivation from a common source, and the more archaic sculptures of Greece and Etruria have been frequently confounded, from the supposed similarity of style; when, after all, as has before been observed, this is only the common, characteristic of all art in its first stage. This fancied resemblance to some of the Egyptian figures led at

¹ As reference has been made to the collection of Egyptian antiquities in the British Museum, it may be useful to those who desire to study the sculpture from the original monuments, to point out the grand divisions of the arrangement in these galleries. The northern gallery and centre contain the sculptures of the 15th dynasty, which comprehends the most splendid epoch of Egyptian history. It is the era of Rameses, who appears to have been the Sesostris of the Greeks. These works are of the fourteenth century B.C., and there are others of older date. But little change, if any, was made during the Persian rule in Egypt. In the southern gallery are deposited works of this period, and of the Græco-Macedonian period, after the conquests of Alexander the Great and the succession of Ptolemy Soter, 323 B.C. Afterwards commence the sculptures of the Roman period, after the capture of Alexandria by Augustus, 30 B.C., extending down to the Mohammedan invasion, 640 A.D.

Sculpture. one time to the belief that the Etruscans derived their art from Egypt.¹ Considerable variety will be found in works of the Etruscan school. In some examples the forms are undefined and very simple, and the accessories, as the hair and draperies, arranged stiffly, and in regular lines, bearing in these respects considerable resemblance to the works of the Persians above described. In others there is an exaggeration and affectation entirely distinct from anything found in the contemporary art of the time, excepting, occasionally, in the early Greek vases; a circumstance which might seem to indicate a connection at this period of their history with this nation. The peculiarity referred to is especially indicated in the hands, where the fingers are turned back in the most unnatural manner. The prevalence of a marked style in the Etruscan sculpture may be attributed to the same causes which, it has been shown, influenced Egyptian, Assyrian and, as will be seen, early Greek art. Their rulers, the "Lucomones," were priests as well as governors; and no doubt religious feeling consecrated certain forms, and prevented changes which might have been considered in the light of profane innovation. A distinction must, however, be drawn between original Etruscan works,—that is, the production of native Etruscan artists,—and works in the Etruscan style; a mode of treatment that was retained by the admirers or followers of this school long after the date of the true and original art of Etruria. It was a style particularly distinguished by the Romans, and called by them "*tuscanicus*," as applied to art; and it was not necessarily confined to works executed by native sculptors. All productions which exhibited the hard and dry manner of the earlier Etruscan school gained the title of *Opera Tuscanica*. There is a passage in Quintilian which affords an interesting illustration of this classification of style, when he is speaking of the (technical) character of the works of some of the more celebrated Greek sculptors of the fifth and sixth centuries before Christ. Callon and Egesias, he says, executed their statues or productions in a harder style than some other artists referred to, approaching very near to the Tuscan or Etruscan forms; Calamis, again, was less rigid.² It may be remarked, generally, that the works of the Etruscan artists are deficient in beauty. They have not even that simplicity and repose which, in spite of its deficiencies in other respects, give a certain air of dignity to Egyptian sculpture; still less is there any attempt at or approach to the fine forms of Grecian art.

Some Etruscan works have been found to differ considerably from the usual productions of this school, and from the style particularized in the foregoing remarks. This is especially observable in the compositions in painting and sculpture that have been discovered of late years in certain tombs of Volterra and other Etruscan cities. The sculpture in these consists of semi-recumbent figures reposing on sarcophagi. They vary in size, some being as large as life, others of small dimensions; and they usually form the top or lid of the coffin, or receptacle in which the remains of the deceased were deposited. In these statues we no longer recognise the ordinary Etruscan style; and yet they have been found in localities and bearing inscriptions which would appear to carry them back to a very remote date. The forms usually are clumsy, and they are loaded with full and heavy drapery. The heads, again, are peculiar. They often have all the character of being portraits, and sometimes they are pleasing in expression, and even exhibit an approach to beauty. The first impression they convey is, that they belong to a low Roman school of art, to which

indeed some antiquaries have unhesitatingly assigned them. **Sculpture.** There are, however, difficulties in the way of coming to a conclusion upon their date and origin. There is no doubt that the tombs of Etruria were opened and, in many instances, plundered in ancient times; and it is extremely probable that they were used also as depositories for the dead by a people who were in possession of the country very long after the date of their original constructors. Objects have been found in some of these tombs evidently of various ages; a proof of their not being in their primitive integrity when opened by more recent antiquaries. From these circumstances, it becomes exceedingly difficult to define the precise age of the works that occasionally are found in them; and where inscriptions of an ancient character occur upon sculpture that exhibits indication of the decadence of art this difficulty is of course greatly increased.

The foregoing rapid survey of sculpture has been rather a notice of an universally practised form of record than a history of a refined art, requiring the exercise of the intellect and the hand, and having for its office to express elevated sentiment, or to illustrate noble subjects under appropriate forms of beauty. Important in other respects as was the employment of sculpture among the most ancient nations, and valuable as are the monuments that time has left us, it was not till the Greek mind perceived its capability of development that the entire value of the art was recognised as a means of physically illustrating the perfection of nature's noblest work. It strikes us now with wonder and astonishment that so long a period could have elapsed between the first invention and rude practice of sculpture, and the perfection it was destined to reach among the Greeks. Sicyon was founded above 2000 years B.C., Argos 1856 B.C., and yet it is not till between 700 and 600 B.C. that those first changes are perceived in the style of art practiced in that region of the world, which then led so rapidly to the consummation of sculpture in the great schools of Myron, Phidias, and Polycletus, in the time of Pericles.

The Greeks were subject to the same obstructive influence of the priesthood as other nations whose works have been referred to, and there can be no doubt that for a considerable period this power of preventing innovation in sculpture intended for religious purposes, as statues in temples, or votive offerings, held its sway, and retarded the progress of the art. But there seems to have been one established quality in the Greek mind which, independently of other circumstances, necessitated, if it may be so said, the development of an imitative art to a condition of high excellence. This was its sensibility to beauty. Some writers, in endeavouring to account for the superiority of the Greeks in art, have thought it attributable to climate, to the government under which they lived, to the beauty of the people, or other external causes; but in considering the history of the several schools of Greece, it will be found that none of these existed universally in any of the localities where sculpture was most successfully practised. Attica, the home of the fine arts, had a climate of great inequality. In some parts there was the greatest luxuriance of vegetation, while in others the soil was ungrateful, naked, and barren. In personal beauty Athens held no decided superiority over other cities, and yet the Athenians were distinguished beyond all others for their productions of art. It certainly is curious that not one of the women whose celebrity for beauty has come down to us was a native of Athens.

¹ Cicognara very properly remarks,—"*La supposizione che gli Etruschi traessero dagli Egizii le loro arti e il loro disegno è priva di fondamento, poichè, come avvertì il Lanzi, la rigidità e il rettilineo dei segni non hanno bisogno di venirli dal Nilo, e nei principii delle arti presso tutte le nazioni si vede lo stesso carattere, essendo quello stile non tanto arte quanto mancanza di arte.*" (Cicognara, *Stor. della Scultura*, vol. i.)

² *Duriora et Tuscanicis proxima Callon et Egesias; jam minus rigida Calamis*, &c. (lib. xii. 10).

Sculpture. Phryne was of Thebes, Glyceræ of Thespiæ, Aspasia was born at Miletus, Laïs at Hyccara in Sicily; and when Zeuxis the painter was occupied upon his famous picture of Venus, it is recorded that he studied the beautiful forms of seven virgins of Crotona. It is worthy of remark that Cicero, speaking of the youths he saw at Athens, says he observed few who were handsome. (*De Nat. Deor.* ii., c. 79.) It is not intended to deny the existence of beauty among the Athenians, but simply to point out that their exclusive possession of it was not necessarily the cause of their success in sculpture. Indeed, the Lacedæmonians, whose admiration of beauty is especially remarked by Ælian (*Var. Hist.* xiv. 27), proscribed the practice of sculpture and the fine arts in Sparta. Nor will the form of government account for the excellence of this people in the arts of design. The most different political conditions existed where the arts flourished, as was the case at Corinth, at Athens, and Sicyon. The aptitude of the Greeks for excelling in the fine arts is then to be sought for in causes different from, and independently of, the above. It is more probable that it was owing to the peculiar constitution of the Greek, one of whose prominent features was an extreme sensibility to beauty. It was the development of this feeling that established a principle upon which their imitative art was founded, and which led necessarily to its excellence. Why the Greek was the first to feel this power, and how he was led to break through prescriptive forms in expressing it in art need not now be discussed, but the fact is indisputable. He recognised sculpture as an imitative art, and his acute and sensitive intelligence taught him that it was capable of improvement from the old types if that upon which it was founded, namely Nature, was carefully studied and copied. This was the secret of the superiority of the Greeks; and their selection or choice of what was most fit to be copied led to the perfection of their sculpture, and to the establishment of what has been called in art-language, *ideal* Beauty.

It has been observed that the Greeks seem to have had an intuitive perception of the beautiful; that they sensibly appreciated it is proved by many curious facts. Allusion has been made to the admiration felt for it among the Lacedæmonians (*Athen.* xii. 12). In other parts of Greece the same feeling existed. The priests of the temple of Jupiter at Ægium in Achaia, were youths who had received a prize for their personal beauty. The same distinction marked the priests of the Ismenian Apollo; and the boys who took part in the procession in honour of Mercury at Tanagra, were also chosen for the possession of this quality. (*Paus.* ix. 10, 22; vii. 24). The Thebans had a law which subjected artists to a fine if they represented objects less beautiful than they were in reality (*Ælian Var.* iv. 4; and see *Junius de Picturâ veterum*, and Lessing, "Laocoon"). It is remarkable how strictly the artists seem to have been bound by this principle not to represent repulsive subjects, nor indeed to express any passion or feeling under forms that were incompatible with the laws of beauty. The habits of the Greeks fostered this appreciation of the beautiful. The mode of life of the people, and the constant occurrence of public exercises, taught all classes to be judges of the human figure. The gymnasia, or schools for training for the games, were universally frequented. The public found there their rulers, statesmen, philosophers, poets, and artists taking interest in the exercises; and thus all were accustomed to see the human form in its highest condition, whether in action or repose. The education or training of young men who intended to take part in the great contests for prizes, was also a subject of the greatest care. The fullest development was given to the muscles, and constant practice prepared them for those trials of agility and strength which were witnessed by the eager multitude of all classes, and

from which the successful candidate issued not only a **Sculpture.** crowned victor but the subject of the poet's noblest odes, and of the sculptor's art. The highest honour that could be awarded, and this was only granted to those who had been conquerors a certain number of times, was to be allowed to dedicate an Iconic or portrait statue, representing the fortunate candidate, in the Altis or sacred grove, near the temple of the Olympian Jupiter. These statues were seen by the crowds who assembled periodically to witness or take part in the games; and thus was the memory of the prowess or agility of the individual perpetuated constantly inciting others to deserve a similar distinction. The opening afforded by this custom for the exercise and improvement of sculpture is obvious. These statues were portraits of the individuals who had gained their crowns by the exhibition of their superiority in certain exercises. Thus the sculptor found in the successful wrestler a peculiar development which was evidence of strong physical power; in the victor in the foot race the clean limbs and light proportions which enabled him to outrun his competitors; while the combination of similar qualities of strength and lightness gave the type of the general athlete. Here, then, are seen the elements of those fine creations which have stamped Greek sculpture with its enduring character of excellence. From such studies were produced the statues of Hercules and others of that class, or those of the light and active Mercury, or, again, the Discoboli and similar productions; and from the skilful application of the principles discoverable in such forms, the whole class and variety of ideal subjects, either of sublimity or beauty, in the statues of divinities and heroes had their existence. The noble objects to which sculpture was thus applied, to do honour to worth, and to decorate the temples of the gods, gave a dignity to the art, and an honourable character to the pursuit, while the recognition of the principle, that an imitative art was constantly to aim at reproducing and repeating the finest forms which were presented for its guidance, led to its perfection as an objective art. It was precisely this union, which had not before been established by any nation of artists, which gave to Greek sculpture its extraordinary excellence; and it may be said has maintained the superiority of Greek art through a long succession of ages. No mechanical copying of Greek statues, however skilful and however zealous the copyist, can ever secure for modern sculpture the same noble and effective character it possessed among the Greeks, for the simple and intelligible reason that the imitation, close as may be the resemblance, is but the result of the eye and hand, while the original was the expression of a true and deeply-felt sentiment. Another circumstance highly conducive to the progress and development of art must also be taken into consideration. This was the general appreciation of sculpture among a whole people sensitively alive to beauty in all its forms. Art was not here sustained by the patronage of the few who, having, or affecting to have, what is called *taste*, bought the services of the sculptor, and paid him to decorate a gallery by order. In Greece the artist, himself a Greek, having a common feeling for the beautiful with his countrymen, produced his works for the public; they were to be erected in places of honour, to be dedicated in the temples of the gods, and no small motives influenced his labours. These were the conditions which carried the art to its highest perfection. When they were invaded, and the objects of art lowered to suit a change of feeling sculpture, as will be seen, immediately began to show symptoms of decline.

The history of the earlier settlements in Greece is involved in so much obscurity, that it will scarcely answer any useful purpose here to attempt to penetrate it. We must be satisfied to trace, so far as is practicable, the first germ of art, and to follow it in its various phases from its rudest

Sculpture.

condition to its perfection, and then to its extinction. The earliest records which can be at all associated with sculpture, or as the elements of its creation, were as simple among the Greeks as with other nations. Columns and blocks of stone were the primitive types under which they worshipped their divinities; and as late as Pausanias, A.D. 170, some of these were to be seen in different parts of Greece. This traveller speaks of seeing some at Pheræ in Achaia. It is recorded that Juno at Thespiæ, Diana Patroa, and the Milichian Jove at Sicyon, and even the Venus of Paphos, were thus represented. The addition, by degrees, of heads, and then of feet and hands, the latter close to the sides, and the legs united like columns, formed probably the earliest attempt at giving such objects a human form. These speculations are, however, but vague, and it would be difficult to attribute dates to such early attempts at imitative design. In this respect, in the very infancy of art, the mode of representation was doubtless very nearly the same wherever it was attempted at all.

In tracing the later history of sculpture among the Greeks, certain changes mark distinct epochs in the progress of the art. Four principal periods may thus be distinguished, each characterised by striking peculiarities of style or treatment.

The first may be said to comprehend all that uncertain age of which no reliable record remains, and of which our only knowledge is in the traditions preserved by ancient writers down to the period of the first art-movement exhibited in the archaic-movements of the Eginetan school, at about 600 B.C. The second period extends to the perfection of sculpture, by Phidias and his contemporaries, at from 450 to 400 B.C. The third period includes the practice of the art from this time to about 250 or 200 B.C., when the more voluptuous execution and style of design of Praxiteles and his scholars, and of Lysippus and his followers effected a most important change in the condition of the art. The fourth and, in this comprehensive summary, the last period of true Greek sculpture is that of its decline, under mere imitators or bad innovators; when manner took the place of style, and when that pure simplicity and noble grandeur that had hitherto characterized sculpture were superseded by minute details, mechanical and tasteless execution, and by littleness and poverty of treatment.

In the earliest attempts in sculpture among the Greeks there is a distinction discernible which separates them from those of other nations, and a skilful antiquary will rarely have any difficulty in deciding whether or not the most archaic specimen submitted to his judgment be of this people or of any of the more ancient races who practiced the art. It is true the sculpture of the archaic period offers but little that is attractive to the admirers of the beautiful. Rude and clumsy in form, stiff and limited in action, there is nothing in these respects to elevate them above the earlier productions of other nations. The first improvement was in the attempt to give fuller action to the figures, and this led immediately and necessarily to a more careful consideration of form and knowledge of parts. The characteristics that are here most striking are exaggeration. The action is usually violent and energetic, and the forms are over-developed, full, and charged. The proportions are wide compared with the length of the figure. The treatment of the head in sculpture of the earliest period offers also some remarkable peculiarities. The eye is usually long and narrow, and slightly raised at the outer extremity, and the mouth is open with a smiling expression. The execution of the hair varies at different dates and in different schools. On some of the most ancient coins it is wiry, and in close parallel lines; in other examples the hair is represented in masses, in lumps or knobs. In male figures the beard, and other hair is marked by elaborate care. The drapery

in early sculpture is usually extremely scanty and thin, lying close to the figure, and scarcely showing any fullness or variety except at the edges, which are sharp and angular. The folds are for the most part arranged with mechanical precision; opposite folds corresponding, line for line and angle for angle, with each other, and exhibiting at their termination a regular zig-zag. For examples of the peculiarities above noticed, the student may examine the early tetradrachms of Athens, the early coins of Oreste and Pellene, the coins of Posidonia, the heads of the statues found in the island of Ægina, and the sculpture from Selinunte in Sicily. The British Museum possesses most interesting monuments of these earlier schools, and in the absence of the original works casts from the Selinuntine and Eginetan sculptures may be consulted with advantage. Lately some very curious and interesting monuments of the archaic type have reached this country from Branchidæ in Miletus. Whether they really are of the remote date their general style suggests, or are ancient imitations of an earlier school of sculpture, executed to complete some grand design, for they appear to have formed a portion of an avenue of sitting statues leading to the temple of Apollo Didymæus, may be a question for antiquaries to determine, but they are extremely valuable as examples of the peculiarities of early execution.

The earliest names that occur of sculptors belonging to the Greek school are Dædalus, Smilis, and Endæus. The difficulty of giving anything like precise dates to the first artists who are recorded has already been adverted to, and with respect to Dædalus, especially, this difficulty is the greater because there is every reason to believe that it was a common appellation given to many persons remarkable for skill and ingenuity. The Dædalus usually considered as the first rightful owner of the name is said to have been of a royal race; the grandson of Erechtheus King of Athens. He was the inventor of various mechanical instruments, the lever, the saw, &c.; and as a sculptor was the first who ventured upon the innovation of separating the legs and arms of figures from their former stiff attachment to the body. Pausanias (ix. 3, &c.), says "the ancients called wooden figures *Δαίδαλα* (Dædala);" and he adds that it is probable the artist was named after his works rather than by his own name; thus making Dædalus a title or distinctive appellation from his skilful accomplishments. Pausanias was shown some wooden figures said to be by Dædalus. He declares there was a certain air of grandeur in them, but no beauty. If so, it could only have been from their size, unless his feelings of veneration for their great antiquity gave them sublimity in his eyes. Smilis was a native of Ægina. He was the author of a statue of Juno at Samos. Endæus was an Athenian, and scholar of Dædalus. Pausanias (vii. 5) records a colossal seated statue (of wood) of Minerva Polias, by this artist, which was in the temple at Erythræ in Ionia. He is said also to have executed works in stone and ivory. The accounts of works and of artists of this remote period are of course very vague.

Phido of Argos, about 800 B.C., is said to have struck the first money in Greece, in the island of Ægina. Some extremely rude coins of that island, having for a device a tortoise, are extant; and from the very primitive style of their execution, they have been thought to be not very remote from the period alluded to. At this time mention is first made of statues in metal. Gitiadas, some of whose works Pausanias saw (iii. 17), and Learchus, of Rhegium, are mentioned among the earliest artists, and the above writer speaks of a bronze statue of Jupiter at Lacedæmon, which was said to be by Learchus, as the most ancient statue in that material known to exist. The date of Learchus has been a subject of considerable difficulty with antiquaries, but it is probable that he lived about the time

Sculpture.

Sculpture. here stated. The next names that occur are of importance in the annals of Greek sculpture,—these are Telecles, Rhœcus, and Theodorus. Their reputation was so great that they had the credit of inventing many processes of art which it is obvious must have been known before their time; such, for instance, as the plastic art, or modelling. This is recorded by Pliny (*Hist. Nat.* xxxv. 12), though he himself tells us in another place its discovery was attributed to Dibutades of Corinth. This simple art was of course known at the very earliest period, long before either of these artists appeared, but it is probable they were the authors of many improvements by which sculpture was greatly advanced. Rhœcus and Theodorus were natives of Samos. The latter name was borne by two sculptors, one the son of Rhœcus, the other of Telecles. Herodotus (iii. 60) says Rhœcus, who was an architect as well as statuary, built the temple of Juno at Samos; and he is referred to as the author of a statue called Night, preserved in the temple of the Ephesian Diana. Pausanias says he was unable to find any work of Theodorus. Pliny mentions several that were attributed to him. The son of Telecles was considered the inventor of casting in iron. Herodotus (iii. 41), records that Theodorus engraved the celebrated ring which Polycrates, the tyrant of Samos, threw into the sea, and so marvellously recovered. The king, who had enjoyed a long course of uninterrupted prosperity, determined to make some sacrifice to prove his equanimity. Among his most highly-valued treasures was this ring, and he voluntarily parted with it, casting it himself into the sea. His good fortune still, however, attended him, for in a few days a large fish that had been taken was presented for the king's acceptance, and upon opening it the much-prized ring was found in its belly. Theodorus is also said to have made a magnificent vase that was dedicated at Delphi by Cræsus, King of Lydia; a circumstance that has led to the belief that Theodorus lived at a later date than that usually assigned to him. It is possible, however, that the vase presented by Cræsus may have been among the treasures of the king, a carefully-preserved work of an older age, and from its value and the fame of its author, a worthy object for the purpose to which Cræsus applied it. Pliny says these artists lived long prior to the expulsion of the Bacchiadæ from Corinth. This occurred about 659 B.C. It has therefore been conjectured that Rhœcus and the two sculptors named Theodorus must have flourished between 800 and 700 before our era. Dipænus and Scyllis, who are supposed by some writers to have lived at this remote date, were considered the founders of the school of Sicyon. They had many scholars, among whom appears Learchus of Rhegium before mentioned, and which will account for the early date given to these artists. It has been said of them they were the first who employed marble for sculpture; but the expression of Pliny (xxxvi. 4), upon which this opinion has been formed, more probably means that they were particularly distinguished in working in that beautiful material. Dipænus and Scyllis were employed to make some statues of the gods for the Sicyonians; but owing to some offence received, they quitted Sicyon, leaving the statues unfinished. A famine soon after afflicted the country, and the oracle declared it would not cease till the statues of the gods were completed. The sculptors were prevailed upon to resume their work, and the statues of Apollo, Diana, Hercules, and Minerva, were finished by them. Among their scholars are Tectæus and Angelion, Doryclidas, Dontas, Medon, and Theocles. (Paus. ii. 32; iii. 17, &c.) Some writers have imagined that these eminent sculptors lived as late as 540 B.C. Flaxman (*Lect.* p. 75-79) considers the older date the more probable one.

From the most archaic period to about 600 B.C., there probably was but slight change as regards style in sculpture, though no doubt improvements were effected in some of the

executive processes. At the later date referred to, a great **Sculpture.** step was made in the art; and it will be seen that from this time, from 600 or 550 B.C., the advancement of sculpture was continuous and rapid to a degree that is perfectly surprising.

Before proceeding with the consideration of some of the more interesting of the earlier monuments discovered within the present century, attention may be directed to the ancient lions over the gate of Mycenæ, supposed to be the oldest example existing of Greek sculpture. The work is in stone, in high relief. The two lions are represented, on their hind legs, with the front feet resting on the shaft of a column standing between them. Pausanias (ii. 16) says this was reputed to be the work of the Cyclops. The statues from Branchidæ have already been referred to for the peculiarities they exhibit of archaic design. It remains to mention the very interesting archaic sculptures discovered in Lycia in 1842-7, and now deposited in the British Museum. The statues and reliefs in this collection are of different periods, down to a comparatively late date, but the slabs on the tomb (called) of the Harpies, and some few fragments of draped statues, are of the most ancient type; curiously illustrating the infancy of Greek sculpture, and its distinctness of character from that of any other people.

In alluding to certain characteristics of archaic treatment in style, especial reference has been made to the sculptures of Selinus and Ægina. The first consist of some fragments of metopes from temples discovered in Sicily in the year 1823. One represents a portion of a combat between a warrior and a female. Three others, from another temple, are of historical or mythological subjects. The art of all these remains is very rude, but extremely curious and interesting, especially with reference to the growing change in sculpture. The proportions of the figures are short. The waists are remarkably contracted, and the heads, thighs, calves, and feet large and heavy. The legs and feet are represented in profile, though the figures are fronting the spectator. The execution of the hair is formal, being long, and falling over the shoulders. It is also in some of the figures plaited. As usual in archaic design, all the figures, whatever their occupation, appear to be laughing. There is a total absence of beauty in all these sculptures. In the head of the fallen warrior some exceptional peculiarities will be observed, which seem to refer to a higher school of art than the others. So strong a resemblance appears in it to some of the heads of the Æginetan sculpture that it might be fancied that a portion of these works may have been superintended by artists from that rising school, while others may have been the productions of native artists. The date of these interesting monuments may probably be reckoned at about 600 B.C. The originals are in the Museum of Antiquities at Palermo, but casts from them are deposited in the British Museum. Selinus was founded about 620 B.C., and though it was taken and sacked by the Carthaginians, was not finally destroyed till about 270 B.C. The above sculptures may be referred to an early period of its history; and the student of the history of the art will be struck with the link they form in the progressive changes which begin now to mark the development of Greek sculpture.

The remarkable series of marble statues that form the Æginetan collection of sculptures, of which also we only possess casts, was discovered in the year 1812 in the island of Ægina. They decorated the two pediments of a temple dedicated to Jupiter Panhellenius. They consist, in addition to numerous fragments, of sixteen statues, of which eleven belonged to the western pediment and five to that at the eastern end of the temple. The first eleven appear to complete the composition required to fill the space, and are therefore considered to be the entire number originally intended on that side. The eastern end is of course very deficient. The subject of both is a combat; and in the more

Sculpture. extensive series Minerva appears in the centre as the presiding power. She is of somewhat larger proportions than the combatants, and is raised on a step or plinth. The goddess is fully armed, with her helmet on, and on her left arm is a large circular shield. In her right hand, which was bent towards her front, was in all probability a spear. Her ægis covers her bust; the edge of it shows the winding bodies of the snakes, and these terminate in small points or tails, which were formed of metal. The figures extended on either side of the centre are engaged in battle; some are in violent action, some wounded and dying. It is remarkable that the figures of the eastern pediment are of a larger scale than those of the western side.

These sculptures offer many points of great interest to the student of the history of Greek art. Their general style may be classed as archaic; but there are peculiarities even here that show the commencement of an important movement. The statue of Minerva is of a much more ancient or rude style than the rest of the figures, from which two important conclusions may be drawn:—*First*, that although all the statues are unquestionably of the same date, there was a style of art known superior to that sometimes practised; and, *secondly*, that in the statues or representations of divinities, the sculptors were under some obligation to conform to prescribed rules. While the combatants exhibit every variety and generally entire correctness of action, the goddess is stiff and primitive, and stands with both feet turned in the same direction, sideways, in an attitude of difficulty and insecurity. In the other figures there is considerable display of knowledge of form, and an approach to broad treatment in the execution; and though the details are not yet equal to the excellence of the subsequent school, there is a fine feeling for proportion, and an agreeable and harmonious balance of parts. Yet here again the archaic element steps in in the character of the heads, which exhibit all the peculiarities of the more ancient types before referred to. However earnestly engaged, and even when wounded and dying, each has a smiling expression; the mouth being slightly open, as though each figure was occupied in the most pleasing manner. The hair is worked with the utmost care, in small curls and knobs, in the manner before described. The execution of these sculptures may be attributed to the age immediately preceding the time of Pericles. The originals in marble are at Munich, but there is a fine set of casts from them in the British Museum.

Before entering upon the sculpture of the great period referred to, a few remarks may advantageously be offered upon the schools and artists immediately preceding. The most celebrated of the former were those of Sicyon, Ægina, and Corinth; and from about 500 B.C. the succession of the sculptors and the changes each effected in the style of his art may be traced with some accuracy. Callon was one of the most celebrated of these, but his precise date is uncertain. After him appear Onatas and Glaucias. The former was both sculptor and painter, and Pausanias describes many of his works (Paus. vi. viii. ix. x.) Amongst these were several of bronze; some of colossal dimensions, and others of ordinary scale. At Pergamus was a colossal statue of Apollo; at Olympia a colossal Hercules, also one of bronze dedicated by the Thasians; also at Olympia a statue of Mercury, placed there by the people of Pheneos; a statue of Ceres and others. Onatas executed some works in connection with other sculptors: Calliteles, for instance, assisted him with the above-named statue of Mercury. In another work, a chariot with accompaniments, dedicated at Olympia, we find him associated with Calamis; and in another with one Calynthus. Pausanias also states that certain of his performances in the sister art were preserved in the temple of Minerva Aræa. It is curious and interesting to find ancient writers illustrating another art,

that of oratory, by a reference to peculiarities in the practice of sculpture; by which we not only acquire some valuable information upon the subject of change and progress already adverted to, but are furnished with an important list of names of successive ancient sculptors, by whom these changes and improvements were effected. Cicero (*De Clar. Orat.*) says,—“*Quis non intelligit Canachi signa rigidiora esse quàm ut imitentur veritatem? Calamidis dura illa quidem, sed tamen molliora quàm Canachi; nondum Myronis satis ad veritatem adducta, jam tamen quæ non dubites pulchra dicere,*” &c. &c. We have already seen that Quintilian in the same way characterises the difference of style of artists of this transition period, where he says,—“*Duriora Callon atque Egesias; minus rigida Calamis,*” &c. These notices are extremely valuable. They carry sculpture through various phases, out of the early archaic manner, into the more perfect school of which Polyclethus and Phidias were the great ornaments. Cicero, in continuation of this review, says of the works of the former, “*Pulchriora etiam Polycleti (signa or opera) et jam planè perfecta;*” thus bringing us through a series of changes to the highest perfection of the art.

A list of names of the eminent sculptors who now crowd the scene, though of great interest to the antiquary, would occupy much space, and would convey but little information upon those points which are important to our history.

There is one, however, noticed in the above series upon whom a few remarks may be made, as we possess in our national collection an antique copy of an undoubted work of the master. This is a statue of a “Discobolus,” or quoit-thrower by Myron. Lucian and Quintilian describe the original, which was of bronze; and the copy we refer to, one of three known to exist, bears out the criticism that is come down to us. The statue is full of action, even to exaggeration, and the style of form and execution associates it with the known date of its author. The ancient comment on it expresses the judgment of the writer:—“*Quid tam distortum et elaboratum quàm est ille Discobolus Myronis,*” &c. Myron and Polyclethus were rivals in bronze works, and we read that they had their preferences for the kinds they used. Polyclethus employed the bronze of Ægina, Myron that of Delos (Plin. *N. H.*) Myron was an Athenian and a pupil, together with Phidias and Polyclethus, of Ageladas. He is said to have introduced a greater variety in his art than those who preceded him; but Pliny says he was not considered successful in expressing sentiment or passion, and that in his style of treatment there was still much of the stiffness of the early schools.

We are now struck with the importance that was beginning to be attached to particulars and details in sculpture; that is, in expression and peculiarities of treatment, apart from the distinct changes in style which indicate the general progress of the art in its passage from the archaic to the perfect schools.

Pythagoras, a sculptor, a native of Rhegium, who lived about the time, is mentioned for his superior ability in this respect. A statue by him is recorded of a wounded man, in which the expression of pain was so accurately defined that the spectators were affected by it, and seemed to share the sufferings of the figure before them. This sculptor is also particularly noticed for having expressed the veins in his statues, and for the careful execution of the hair. “*Hic primus nervos ac venas expressit, capillumque diligentius.*” (Pliny, *Nat. Hist.* xxxiv.)

The next sculptor famous in the annals of Greek art, of whom particular mention is made, is Polyclethus. There are at least three of the name recorded, but the most eminent is called by Pliny *Sicyonius*. It is possible, however, as one equally celebrated was also called *Argivus*, that he may have been a native of Sicyon, but was known as an Argive from having produced many of his most celebrated works at Ar-

Sculpture.

Sculpture. gos, and thus that the two epithets belonged to the same individual. He is noted for the great care and perfection of his finish; but it is said he wanted variety in his art. This Polycletus was the author of one statue, a "Doryphorus," or lance-bearer, which was so perfect in its proportions that it was called by common consent "the Canon." Artists referred to it as a rule or standard of art, "*lineamenta artis ex eo petentes velut a lege quoddam.*" (Plin. *N. H.* xxxiv. 8.) We might easily dwell, if our limits permitted it, upon the numerous works of this accomplished sculptor, who seems to have been highly distinguished in every branch of his profession, and to have been no unworthy rival of the greatest artists who illustrated the age of Pericles. In one process he is pronounced to have surpassed even Phidias himself, for Pliny, in handing down a tradition of the practice of the *Toreutic* art, says that Polycletus perfected or consummated what Phidias had only commenced. "*Hic consummasse . . . ut Phidias aperuisse.*"

Ageladas, or, as it sometimes occurs, Eladas, of Argos, produced numerous works of excellence; but the circumstance of the greatest interest attached to his name is his having been the master of the three leading sculptors of the fifth century before Christ, the age of what has been properly considered the *sublime* school of this art.

We now come to the greatest sculptor whose name and fame have reached modern times; and fortunately some undoubted works produced by him, or under his immediate direction, remain to attest the justice of the distinction that has been awarded him. Phidias, the son of Charmidas, was a native of Athens. He was born in the 73d Olympiad, or 484 years B.C. His masters were Hippias, of whom little is known (indeed he is mentioned but by one author), and Ageladas above mentioned. At one time he is said to have studied painting, an art professed by some of his family; but it is as the greatest of all sculptors that the reputation of Phidias has reached modern times. It has been seen by preceding remarks, and may be proved by existing remains, that the sculptors of what has been termed the *Æginetan* school, immediately prior to this time, laid the foundation of a finer style of art which Phidias especially brought to perfection. The preparation for this consummation takes nothing, however, from the honour due to this sculptor; for the superior quality of the art which he produced stamps it with a character of grandeur and beauty entirely its own.

Circumstances were peculiarly favourable to the development of art in the age at which our history has now arrived; and it was fortunate that there were such sculptors and architects as Phidias, Polycletus, Myron, Praxiteles, Ictinus, and Callicrates to take advantage of and do justice to the opportunities offered for the highest exercise of their talents. It was under the enlightened administration of Pericles that some of the most magnificent works in these arts were produced; and Plutarch records the favour with which Phidias was honoured by this accomplished patron. Speaking of the more remarkable edifices erected during his government, he says, "It was Phidias who had the direction of these works, although great architects and skilful artists were employed under him;" and "Every artist was ambitious that the excellence of the workmanship should equal the beauty of the design." (Plut. *in vit.* Pericles.) Of the greater works for which Phidias is most celebrated there are unfortunately no remains. These were the magnificent chryselephantine statues, with their elaborate accompaniments, which he executed for the Athenians and for the Eleans, and of which accurate descriptions have been handed down from ancient times. The most important was that at Elis of the Olympian Jupiter. The materials, as the term chryselephantine denotes, were ivory and gold, and the accessories were of the richest kind. The god was represented seated on a throne of gold. His brows were crowned with a wreath of olive; in his left hand he sup-

Sculpture. ported a statue of Victory, in his right he held his sceptre. His drapery was enriched with objects painted upon it, patterns of flowers and animals. At the foot of the throne were small statues of Victories; and on panels various subjects of ancient poetry and mythology. Nothing can exceed the splendour of the ornamental compositions described as part of this magnificent work. (Paus. v., c. 11.) The colossal proportions of this statue, sixty feet high, compared with the temple in which it was placed, has occasioned a judicious criticism of Strabo. If it had stood up, he says, it would have been higher than the roof of the building, and therefore that the statue was disproportioned to the temple. An interesting anecdote is recorded by Pausanias showing the importance attached by the Greeks to this great work. Phidias, the story says, after the completion of the work, besought a sign from the god in whose honour it had been executed to intimate whether it was acceptable and pleasing to him. A flash of lightning immediately descended into the temple, and struck the pavement before the astonished and gratified sculptor. This was at once hailed as a proof of the satisfaction of the deity, and a brazen vase was placed on the spot to commemorate the circumstance: Pausanias says it was existing in his time. Our limits prevent our describing this work as fully as it deserves; but the reader who desires further and more precise information respecting the mode of execution, the subjects represented in its decoration, and the admiration bestowed upon this celebrated production may advantageously consult the elaborate work by M. Quatremère de Quincy, (*Jupiter Olympien*), in which many very interesting particulars upon the whole question of chryselephantine and *Toreutic* art are collected. It appears that this magnificent work was existing as late as the fifth century after Christ. The temple of Jupiter Olympius was destroyed about A.D. 385; but the statue had been transported to Constantinople, where it was destroyed by fire in or about A.D. 475. The next great work of this sculptor, executed prior to the statue above described, was that of Minerva of the Parthenon at Athens. This, like the Jupiter, was composed of gold and ivory. The goddess was represented standing, holding in her right hand a statue of Victory, and in her left a spear. She had a helmet on, and on her ægis was the head of Medusa. Her shield was elaborately decorated with a representation of the battle of the gods and giants, and the pedestal exhibited the birth of Pandora. The height of the statue was 39 feet. These statues are here selected for notice as being the most highly-reputed performances of Phidias, but a long list of colossal and other statues, in various materials, as bronze, marble, wood, as well as gold and ivory, by this artist, might easily be produced to show the extent and the important character of his employment. As there are no remains of these works left by which posterity may form any judgment of their merit, it would unnecessarily occupy space only to enumerate their titles and subjects. It is, however, satisfactory to be able to contemplate some of the marble decorations of the Parthenon, which may without dispute be attributed to the master mind and hand of Phidias. These are the statues and reliefs which were on the exterior of the temple. They consist of single figures and groups which were placed in the pediments, of several of the metopes, and a considerable portion of the frieze of the cella. These celebrated sculptures are without dispute the finest specimens of the art that exist; and they illustrate so fully and so admirably the progress and, it may be said, the consummation of sculpture that it is important their character and peculiar excellence should be well understood by those who desire to make themselves acquainted with the true principles of this art. They exhibit in a remarkable degree all the qualities that really constitute fine art,—truth, beauty, and perfect execution. In the forms, the most perfect, the most

Sculpture. appropriate, and the most graceful have been selected. All that is coarse or vulgar in ordinary nature is omitted, and that only is represented which unites the two essential qualities of truth and beauty. The result of this happy combination is what has been termed ideal beauty. No productions of the earlier schools exhibited this union; Phidias may therefore justly be considered the author of this consummation as we now first see it in the works produced under his immediate direction. The statues of the Ilyssus or river god, of the so-called Theseus, of Neptune, and the large draped groups, are all remarkable for the qualities referred to, united with grandeur of style and simplicity. Wherever the naked form is shown there is the most profound knowledge of its anatomical structure and capabilities of action. The draperies, likewise, are everywhere treated with the greatest skill and with the most careful attention to effect, in their opposition to, and contrast with, the naked. These works deserve also especial notice for the admirable management of composition in relief. The metopes afford the best examples of *alto* or high relief, and the frieze of that which is called *basso* or low relief. In the latter especially, the knowledge and skill exhibited in representing a crowded and busy procession of walking figures, mixed up with riders and horses in every variety of action, and other animals intended for sacrifice, without unseemly and unintelligible confusion, cannot be too highly praised. It may be observed here that the perfect acquaintance which the best sculptors of this time had with the anatomy and character of animals is extraordinary. Myron was celebrated for his accomplishment in this respect, and the horses in the Elgin marbles must be admitted by all competent judges of that animal to be the most perfect representations of shape, action, and high-breeding.

Before entirely quitting the subject of Phidias and his works, an interesting circumstance may be mentioned in connection with the preservation of the two most important productions of the artist,—the statues of Jupiter and Minerva. Pausanias tells us the former was surrounded at its base by a groove or channel of black marble containing oil. The object of this was to supply a sufficient quantity of moisture to preserve the ivory (from shrinking probably), and at the same time to secure the work from the danger of too much humidity, as the Altis was situated on marshy ground. At Athens means were adopted to obviate the damage that might arise from the opposite evil, the Acropolis being in too dry a situation. The statue of the Olympian Jupiter was out of repair soon after its completion. The custody of this work was entrusted to a particular family called Phædruntai. Pausanias says they were descendants of Phidias, and mentions as a remarkable fact that the office was held in the same family in his time.

Among the most celebrated of the scholars and followers of Phidias were Agoracritus of Paros, Alcámenes of Athens, Colotes or Colotas, Pæonius, and others. Of these, the two first appear to have held the highest rank. Agoracritus was the favourite scholar; Alcámenes, judging from the accounts left of him, the most able artist. He is said to have been second only to his master; and one author says, what was wanting in Polyclethus was found in the works of Phidias and Alcámenes.¹ Two works of this artist have been particularly noticed for their excellence: one was a statue of a conqueror in the games, called a "Pentathlus;" the other of a "Venus" of the "gardens."²

The sculptures in high relief known as the Phigalian marbles, and preserved in the British Museum, are also of this date, and deserve attention for the high art qualities they possess. They formed part of the decoration of the

temple of Apollo Epicouros or Epicurius, and were discovered in the year 1812. They represent the contest between the Centaurs and Lapithæ, and the Greeks and Amazons. The various groups in these compositions are remarkably striking for their vigour and expression; and though the forms are rather heavy, they exhibit all the character of a high style of art. There can be little doubt that these sculptures proceeded from the same source as the sculptured decoration of the Parthenon. Pausanias says the temple was built by Ictinus; and as he was assisted by Phidias in his great work at Athens, it is more than probable this sculptor also supplied designs for the Phigalian temple. They bear satisfactory evidence of the influence of the master mind, and their comparative inferiority in some technical points may easily be accounted for by the fact of their execution being left to perhaps inferior artists, working at a distance from the personal superintendence of Phidias.

The perfection of the grand or sublime style of sculpture appears to have had its consummation in the time of Phidias. He executed works of various kinds, but chiefly he was employed on subjects of a high and dignified class, such as were to do honour to the gods, in illustrating the mythology, or in statues of divinities; and the elevated character he gave these performances procured for him the most honourable distinction. It is recorded that he acquired the title of the "sculptor of the gods;" and one writer says, in speaking of the "Jupiter" of this artist, that by the power or excellence of his art he added something to the sublimity of religion.

The next great master who influenced the progress of sculpture introduced a new element into it, which could only have been accepted subsequently to the success which had followed the innovations introduced by the genius and power of Phidias. The latter had boldly freed his art from the prescriptive types and the over-dry manner of the archaic and Æginetan sculptors; but though he had established the fundamental rule that the highest perfection of form is the proper object of imitative art, he still preserved some severity of style in his mode of treatment. Praxiteles of Cnidus is considered to be the head of the school that addressed itself more immediately to the senses. This step had a most important influence upon the art. The object now was not so much to elevate and instruct as to please, and the result was, of course a lower standard of judgment in the people. Praxiteles is spoken of by all the ancient writers as one of the greatest masters who has professed this art. His works in bronze and marble are described as of the highest excellence; and there can be no doubt that they fully merited the encomiums lavished upon them. Still his peculiar merit appears to have consisted not in the imagination or high purpose of his works so much as in the exquisite perfection of his execution. Two of his works in marble are especially noticed for their expression. One represented an aged woman weeping; the other a courtesan, said to be a portrait of Phryne, to whom the sculptor was much attached, and whose features were lighted up with the most joyful expression. Praxiteles executed for the people of Cnidus a naked statue of Venus. This work was considered the masterpiece of the sculptor, and people flocked from all parts to see and admire it. It is recorded, in proof of the value of this work, that the Cnidians were oppressed by a heavy debt they owed to Nicomedes, King of Bithynia, who offered to liberate them from this obligation if they would consent to give up this far-famed statue. The Cnidians refused, however, to purchase their freedom from debt at this cost, and would not part with a work of art the possession of which rendered their city so illustrious.

¹ Quintilian, xii. 10.

² Lucian de Imaginibus, Plin. *N. H.* xxxvi.; Paus., lib. i.

Sculpture. It has been thought that Praxiteles was the first sculptor who ventured to represent the female form entirely without drapery.¹ It was an innovation somewhat startling, and at first was not generally adopted; but to reconcile, partially, the representation of such forms with feelings of propriety (for sculpture was not yet used merely to gratify indecorous fancy and prurient tastes), a compromise was effected by representing the lower half of the figure draped, as is seen in the fine statues of the "Venus" of Milo in the Louvre, the "Venus" of Capua at Naples, and our own fine statue of Venus or Dione in the Townley collection in the British Museum. It is, however, clear that, from this time, the exhibition of the undraped female figure was a common and popular exercise of the sculptor's art; and perhaps the real decline of sculpture may be said to have commenced when its practice was directed to please the sense or taste for voluptuous forms, instead of addressing the nobler sentiments, as had been done by Phidias and his severer school. The object of this essay being the history of sculpture, and not the biography of sculptors, it is not possible to do more than touch generally upon individual artists, and that only in their character of leaders of schools. Otherwise the fame and extensive practice of Praxiteles would fully warrant a much more extended notice than is here afforded to so great a master.

In the list of eminent sculptors living at this time the name of Scopas claims honourable distinction. He is thought to be the author of the celebrated group of "Niobe and her Children" in the gallery of sculpture at Florence. He also is said to have executed the sculptures on one side of the quadrangular base of the celebrated Mausoleum. There is reason to think that the greater part of the statues composing the Niobe group are but ancient copies from the original work; but even as copies they afford satisfactory evidence of the ability of the artist who conceived the subject, as examples of expression, form, action, and fine style of art. Of the other work alluded to, we may congratulate ourselves on possessing indisputably portions of the original sculptures, though in a mutilated form. They consist of a large collection of objects, as statues, reliefs, fragments of animals and of architectural details, and they certainly may be considered among the most valuable remains that have been recovered from ancient times. They not only illustrate a very celebrated period and school of art, but are undoubted examples of the works of individual sculptors whose names have been handed down to us by the writers of antiquity. They were found on the site of the ancient Halicarnassus, now called Budroum, in Asia Minor; and they formed portions of the famous commemorative monument, of which nothing was known but by tradition, erected by Artemisia to her husband (and brother) Mausolus, King of Caria, who died in the year 353 B.C. It was called the Mausoleum from that circumstance, and has given its name to all subsequent erections of a similar character. It was so remarkable for its scale and the magnificence of its decoration, that it was accounted one of the wonders of the world. Pliny describes this noble monument at great length, and we are enabled from the particulars he supplies to form a very good general idea of its design. The whole composition, formed of marble, stood upon an ample base, of which we have many of the blocks. Upon this was a peristyle of thirty-six columns, of which, and of portions of the architraves, sufficient fragments have reached us to settle a point not mentioned by Pliny—namely, the order of the architecture, which is Ionic. From a centre or *cella* rose a pyramidal structure in steps, and this was surmounted by a marble quadriga. The whole height was 140 feet. The length on two sides, the north and south,

was 63 feet, and on the others somewhat less. Among the sculptured fragments recovered are some of great interest, consisting of statues, portions of colossal horses, and reliefs. Pliny acquaints us that Artemisia employed four of the most celebrated sculptors of antiquity to decorate this monument, and he gives us the names of Bryaxis, Timotheus, Leochares, and Scopas; Vitruvius gives Praxiteles instead of Scopas. These artists executed the reliefs that adorned the sides of the Mausoleum; Bryaxis, according to Pliny, adorning the north face, Timotheus the south, Leochares the west, and Scopas the east. To Pythis was entrusted the execution of the marble quadriga by which the whole was crowned. It is not necessary here to enter into the vexed question which has occupied and still occupies antiquaries and architects upon the precise design of this celebrated work. We have sufficient accounts of its general character and scale, and now most satisfactory evidence in details of the quality of its sculptured decorations. It is this latter particular which gives the work its interest in a history of the art. The school of sculpture which these remains illustrate had reached the highest point of excellence. Founded on the grand and sublime style which characterised the productions of Phidias and his immediate followers, the works of the succeeding sculptors whose names we find associated with this splendid erection exhibit a greater refinement and luxury, if it may be so called, of treatment and execution than are found in the previous school. This is clearly exhibited in the manner of working the drapery in the two colossal statues; one of which has been surmised possibly to represent Mausolus himself; the other is a female figure. The drapery about the left mutilated arm of this latter statue, with the effect of the flesh of the limb against it, is an example of consummate art-power. The reliefs represent various subjects, but chiefly contests between men and Amazons. They are full of action and expression, with the greatest variety of composition and most picturesque arrangement: a quality of very difficult and dangerous adjustment in the somewhat severe art of sculpture, but they are here achieved with the most skilful perfection. These reliefs vary a little in width, and indeed in the scale of the figures, showing that there either were different tiers or series of reliefs, or that the different sculptors exercised their own fancy in making their respective decorations of a larger or smaller size. The fragments of some statues of horses show that these works are of a larger scale than any similar works of the kind that have been found in marble. One of them still has some portion of the bronze bridle or head accoutrements remaining. There is one fragment of a horse, in violent rearing action, with a portion of a figure probably reining in the steed. Generally speaking, the horses are of very inferior quality to the rest of the sculpture. All these interesting fragments are now in the British Museum.

The sculptor who may be said to have completed the progressive course of sculpture was Lysippus, a native of Sicyon. He worked chiefly, if not entirely, in bronze. Pliny, Pausanias, and other writers, have recorded a long list of his works, and he is said by the former to have executed as many as six hundred and ten statues. Lysippus was greatly esteemed by Alexander the Great, who allowed him the exclusive privilege of making his statues. He also made one of Hephæstion, the favourite of Alexander, and statues of all the generals who accompanied the prince in his passage over the Granicus. There are some particulars mentioned of the practice of Lysippus which throw light upon the condition of the art at this its culminating point. He is noticed for the care he bestowed on completion and finish, and in working the hair. He also made the heads of his figures smaller than his predecessors (*an-*

¹ Millingen, *Ancient Inedited Monuments of Grecian Art*, No. x., p. 7.

Sculpture. *tiqui*), and the bodies somewhat more slender, by which the effect of tallness was increased. His works were remarkable for a quality which Pliny describes by the word *symmetria*, and he entirely got rid of a certain squareness observable in the ancient school. A remarkable expression is attributed to Lysippus, which shows how thoroughly this sculptor understood the value of working for effect without sacrifice of truth and correctness of detail. He said, "By the older artists, men were made as they are; by himself, as they appeared to be." It is thought that a bronze statue of Hercules in the British Museum may very possibly be a work of this sculptor. The character of the art of this time had a slight leaning to exaggeration. As the grand, solemn style of Phidias had been followed by a change to the sensuous treatment introduced by Praxiteles, so this latter was succeeded by the effort of a new school to produce additional effect by a more energetic display of action, and somewhat elaborate execution. Lysippus left many scholars who were eminent sculptors; of these, three—Laippus or Daippus, Bedas, and Euthycrates—were his sons. Tisicrates, another, imitated his master so successfully, that it was sometimes doubted whether the work was by Lysippus or the scholar. Chares, the Lindian, the author of the far-famed Colossus of Rhodes, also worked under Lysippus. It is worthy of remark how many celebrated sculptors were natives of Rhodes. Agesander, Polydorus, and Athenodorus, the authors of the group of "Laocoon," as well as Apollonius and Tauriscus the sculptors of the well-known group of "Dirce and her Sons," commonly called the "Toro Farnese," were Rhodians. From this small island, not more than forty miles long and fifteen broad, the Romans, when they conquered it, brought away three thousand statues.

The history of the progress to perfection of Greek sculpture may here be said to be completed. From this time only imitations or varieties of the examples of the three great schools were attempted. The death of Alexander the Great, and the division of the Macedonian empire among his successors was one cause of the decline of art, though some endeavour was made by the Seleucidæ and by Ptolemy to support them in Syria and Egypt; as well as at Pergamus by Attalus and Eumenes. As late as the 145th and 150th Olympiads the names of several sculptors appear; and to this period antiquaries have attributed some celebrated works that have reached our time. Among these, the "Hermaphrodite;" the "Torso" of the Belvidere, bearing the name of Apollonius, the son of Nestor, as its author; the Farnese "Hercules," by Glycon; and of the "Fighting Gladiator," by Agasias, may be mentioned. In the 157th Olympiad (146 B.C.) Corinth was destroyed and sacked by L. Mummius, by whom the finest statues and other works of art were carried to Rome as spoil; and the last blow was given to the hopes and power of the Greeks. Athens, in the midst of political changes, kept up for some time her character for eminence in the fine arts; but after the death of Alexander she began to lose her ascendancy even here. After the termination of the civil war between Pompey and Cæsar, in which Athens had sided with the former, her fate was sealed; though the conqueror treated her with generous consideration, saying, in allusion to her former glory, "He would spare the living for the sake of the dead." Many Greek artists, driven by want from their own country, emigrated to Italy, where they found an asylum and employment among such patrons as Rome afforded; and it is in Rome that the further history of sculpture must now be followed.

In the earlier period of the rise of Rome there was little opportunity or disposition for the cultivation of the fine arts, and though we read of works in sculpture of an early date, they were no doubt the productions of strangers, probably the Etruscans. Mention is made of some equestrian statues in Rome, of Camillus and Mænius, three hundred years be-

fore the Christian era; and in another art, Fabius, a member of a noble family, so distinguished himself as to have acquired the surname of "Pictor." After the capture of Syracuse, Marcellus sent home various works of art from Sicily; and about this time it is supposed Greek artists arrived in Rome. Collections of works of art were made, but this seems to have been done rather from ostentation than from any feeling for or admiration of their merit. Sylla, after the victories he had gained, despoiled Athens, Delphi, Elis, and other great centres of art, and had the treasures carried to Rome, till at last collecting statues became a fashion. Verres is well known for the avidity and injustice with which he indulged the passion for acquiring such works during his government of Sicily. Many names of sculptors of this time have been recorded, but all appear to be Greeks,—Pasiteles, Arce-silas, Strongylion (the author of the statue of the Amazon called "Eucnemis," from the beauty of her legs), Olympios-thenes, and others. Julius Cæsar appears to have had a taste for art, for he not only collected largely in statues, gems, &c., but he also embellished with fine public works Rome and many cities of Gaul, Spain, and other countries which owned the rule of Italy. The same may be recorded of Augustus, who not only decorated the city with works of art, but had statues erected in honour of eminent men. In this age the name of Agrippa stands pre-eminent for his public spirit and princely liberality in erecting useful and ornamental edifices in and about Rome. The Pantheon, which still remains to do honour to this munificent patron of art, was erected at the charge of Agrippa, who, it is recorded, employed Diogenes the Athenian to enrich it with sculpture, all of which seems to have perished. The celebrated statue of Germanicus in the Louvre is no doubt of this period. Vitruvius the architect, Dioscorides, Agathopus, Epitynchanus, and others, gem engravers, were also practising with honour at this time. Some of the best-known productions of sculpture have been attributed, with more or less reason, to this age, but the discussion of their date would scarcely come within the objects of this general history.

The reigns of Trajan, of Hadrian, and the Antonines may be considered the best age of sculpture in Rome, though there is no reason to believe the arts were practised even then by natives. Hadrian, there can be no doubt, had a real love of art. He completed the temple of the Olympian Jupiter at Athens, which had been left unfinished for ages. In Italy, the remains of his celebrated villa near Tivoli prove the scale of his magnificence; while the high quality of the statues, relievi, and other objects that have been found there, establish the claim of this emperor to rank not only as a liberal and munificent, but as an enlightened patron of art. Of this time are the fine statues of Antinous.

Here and there, after this date, an occasional revival of art occurred, but the general tendency was to its rapid decline, till Constantine endeavoured to give a new impulse to its practice. But this failed to produce original works of merit, and the emperor was driven to decorate his new seat of government at Byzantium with ancient statues and works of art that could be procured from other places. Many most important productions in sculpture, in marble and bronze, were here accumulated when, in 479, a fire destroyed the greater part of them. Constans, who was Emperor of the East, in 661 was driven from his capital, and fled to Rome. He despoiled it of all the works he could seize, and had them sent to Sicily, where he found an asylum and where he died. The arts in Rome were now hastening to their final extinction, and all the well-intended efforts of Charlemagne, and afterwards of Theodoric, were insufficient to save the finest remains of antiquity from the ravages of their barbarian followers. The Empire of the West was at an end, and the Roman name was only known

Sculpture. at Constantinople, where, however, some of the finest productions of ancient sculpture were still preserved. When Baldwin made himself master of Constantinople further misfortune befel the arts. All the metal statues that could be seized were melted down and converted into money. Amongst these, it is painful to know, was a magnificent statue of Juno by Lysippus, a colossal "Hercules," a statue of Helen, and many other productions of the best period of Greek sculpture.

The monuments of the Romans are very numerous, and occasionally some fine portraits are found among them. They also have been very useful in illustrating the history and habits of the nation. But Roman sculpture is in all respects essentially inferior when compared with the productions of the Greeks. With one people it was the expression of original feeling, in forms of the most perfect beauty, the consummation of the utmost refinement of sentiment and intelligence: with the other the best of it was only imitation. The result was for the most part insipidity and tameness, even when the mechanical imitation was tolerably successful.

The decline of sculpture, after the few fitful attempts to restore it by some of the later rulers of the dismembered and decaying Roman empire, was rapidly progressive, till at last it is impossible to connect the miserable performances of the artists of these times with the fine ancient examples, which were still abundant and might have served as valuable guides had any sympathy with their excellence existed. But there was no general interest felt in the subject, and the efforts to revive it, emanating as they did from a few individuals, had little or no success.

Italy may justly claim the honour of the new birth of art. It has been said that the monks of the early Greek and Latin churches kept alive its dying embers by illuminating manuscripts and church services, and by decorating the chapels of their convents with rude paintings; but it is scarcely possible to admit this, and to consider the awkward and ignorant attempts at design of this time as an effect or continuation of any art, deserving the name, that had preceded it. Modern art must be estimated by a totally different standard, and, thus considered, the circumstances of its rise and development give it an interest and importance which it never could claim if it were only a spurious imitation of the debased and exhausted art of the ancient schools. There are, besides, some curious circumstances that arrest attention at this point in the history of art. One of these is the fact of its almost total extinction among that remarkable people, the Greeks, by whom it had been carried to its highest perfection; and its revival in a country where, in ancient times, its existence had been ignored, its practice looked upon with a feeling akin to contempt, and where collections of works of art, when made at all, were formed much more frequently from ostentation than from any real interest that was felt in them. The next fact to be noticed is, that when the early Christian communities desired to call in the aid of art to enforce or illustrate the new faith, the employment of beautiful forms in representing the Saviour and other sacred persons was strenuously opposed by the fathers of the Eastern Church; while the Western Christians contended, on the other hand, that no form could be too perfect for this object. This curious and, as it affected art, important controversy was carried on with the greatest warmth on both sides; but finally the cause of the beautiful was established in the West, and resulted in that happy development which in the course of years so eminently distinguished the schools of Italy. In the East, formerly the home of all that was beautiful in art, but now, where beauty, as a means of illustrating divine and Scripture subjects, was proscribed, the reverse has taken place. The religious paintings of the Greek Church are of the most debased and barbarous quality; and all classes of fine art

among this people seem to have sunk into utter insignificance. *Sculpture.*

The revival in Italy has usually been dated at about the tenth century; probably because at that time, or a little later, a resemblance is supposed to be traceable to some of the old types, by which a connection would appear to be established between the later and earlier practice. But the real beginning of modern art may be reckoned from an earlier period. Flaxman thought it might be dated as far back as seven centuries earlier, when Christianity had, under Constantine, become the religion of the empire. It is true that the early Christians adapted, and even adopted, pagan designs, to ornament, if it can be so called, their subterranean hiding-places with illustrations of Scripture subjects, or with allegorical emblems; but it is curious to find that an entirely original style of art was all the while growing, whose character bore no resemblance to what already existed, and which might so easily have served for examples to the sculptors and painters of this dark period. This fact offers grounds for some speculations of interest, with reference to the origin of a distinct and original school of design, which should fulfil the same office to the new religion which the art of its time had done for the older and now obsolete systems; but it is not expedient to enter into the discussion of this subject in a compressed history of sculpture. It may, however, be remarked that the mind and spirit that are observable in the paintings and sculpture of the class referred to display a feeling that justly claims for them the merit of originality, and shows their entire independence, in that respect, of the ancient schools. This freedom of thought is particularly striking in the compositions of the early Christian artists of subjects that would seem naturally to tempt them to recur to the mode of treatment of their predecessors in art,—namely, those in which allegorical figures and symbols were required. Many instances of this originality might be adduced, but it will be sufficient for the purpose to refer to the works of one of the earliest and most remarkable painters, Giotto di Bondone, in the "Salone" at Padua, and in the "Capella dell' Annunziata" in the same city, in proof of the fact stated. Early Christian art was as distinctly divided from the art of the Greek schools as the religion itself which gave it birth was, in its earlier and pure teaching, distinct from the numerous systems that had before filled the world; and it is important to show its claim to originality, as it will assist the student of the history of art in understanding many of the causes of the fluctuations and changes that have characterised all the modern schools of sculpture. A depth of thought, and an earnest, solemn character pervade the art of the Christian designers, which shows they draw their inspiration, not second-hand from models, but from their own inward feelings. At first, indeed, their attempts in art were painfully rude, compared with the wonders of the Greek schools. But it must be borne in mind that the purpose of Christian art never was the same as that of much of the sculpture of the Greek schools,—namely, the representation of beautiful form for its own sake. After the first attempts at design, usually in single figures,—gaunt and staring images of apostles and saints, or, if in numerous figures, without any knowledge of composition,—the religious artists seem to have aimed at appealing to the sympathies, or at awakening reflection, rather than of gratifying the sense by presenting to the spectator such objects as should be only pleasing to the eye or the fancy. Art was not required as a mere appendage to luxury. Its recommendation in this respect had long ceased to exist, and the sensuous schools of the post-Phidian period had, as has been shown, in some degree, helped to lower its character even among the ancients, after its higher religious and heroic object had been lost sight of. Among the moderns it had

Sculpture. an entirely new mission. Exercising art on this principle, the artists of this age may therefore consistently be considered men of original genius. Instead of merely copying, they drew from their own innate and independent sources of sentiment, and the result was, that the art they produced gave the promise that had been realized in Greek art of the fifth century B.C., when it was directed by the master-spirits of that age—of deep expression, beauty, and refined taste. The causes that tended to check this consummation will be considered hereafter.

The first artist whose works arrest attention for the real art-feeling they exhibit is Niccolo Pisano. He appeared early in the thirteenth century, and, as his name implies, he was a native of Pisa. It was usual in those days for the same artist to practise in all the three branches of the arts, painting, sculpture, and architecture; and many examples still exist of this combination. In the hands of Niccolo and his son Giovanni of Pisa, however, sculpture had its own distinct and important character from the exclusive devotion given to it by these sculptors; and their employment in the decoration of the sacred edifices that were being erected in all parts of Italy enabled them to carry their art to a high degree of comparative excellence. The cathedrals of Pisa, Pistoja, and Orvieto especially are rich in their works. In order to account for the superiority of these artists, it has been supposed that they derived considerable advantage from the opportunity they had of studying some remains of ancient sculpture which were preserved in the Campo Santo of Pisa. It is highly probable that they may have been impressed with the technical superiority of these ancient sculptures; but that their own original character of design or of sentiment, the latter especially religious and Christian, was in any way affected by anything they saw in these works is by no means apparent; and it is not till much later, when art was much more universally practised, that the influence of such examples can be traced. A reference to some few of the productions of the two great sculptors of the school of Pisa will illustrate the view here taken. The rilievi, in marble, which enrich the front of the cathedral of Orvieto especially merit attention. The subjects are taken from the Bible, and represent the Creation of Adam and Eve, the Temptation, the expulsion from Paradise, and others of the kind. These designs exhibit very rare qualities of beauty and expression, and are remarkable indications of the deep art-feeling which has made the Pisan school so celebrated. They of course show the want of practice in the more mechanical requirements of art and in freedom of execution, but the higher qualities that abound in them amply compensate for these merely technical shortcomings. Simplicity, grace, and feeling are all combined in these striking compositions; and in the figures of angels especially there is an exalted and pure character that is at once impressive and elevating. The draperies are also treated with great taste and skill. Cicognara (*Storia della Scultura*) thinks that these are the productions of some scholars of Niccolo, and not by that sculptor, but the question does not affect the great merit of the works. A semicircular bassorilievo by Niccolo, representing the "Taking down from the Cross," placed over a door in the front of the cathedral of Lucca, is also a composition of great merit, both for its design in an artistical point of view, and for the exquisite feeling shown in it. Another remarkable work by the same author may be seen at Siena, in a rilievo representing the Last Judgment and the final punishment of the wicked. Judging from the general character of the works attributed to Niccolo, the subject could scarcely have been congenial to the spirit of the artist. His special ability was in treating gentle, and touching, and delicate subjects. This composition has, however, considerable merit, in the bold treatment of the terrible scene; the crowding together

and shrinking of the guilty, and for the skill occasionally shown in the arrangement of the different groups. There are two figures of angels introduced to which the sculptor has been able to give all that grace and beauty so observable in his other works. Niccolo lived to an advanced age, and left many distinguished scholars and imitators, of whom his son Giovanni of Pisa, Arnolfo of Florence, Margaritone of Arezzo, and Guido of Como, gained well-deserved reputation.

In 1330 Andrea, the son of Ugolino of Pisa, who was settled in Florence, executed one of the bronze gates of the baptistery in that city. It is a work of great excellence for its date, though it is deficient in some practical points. He also executed some statues in marble, but they are inferior to many of his productions. A sculptor of great merit, Andrea Orcagna, was contemporary with Andrea Pisano, and executed various works in Florence. Some of these are preserved in the small chapel or oratory, called Or San Michele, in that city, and justify the praise that has been accorded to this artist by all competent judges. He was not only a sculptor, but was distinguished also as a painter, an architect, and a poet. His style of art partook of the dry and minute character of the early school, but he was superior to his contemporaries in his treatment of drapery. Among the sculptors who highly distinguished themselves at this period, towards the end of the fourteenth century, Luca della Robbia claims honourable mention. His subjects are all of a serious or religious character, and among his productions are some of great beauty. He chiefly delighted in representing groups, in high relief, of the Virgin and infant Christ, or the Saviour and St John as children, and similar subjects. There are two works of Luca preserved in the sculpture gallery in Florence which deserve particular notice; they are bassi rilievi in marble, representing a choir, or a group of church singers. They claim attention for their skilful composition, and for the truth of the expression of the different figures. Indeed, they only require elevation of form to place them on a level with the best productions in the art. Luca della Robbia is well known in the history of sculpture as the inventor of a peculiar mode of working in *terra-cotta*, the material of which almost all his groups are made. He painted his compositions, and covered them with a beautiful and peculiar varnish of which he made a great mystery. It is said he never disclosed it to any one, but committed the process to writing, and inclosed it in one of his clay models before baking it. Whether this was the case, can only some day be known by the accidental destruction of that one of his works which is the depository of the secret. Luca died in 1442. In Florence are preserved some very interesting compositions in rilievo, in marble, by other sculptors of this period, among whom Benedetto da Rovezzano may be particularly mentioned. In these works an approach is seen to those qualities which constitute real art progress. There is not only occasionally very agreeable form, but considerable skill and feeling in the treatment of drapery.

A crowd of artists now appear in all parts of Italy, employed in erecting and decorating the churches which the piety and liberality of the age were dedicating to religious service, and in honour of particular saints. Only the more celebrated can be selected for notice from this long list; but it would be unjust to the striking superiority of two of these to omit to record especially the names of Lorenzo Ghiberti and Donato di Betto Bardi, better known as Donatello. The great work of the former of these sculptors is too well known to require an extended notice in this place. It is the beautiful composition of rilievi in the panels of one of the bronze gates of the Baptistery at Florence. Several sculptors had been employed on parts of this edifice, but the contribution of Lorenzo Ghiberti so far surpasses them all that Michel Angelo is said to have declared, in his admi-

Sculpture. ration of them, "they were worthy to be the gates of Paradise." The subjects are from the Old Testament. They display a fine feeling for composition, a superior acquaintance with the beauty and movements of the human figure, refined expression, considerable skill in execution, and are in all respects of a higher quality of art than any contemporary productions of the kind. Unfortunately, in the treatment of these otherwise admirable compositions a great principle of art has been infringed by the attempt to represent perspective appearances by different degrees of relief; effects which can only be truly and correctly produced by the aid of colour in the atmosphere, and by the skilful artificial distribution of light and shadow, as in a picture. Modern sculptors have constantly erred in their attempts to meet this difficulty, inherent in their art. The great masters of ancient sculpture have shown us in their works that they could carry the art to its highest perfection within its own legitimate limits, and in rilievo of all kinds they confined the representation to one plane. The gates of Ghiberti are injured by this seeking for picturesque effects; and the number of small parts, the variety of unimportant objects, as trees, animals, &c., deprive it of that breadth which is so valuable a quality in sculpture. Ghiberti was less successful in some bronze statues than in his compositions for the baptistry. Of a statue of St Matthew, Flaxman says: "It wants the severe chastity of the apostolic character, and the head is inferior to those in the spandrels of his gates; the attitude also is affected, and the drapery unnatural."

Donatello was a Florentine, born in 1383. The works of this sculptor were highly prized, and he was extensively employed. Many of his productions are still remaining in various cities of Italy. Two statues of St George and St Mark, which have obtained well-deserved celebrity, are in the oratory before mentioned, of Or San Michele at Florence. The former of these is remarkable for its simple action and calm, grand expression, reminding the spectator of the vigorous and nervous manner which characterised the works of the immediately succeeding school. The statue of St Mark received the high compliment of Michel Angelo's admiration when he exclaimed, with reference to its truth to nature, "*Marco, perchè non mi parli.*" In Florence also are some very interesting and, allowing for the imperfect state of art of the time, curious bassi-rilievi in marble by this sculptor. They represent groups of children dancing: the background of these is very curiously treated, being closely covered with small round pieces of gold-leaf, like coins. Some rilievi of very great merit by Donatello are also to be seen at Padua. Compared with the works of his immediate predecessors, there appears sometimes a degree of exaggeration in the style of this sculptor; in the bending of the joints, and the smaller articulations of his figures. This may have arisen from his desire to avoid the dry or timid treatment of the earlier schools, and so far may be considered a proof of the forward movement of art. The productions of the two sculptors above named are interesting subjects of examination to all who take an interest in the development of a really original school of sculpture. Donatello lived to a great age, and left many scholars. One of these was a Giovanni di Pisa, the author of a basso-rilievo of no ordinary merit in a small chapel of the church of the Eremitani in Padua. It represents the Madonna and infant Christ, with three figures of saints on each side. Passing over names of less celebrity, though meriting notice in a regular history of sculpture, that of Andrea Verrochio claims distinction as the master of Leonardo da Vinci, and of Pietro Perugino the master of Raffaele. Verrochio at first was a painter, but it is said he grew jealous of the performance of Leonardo in a work in which the scholar was assisting the master, and relinquished that art for sculpture. There are several works by him, statues and rilievi, at Florence. Rustici, who studied

also under Verrochio, was a sculptor of merit. He was invited into France by Francis I. Amongst his works we find many of classical subjects. He died in 1550.

The general character of art had up to this time been essentially of a religious kind. The deficiency in the modern Christian school of sculpture was in the technical requirements of the art; but these seemed to be attainable before long, judging from the rapid strides that painting and sculpture were now making. In the expression of deep sentiment, in simplicity, in chaste beauty of form in sacred or holy subjects, in the arrangement and quality of draperies, and the harmonious flow of lines, no school of art of any time or nation can show works of greater promise than may be found in the productions of the mediæval artists.

This hopeful condition of sculpture, upon which might have been founded the expectation of the art reaching a high state of excellence (as ancient sculpture had done under similar influences), was destined to be interrupted.

At the period which our history has reached the discovery of the long-lost treasures of the classical writers of antiquity gave an extraordinary impulse to the studies of the lovers of literature. The Medici, the accomplished rulers of Florence, liberally encouraged men of learning, and Florence became the centre of the revival of Greek and Roman letters. The fine arts, always so dependent in modern practice upon the influence of those in high position, were soon made to feel the effects of the new movement. The sentiment for religious and Christian art was superseded by the admiration of everything that had the authority of the ancients; in conformity with the new taste, classical and heathen subjects were now the fashion in sculpture, and these, as well as all others, were to be treated after the ancient examples. Even where works of a religious character were required, the ancient mythology was incongruously and absurdly mixed up with subjects of the Christian faith, producing the most offensive contrasts, and, of course, entirely destroying the proper effect and intention of art. This passion was not confined to one state of Italy. The Popes, two of whom were members of the House of Medici, equally patronized the revival of classical tastes; and Rome rivalled Florence in its anxiety to re-establish the style and feeling of the great Greek and Roman periods in their literature, their art, their philosophy, and, if history is to be trusted, even their morals. Its influence upon the style of the literature of the day is remarkable, as it led to the employment of the dead languages in the writings and correspondence of learned men instead of their native tongue, which for a time was ignored and proscribed as vulgar and unworthy the use or attention of real scholars. That these should appreciate the refinement and excellence of the writings of the sages and poets of antiquity, and that those competent to judge art should at once acknowledge the superior objective beauty of Greek sculpture cannot be a matter of surprise; but there can be no doubt that the immediate effect upon art of this excitement was to check its development in a right direction, as a means of addressing modern sympathies. Classical subjects were sought for, because in these a closer imitation could be made of the classical mode of representation, and the conventional treatment of the ancient schools, exhibiting nude forms, was introduced, however incongruous its application, to gratify this Dilettante taste. The study of the ancient examples was capable of effecting, and no doubt did effect, very great changes and improvements in the technical parts of sculpture, but it cannot be denied that it also brought with it certain disadvantages. The pure, simple, and expressive character which was so remarkable and so valuable in the rising school of religious designers, succumbed to the powerful influence of the pseudo-classical taste; and, as the motive

Sculpture. that now impelled the artists was factitious, the sculpture they produced was unreal in its sentiment and unimpressive in its character.

However indisputable the charm of beautiful forms in the abstract, their true appreciation must be a consequence of study and reflection; and therefore, unless they are employed in the expression of intelligible ideas, the community to whom art should address itself cannot derive any adequate advantage from their display. It is the *sentiment* of art that first attracts and fixes the attention of intelligent people long before the *form* in which it is presented becomes the subject of critical examination: a fact constantly proved by the fascinating power of some of the productions of the earlier Christian designers, which are pregnant with meaning, but in which the technical recommendations of the schools are often entirely wanting. These observations are by no means irrelevant or without their use in the history of sculpture. They assist in accounting for the entire change that is now seen in the "motive" of the art of the age; and especially in this art, which seems so prone to ally itself with the older associations, from the greater opportunity offered by classical subjects for the tempting display of naked forms, muscular development, and other mere academical qualities.

The fifteenth, and the early part of the sixteenth centuries, comprehend a period of great interest in the history of literature and the fine arts; and although some disadvantages accrued from the first violent reaction that took place upon the introduction of classical tastes, it would be unjust to the memory of the noble patrons of learning in those days not to record their title to the gratitude of posterity for the generous protection they extended to scholars and artists of eminence. The extraordinary talents of the House of Medici had raised that family to the highest honours in their native Florence, and their influence was powerfully exercised far beyond the limits of their own country. Lorenzo, who had by his princely habits and liberality acquired the surname of "il Magnifico," added to the lustre of his position by attaching to his court the most distinguished literary men of all nations. Rome was also at this time governed by pontiffs who equally sympathized with the liberal tastes of the Florentine Medicis. Julius II., who was elected to the tiara in 1503, gave the utmost encouragement to the great artists of his age, and Leo X., who succeeded him, was equally liberal, making Rome a centre of attraction for all that was classical and epicurean. Leo was a member of the family of Medici. He was soon after succeeded by another scion of that remarkable family, Clement VII., for the intermediate Pope, Adrian VI., occupied the throne scarcely a year; and he also continued to encourage the arts with the same liberality that had distinguished his predecessors. A few names of sculptors who lived at this time will show the character and amount of artistic power that was called into action by the generous and enlightened protection given to these pursuits by the sovereigns of this age. Michel Angelo, Torregiano, Bandinelli, the Ammanati, Rustici, Montelupi, Sansovino, Benvenuto Cellini, Francavilla (and others might easily be added to these), are amongst those who have left works which have honourably illustrated their age and country.

The works of Michel Angelo Buonarroti, who was born in 1474, afford excellent examples of the condition of sculpture at this period. They indicate unmistakably the influence of the new opinions that were gaining ground, marking most distinctly the transition from the original and unsophisticated feeling that had been the motive of the earlier Christian artists to the artificial stimulus given by the recovery of the marvels of classical sculpture. This, the greatest artist of modern times, has left productions of mind and hand as striking for the inventive power displayed in

them as for their wonderful execution. They show there was no deficiency of ability when such works as these appeared. Michel Angelo, personally favoured by Lorenzo de Medici, studied in the school established by that munificent patron of the arts, and no doubt there acquired both a feeling for fine form and something of the classical taste which was likely to be engendered by association with enthusiastic scholars, and by the constant contemplation of fine remains of antiquity. Many of his works exhibit this influence, but, as will be seen, not to the extent of destroying his own grand and peculiarly original character of design. Among those of his productions which may be adduced in support of this opinion may be especially noticed the fine and touching group called "La Pietà" in St Peter's at Rome, representing the Virgin supporting the dead body of Christ; a performance exhibiting much of the peculiar mannerism of the artist, but possessing also the highest claim to our admiration. The statue of Moses, forming a part of the decoration of the unfinished monument of Julius II. at Rome, and those of Lorenzo and Giuliano dei Medici, at Florence, may also be referred to in illustration both of the originality and the power of this grand mediæval sculptor. These indeed are works which may challenge comparison with the best remains of ancient art for sentiment, breadth and grandeur of treatment, composition, and intimate knowledge of form, while at the same time they are totally distinct from the antique in the originality of their conception. The statue of Moses, though by no means free from the fault of exaggeration so justly objected to in the works of M. Angelo, is one of the grandest efforts of genius, and truly illustrates the forcible expression applied to the character of the artist's style,—"*Di Michel Agnolo la terribil via.*" The other statue presents Lorenzo seated, absorbed in thought, leaning on his hand. Here again there is no real resemblance to the antique, but it rivals the best excellences of the ancients in expression, with repose and dignity. It is impossible to look at this fine work without being forcibly impressed by the *mind* that pervades it. In the same chapel are other remarkable works of this artist. They are allegorical figures meant to represent Day and Night, the Dawn or Early Morning, and Evening, and they form the accessorial decoration of tombs of the Medici. They bear the impress of the master mind and hand; but it has been very properly objected to these works that their meaning and object is far from clear, and that their exaggerated action and treatment are not in character with the requirements of monumental design. In the chapel referred to there is also an unfinished group of "Charity," of fine design and execution. A masterly alto-rilievo in marble of the Virgin, with the Saviour and St John as children, at Florence, and another of the same subject, differently treated and very unfinished, in the library of the Royal Academy of Arts in London, deserve honourable mention as examples of M. Angelo's genius in another class of sculpture. Another well-known work by M. Angelo is in the church of La Minerva in Rome. It is a statue of our Saviour, standing, and holding the Cross. The figure is life-size, and is in the revived classical or academical style, muscular and almost entirely nude. It is, however, little more than a careful and successful study of the naked model, and is deficient in appropriate character and fitness, both as regards the subject and its position. The intimate knowledge of anatomy and acquaintance with the human form, possessed by Michel Angelo beyond all the artists of his time, allowed him to indulge in the utmost freedom in giving expression to the suggestions of his energetic and daring imagination; and this mastery over the technical difficulties of his art appears sometimes to have tempted him to indulge in its display at the expense of that sobriety and simplicity which are such valuable qualities in sculpture,

Sculpture.

Sculpture. and whose presence is so remarkable an element in all the finest examples that have come down to us of the Grecian schools. It would carry us far beyond our limits if we were to attempt to give a complete review of the works of this great artist. The influence he has exercised would indeed justify a much more extended notice of himself personally, and of his productions, but in this place it must suffice to refer to these as subjects well deserving the careful attention of the student. Although M. Angelo has here been considered as a sculptor only, he has also left noble works in the sister arts of painting and architecture. Among the former, the well-known compositions in the Sistine Chapel at Rome, illustrating the grand scheme of Scripture revelation, from the Creation to the Final Judgment, are unrivalled in invention, profound thought, knowledge, and grand style of design. These truly sublime performances, whether taken alone or in connection with the other proofs of the power and vast range of his genius, place their author far above comparison with any known artist, ancient or modern. Nor was it in the fine arts of design alone that the great ability of M. Angelo was conspicuous. The political circumstances of his country called forth his talents in other severer exercises, and it was in strengthening the defences of Florence that he added to his well-deserved reputation as an artist also that of one of the most accomplished masters in military engineering and fortification. The few remains that have reached us of his literary works, in his letters and sonnets, exhibit him likewise as an elegant writer and poet.

Pietro Torregiano was a distinguished sculptor of this time, the contemporary and rival, in some respects, of Michel Angelo; of whom his jealousy was so great that on one occasion, in a fit of passion, he struck him with a sculptor's hammer and broke his nose. The disfigurement caused by this outrage is seen in all the portraits we have of the great Florentine artist. Torregiano was invited to England, and was employed upon the tomb of Henry VII. in Westminster Abbey, a work of great interest and a sufficient proof of this artist's ability. In the Rolls chapel is a statue by Torregiano which deserves notice. It is in *terra-cotta*, life-size, and painted. It represents a judge, and is remarkable for its truth to nature. Torregiano afterwards went to Spain where he died. Sansovino and Baccio Bandinelli deserve particular mention for their valuable contributions to the art of this age. They have left behind them works of great merit, in proof both of the great ability of the respective artists, and of the extensive employment of sculpture in Italy during this time. Many of Sansovino's performances are at Venice; Bandinelli appears to have worked chiefly at Florence. Many of the productions of this period claim our admiration for great qualities of art, but it must also be added that all are more or less imitations. It is seldom that any really original ideas occur, the sentiment as well as the character of treatment being more or less borrowed from the "antique."

Among the prominent artists of the time Benvenuto Cellini claims a distinguished place. He was a sculptor of great power, though his works, partaking of the character of the age, are marked by some exaggeration of action and an unnecessary and injudicious display of academical study and anatomical knowledge. He executed some large statues; and his figure of Perseus especially, in the Loggia del Gran Duca at Florence, notwithstanding it has great faults, is a production of great merit. B. Cellini is chiefly celebrated for his smaller works in metal (gold, silver, and bronze) and precious stones. Some of these, consisting of richly-ornamented cups, salvers, shields, sword-handles, and similar objects, are of great excellence, and show the undeniable skill and taste of the artist in this branch of his profession. Cellini wrote on his art, describing his practice and experiments in the then known processes of metal-founding.

He also published his autobiography, one of the most curious and amusing works illustrating the manners of the sixteenth century that have come down to us.

Sculpture. Guglielmo della Porta executed, among other works, the monument of Paul III. in St Peter's at Rome. Two statues in this composition, representing Prudence and Justice, establish this sculptor's claim to high consideration. They are not in harmony with the requirements of a Christian monument, nor are they fit productions to be placed in a church; but as works of art they merit the high praise that has been accorded them. This sculptor was the friend of Michel Angelo; and his sculpture, especially in the figures referred to, shows the influence exercised on art by the great master. The latter statue has been partially draped since Della Porta's time.

The quality for which the sculptors of the end of the sixteenth and the seventeenth centuries are chiefly remarkable is a love of display in the executive parts of their art. This led to a serious evil, and to the decline of art. The object with them was not to improve the public taste, or to elevate and improve the minds of the people, but to astonish the spectator by their bold and skilful ingenuity. The three sculptors who were most distinguished for their merit and for their faults in this respect are Giovanni de Bologna, Bernini, and Roubiliac. These artists were essentially men of genius, and, though their disregard of the true principles upon which only sculpture can be successfully practised must be deplored, it would be most unjust to withhold from them the praise to which they are entitled for such merit as they undeniably possessed. The group in marble called the "Rape of the Sabines" at Florence, and the bronze statue of Mercury in the gallery also at Florence, place Giovanni de Bologna, in spite of the defects referred to, in the highest rank of sculptors. They deserve commendation for some of the most valuable art qualities,—expression, invention, skilful composition, a knowledge of form, and great execution. The Mercury is full of energy, and is conceived in the true spirit of poetry; but, though classical in their subjects, they are far removed in their treatment from the purity and the charming simplicity which are so essentially a part of classical design. They offend from the extravagance of the action and the twisted contortions in the former group, and from the want of refinement in the forms appropriate to the messenger of the gods, in the latter statue.

Bernini was a Neapolitan, and was born in 1598. His imagination was fertile, and his power of execution of the first class. Unfortunately, this power was uncontrolled by submission to the necessary principles of his art. Bernini delighted in the most curious and daring experiments upon his materials, and treated marble as if it had been clay or wax. Under him all the distinctive bounds of sculpture were transgressed, and the object seemed to be to rival the painter's art. Clouds, landscape, perspective, and other unattainable representations were attempted, till the whole subject is confused in the flutter of unintelligible details. That he was an artist of unquestionable genius cannot be denied, but no one probably did more to precipitate the fall of sculpture than Bernini. The immense patronage he received during a long career (for he lived during nine pontificates) filled Italy with his productions. Among the most remarkable may be noticed his group of "Apollo and Daphne," for its bold invention, the forcible manner in which the story is told, and the "bravura" of its execution. The god is pursuing the unwilling fair one, and at the moment of his reaching her she is, in answer to her prayer for protection, changed into a tree. The passion of the lover is displayed in his eager action and his flying hair and drapery, while the metamorphosis of Daphne is shown by her floating tresses, her fingers' ends and her toes sprouting forth in elaborately-executed laurel leaves. The bad taste

Sculpture. of this picturesque treatment is only equalled by the extraordinary executive talent displayed in the representation. The "Extacy of Sta. Teresa" is another work of the kind, in which, amidst the flutter of drapery and clouds, it is difficult to discover the figure of the saint. In St Peter's the magnificent monuments of Urban VIII. and Alexander VII. are examples of the merits and defects of this sculptor; marvellous for their execution, but debased by the most meretricious taste. The colossal statues of the Four Doctors of the Church, in bronze gilt, supporting the chair of St Peter, are also by this artist. The idea is grand, but the attitudes are affected and the forms exaggerated. In his statue of "David preparing to hurl the stone at Goliath"—a work of great energy and expression, and executed when he was young—Bernini is said to give a portrait of himself. The fountain in the Piazza Navona at Rome is another of the numerous strange and daring performances of this artist.

Allessandro Algardi, of Bologna, was contemporary with Bernini, and deserves mention, although his works are injured by the same defects that characterise the productions of that sculptor. Algardi's great and best known performance is over one of the altars in St Peter's at Rome, and represents St Paul and St Peter appearing to Attila and his hosts. It is in marble, in rilievo, and measures about 30 feet in height by 15 in width. There are passages of considerable merit in this composition; but unfortunately it is all through treated upon the principle of a picture, and attempts effects which can only be properly rendered by colour. The numerous figures and reliefs of *putti*, or children, by Francisco di Quesnoy, better known as "il Fiamingo," have given this sculptor a well-merited title to distinction; and a statue by him of Susanna in the church of La Madonna di Loreto at Rome may also be noticed as a work of great feeling and even beauty.

Roubiliac followed in the same road, and his great ability increased his influence in establishing a most meretricious school of artists. The fact of his having had great employment in England enables us to judge more easily of the merits and demerits of his style. One of his best works is the statue of Eloquence, in the monument of a Duke of Argyle in Westminster Abbey. The action is earnest, and the expression full of character. In the same church is a much-commended work in memory of Lady Nightingale. It shows, like all the productions of this artist, great power; but it is an example of mistaken design, and shows how fatally the transgression of the true rules of art must act. A much-admired work by Roubiliac is the monument of Bishop Hough in Worcester cathedral. In the hall of the British Museum there is a statue by him of Shakspeare. Roubiliac has shown marvellous ingenuity in his execution; but he has done himself injustice by bestowing so much pains upon the inferior accessories of flying draperies, fringes, the minute details of dress, in buttons and button-holes, perukes, and the fine folds and clocks of stockings, which withdraw the attention from many very admirable qualities in the nobler parts of his designs.

It is not necessary to dwell longer on this phase of sculpture, and no advantage can be gained by enumerating the minute and laborious performances of the smaller race of sculptors who imitated the worst peculiarities of the school. In the church of S. Severo at Naples are some very curious examples of patience and bad taste in statues by San Martino and Corradino; one is of Modesty, covered all over with a thin veil, another a figure of Falsehood within a net of which the meshes are relieved, and a third represents a dead Christ covered with drapery. Others of the same kind might be mentioned; but it will be seen by what has been said that sculpture no longer held a position of dignity, nor was it practised in a way to receive or deserve the admiration of true judges of art. The above pieces of workmanship are specimens only of the carver's skill and

patience; and such sculpture, instead of being looked upon as fine art, can rank but little higher than an exercise of mechanical ingenuity; for it often is totally independent of invention or sentiment, or other really artistical quality. Occasionally an artist of superior taste or higher feeling in art appeared, but he was not seconded or supported by any refinement in his patrons, nor by the sympathy of the public. The talent that existed—and the names of the sculptors above mentioned prove its existence—was exhausted in the endeavour to excite curiosity and admiration for the skill shown in pretty conceits or elaborate execution. The magnificent collections of ancient sculpture preserved in the cities of Italy, at Rome, Florence, and Naples, failed to impress upon sculptors or patrons the value of those principles which had led to the perfection of Greek art; and even when their forms, modified by the fashions and bad taste of the age, were repeated, there was no true feeling or inspiration to elevate the works above the character of indifferent copies or tame imitations.

The honour of giving a new direction to taste, or rather of leading it back to a recognition of true principles, is eminently due to two sculptors of our own age, Canova and Flaxman. To the former Italy owes her emancipation from those false perceptions which had, from the influence of the Bernini school, so long diverted the current of pure taste. To Flaxman the art owes equal obligation, though he had not the same opportunity as Canova of making his superior merit known. No modern sculptor has entered so deeply into the recesses of ancient art as Flaxman; his style was founded upon their principles, combined with the simplicity of the Pisani and others of the fourteenth century. The purer and simpler taste of which some of the earlier works of Canova, as his "Theseus," "Dædalus," and "Icarus," and others, gave promise, it must be admitted, is less conspicuous in some of his later productions; and he appears to have been seduced from the staid and somewhat severe simplicity which is one of the greatest charms of sculpture, by the fascination of highly-wrought execution and the elaboration of surface. In Flaxman exceptions will be found of a directly contrary character. In his works execution will be found a very secondary object compared with design, though in one of the finest compositions of which modern sculpture can boast, "The contest of Michael with Satan," Flaxman has shown that this deficiency is not to be attributed to want of knowledge or power. The works of these eminent sculptors are before the world; it is not therefore necessary to discuss them more particularly in this place. The influence of these second restorers of sculpture on the art of their day is acknowledged; and though distinct schools have arisen out of those which they may be said to have formed, the merit is justly due to them of having at least directed attention to that which is truly excellent.

Before concluding the history of sculpture with some few remarks upon its condition in England, it is due to the memory of a sculptor of distinguished merit to give him his just position in the list of those who have honourably and successfully exercised this art. Albert Thorwaldsen, a native of Iceland, but long resident in Italy, has left behind him several productions exhibiting a profound feeling for art: excellent in design, composition, and form. Like most modern sculptors, he drew largely from the ancients for his subjects; but he also illustrated others which were suggested by his own faith and feelings. His "Mercury" and his "Jason" are pre-eminent amongst the former; while in his majestic colossal statue of Christ, attended by the twelve apostles (now placed in niches in a church at Copenhagen), in his reliefs of "Charity," and other subjects from scripture teaching, he has, like our own Flaxman, shown that the modern artist need not necessarily be confined to heathen poetry and mythology for ample and exquisite materials for the exercise of his talents, al-

Sculpture. though he may very properly adopt the principle of beauty of form which the Greek sculptors applied so admirably in their works.

The schools of sculpture of France, Germany, and Spain no doubt emanated from those established in Italy, and their earlier history is so closely connected with the revival of art in that country that it is not necessary to treat of them at any length. As the art progressed, the sculptors of each of these nations established their claims to distinction; and in France especially names of very high pretension are met with. Goujon was deservedly eminent even among the great artists of the sixteenth century; and the productions of Pilon, Puget, Girardon, Le Moine, Coustou, have secured for these artists a well-deserved reputation. The performances of the best of the French sculptors will bear comparison with those of any modern nation in knowledge of form, careful execution, and bold conception. The mode of treatment often, it must be admitted, partakes of the taste of particular periods, and, especially in the works of the seventeenth century, is marked by affectation and a somewhat theatrical air in the action and expression, which detract from the claims of the French to rank as a sound school of art; but in other respects the high qualities of the French sculptors admit of no dispute. It has always been the policy of the rulers of France to encourage the fine arts, and especially to foster native talent; and the interest thus shown has proved of the greatest advantage. It has, in the first place, given an honourable stimulus to their professors, and, in the next, the successful progress of the higher departments has acted most beneficially on the general character of design throughout all branches of industry. In the history of art in France there has been no illiberal exclusion of foreigners; but there always has been a patriotic feeling that native artists should be encouraged; and this consistent protection and interest in their progress may fairly be considered in no slight degree a cause of the high position the arts, in almost every department, have there attained.

The German school of sculpture, till of late years, was attached to a peculiar style which the national taste for simplicity and love of local association seem to have engrafted on the early Italian art which had penetrated into the country when the scholars of the Pisani travelled over Europe practising and teaching wherever they found employment. This has given a somewhat dry and quaint character to much of their sculpture produced before the sixteenth century, and it may indeed be found in works of a subsequent date. During the last fifty or sixty years great progress has been made in giving a higher quality of form to their productions in this art; and the execution of the works of the more eminent of the German sculptors is in no way inferior to that of any of their contemporaries. The influence of the modern artificial taste for classical imitations has extended to Germany, but it has acted less forcibly there than in Italy, France, or England; the national and domestic element, so strong in the German character, inducing their artists to exercise their art upon subjects which address the sympathies of the age.

In the sixteenth century sculpture was exercised extensively and with great success by native artists in Spain; and many of the churches possess works of a very high quality by Alonzo Cano, Hernandez, and their contemporaries. The close political connection that so long existed between Italy and Spain will account for the similarity of style in the art of the two countries, and many Italian sculptors of reputation visited Spain. Torregiano, as has been stated, proceeded thither from England, and died there after executing various works. A peculiar practice prevailed which gives a very remarkable character to the Spanish sculpture of the sixteenth century. The statues of religious subjects,—and in Spain the talents of the artists were almost exclusively exercised in the service of the church,—as the Saviour, the Virgin, saints, and similar personages, were carefully executed in sculpture, but afterwards they were as carefully painted, so as to imitate, with all possible truth, the appearance of nature. The effect of these works is said to be very startling, but very disagreeable; they appear almost to be living figures, or *tableaux vivans*, standing as models. This is a practice that cannot be admired or recommended by good taste. It in fact takes works out of the strict category of sculpture, without placing them in the condition of pictures. It is not the object of really fine sculpture or painting to make the spectator, who contemplates a picture, a group, or a statue, believe he is looking at real, living figures.¹

The short time, comparatively with other countries, during which sculpture has been practised in England, precludes it from taking a place in the early history of art with Italy, France, and Germany. The English sculptors exercised no influence on the style of the art; and it is not till the eighteenth century that any place can be claimed for our native artists. It may be observed, however, that although there is no account of the practice of sculpture, there is reason to believe that there were native artists in England at a very early date. No reliance can be placed on the traditional account, quoted by Flaxman, respecting the "great and terrible" statue of Cadwallo, who died 677; but two flat monumental effigies in the cloisters of Westminster Abbey, of two of its abbots, are of great historical interest. They are of the eleventh and beginning of the twelfth centuries. One is of Vitalis, who died in 1087; the other of Crispinus, who died 1117. Whether two statues of Henry I. and his queen in Rochester cathedral were of that date, the middle of the twelfth century, cannot be determined; but there is evidence of the art having been exercised in England extensively within a hundred years of that time. It is worthy of remark, that Wells cathedral, which is copiously decorated with sculpture, was completed in the year 1242; and that Cimabue, one of the fathers of Italian art, was only born in 1240; and Giotto did not appear till 1276. The building of this church was therefore going on while Niccolò Pisano was exercising his art in Italy, and it was finished between thirty and forty years before one of the most interesting monuments of the kind in Italy, the Duomo of Orvieto, was commenced. The sculpture which decorates Wells cathedral is of course very rude in point of art; but

¹ The question of colouring sculpture is too large a subject to be entered upon here, where it is only referred to incidentally as a practice that has obtained at different periods in the history of the art. That the ancients employed colour in a variety of materials as well as in pigments, there is no doubt. Extreme decoration and love of finery is a characteristic of all early and barbarous nations, and it is found that the sculpture of remote antiquity was everywhere painted. As art in the times referred to was used almost exclusively for religious purposes, the mode of treatment became prescriptive; and therefore, even after a purer taste was established generally in design and form, as was the case in the age of Pericles, and when Phidias exercised his art, the established usage of richly decorating the statues of the gods was still adhered to in very many instances. The colour was put on thickly and uniformly over a stucco ground, and without tints. Vermilion and white were those usually employed for the naked parts. The eyes were often made of glass or stone. It is not possible to conceive that in their general practice the great sculptors of antiquity would consent to injure and conceal the perfection of surface they gave to their marble by thus coating and disfiguring it with thick opaque colour. It must also be borne in mind that colour was extensively used in architectural enrichment, and sculpture usually was so intimately associated with architecture that it partook of the decorative character, and was subject to its conditions. This gives, so far, a reasonable account for the practice of the ancients, but it affords no excuse for the affectation of its modern re-introduction in isolated and gallery statues. (Kügler, *Polychromie*; Westmacott, *On Colouring Statues*, 1859; Hittorf; Quatremère de Quincy, *Le Jupiter Olympien*, &c.)

Sculpture. it is of great interest, from the character of the designs, and from the date of its execution. It illustrates various subjects of Scripture-history and acts in the life of our Saviour; besides recording, in statues of heroic size, the memory of saints, kings, queens, and others, who were probably patrons and benefactors of the church. Another circumstance of interest is, that it seems to be the earliest example in this country of such sculptural enrichment exhibiting a connected series of Scripture illustrations; but its importance may be still greater if, as has been conjectured, it is the first specimen of the kind known to exist in Western Europe. Its origin, then, becomes a question of some importance. It is not improbable that some of the earliest Italian practitioners may, in their wanderings, have penetrated as far as England; but the style of the sculpture certainly does not resemble that of the Italian artists who undoubtedly were employed on the tombs of Edward the Confessor and of Henry III.; and, therefore, it is not so easily associated with the art derived from that source. Flaxman, admitting this, was disposed to think it was derived from the East, conceiving that, as it was not Italian, it might have been founded on examples seen by the Crusaders; a speculation which has little probability to recommend it. That the Crusaders influenced the civilization of Europe must be conceded, inasmuch as many of the ingenious eastern arts became known, and were introduced by those who returned from those wars; but it scarcely can be likely that any light could be thrown on sculpture by the practice of the eastern nations. No writer seems to have allowed himself to think it possible that the English could have been capable, at any period of their history, of producing such art as was required for the decoration of their sacred and other edifices, even of the rude and primitive kind under consideration; and therefore all have taxed their ingenuity and invention to give the honour of it, such as it is, to any rather than their own countrymen. The preponderance of the foreign element in the courts of the sovereigns of England, and the little knowledge of, or feeling for, art in the higher classes, have always tended to depress or ignore the attempts of native artists to do at home that which the artists of Italy, France, and Germany effected for the credit of their respective countries; and on all occasions, till a comparatively late period, foreign painters and sculptors were preferred and employed. Want of opportunity and want of practice, all-sufficient causes in themselves of inferiority, were assumed, too often by those but little competent to judge, to be proofs of national incapacity; and till Christopher Wren vindicated the honour of his country in architecture it seemed never to have occurred that an Englishman could make himself worthy to take a position as a real artist. Without entering into the question of the greater or less degree of sensibility in the northern nations to the various forms of beauty, whether in the imitative arts or in music, there can be no doubt that this habit of slight and depreciation by those from whom, from their influence and position, encouragement might rather have been expected, suppressed the growth of art among the English, and paralysed the efforts of the few who might have any desire or ambition to practise it. It must, however, at the same time be admitted, that with the disadvantages that doubtless accrued to the establishment and progress of native art in England by the constant immigration and employment of foreigners, some advantages have also to be acknowledged. The inducement held out by the liberal remuneration to be procured in England by every kind of talent occasionally brought among us artists of a superior class, from whom much could be learned in matters of technical detail, in which our own ill-educated practitioners were greatly deficient; and there can be no doubt that this led to considerable improvement in our own schools. In the seventeenth and eighteenth centuries, however, art in England, with

very trifling exceptions, was in the same low state with Sculpture. respect to taste as it was on the Continent; and the sculptors (foreigners, of course) who were then practising here, —Scheemacher, Rysbrach, and Roubiliac—have left evidence of the debased condition of the art, although, as has before been observed, there are among the works of the last-named artist many productions of great merit.

It may not be out of place to mention here that England is very rich in its series of ecclesiastical and monumental sculpture, from the earliest introduction of that class of art in this country. Reference has already been made to the effigies in low relief of two abbots of Westminster, in the eleventh and twelfth centuries, and to the statues which decorate Wells cathedral. At first all sculpture to commemorate individuals was confined to the ecclesiastics, the clergy having the exclusive control over these works. The earliest monumental effigy of a king is that of John in Worcester cathedral, the date 1216. The next of royal personages are those in bronze, in Westminster Abbey, of Henry III. (1272), and of Eleanor the queen of Edward I. (1290). From this time there is a continued succession of such works, which are not only highly valuable from their historical importance, but for the illustration they afford of the changes in the style of monumental design. Some of those of the end of the fourteenth and the fifteenth centuries are particularly rich in design, and deserve attention for many valuable qualities of art. It will be observed that, from its commencement till about the end of the sixteenth century, monumental sculpture exhibits the influence of the religious feeling of the earlier ages. It was of course modified in its forms and mode of representation, as may be seen in numerous examples of easy reference that abound in our cathedrals and older churches, but everywhere the prevailing sentiment was religious. Figures, whether they are lying recumbent on their tombs or kneeling, a posture not so often met with in the principal subject in early monumental sculpture, are usually represented praying; or if not literally occupied in the act of prayer, they generally have accessories or accompaniments referring to religious exercises, or are attended by ministering angels, either supporting the cushion at the head or grouped at the feet of the person represented. Of course there are exceptions to this rule, as in the effigies of the knights in the Temple church, and others that might be mentioned; but generally the sentiment described was the prevailing one in this class of works. In the sixteenth century a departure from this characteristic of church sculpture is observable, and in a few years all reference to the religious character in such works is lost sight of. The taste exhibited in monumental design of the date of Elizabeth and James I. is exceedingly bad, but after that time this class of art still further deteriorated, and the monuments produced in the latter part of the seventeenth century are for the most part entirely wanting in the associations which seem to be so essential in works of this kind.

It has been asserted—and the assertion has, for want of being properly canvassed, been too readily admitted by some writers—that the decline of art in England, and especially the change in the sentiment of monumental design, was owing to the Reformation, in the sixteenth century. This opinion is quite unfounded. In the first place England had no distinct school of art; all, or almost all, that was produced was by foreigners. In the next, if the deterioration of art is to be attributed to the change in the religious convictions of the nation, the proof of it should be found only among the people of the Reformed Church. But so far from this being the case, examples of monuments in places of worship, deviating much more strikingly than our sculpture from all religious and Christian character of design, abound all over the Continent. In Rome, especially in St Peter's, where, according to the view of the opponents

Sculpture. of the Reformation, the utmost propriety and purity of design might be expected, nothing can be worse than the taste and feeling exhibited in most of the monuments of the time referred to. Some of these works are not only utterly inappropriate, but are of a most objectionable character. Indeed, in this particular, it would not be difficult to show that, though the later Puritan feeling carried the anti-art prejudice to an excess which is to be deplored, the Reformation, instead of assisting in debasing art, was a powerful cause of purifying it. It is a subject of just and honourable pride that such objectionable and even scandalous subjects as occasionally occur in England in screens and on choir-stalls of the mediæval time, and which, being in sacred places, were of course executed under the sanction of the clergy, are never met with in the later decoration of the reformed religion. This subject is here only briefly touched upon with reference to the sentiment of a particular class of art; and to vindicate the Reformation from the unjust charge of having corrupted taste.

There was a slight re-action in favour of art in the reign of Charles I. It was occasioned chiefly by the introduction of some works of art from the Continent; and the interest in the subject exhibited by the king himself and his desire to acquire objects of the kind gave an impulse to the taste for art in his court. The political disturbances that soon began to disturb the kingdom were, however, fatal to the development of this feeling; and though there was considerable patronage and encouragement given to the sister arts, sculpture rapidly declined. After the death of Charles I. the collections he had made were dispersed, many of the finest productions in painting being sold and carried out of the country. The original cartoons of Raffaele and those of Andrea Mantegna, both now preserved at Hampton Court, would have shared this fate, and would have been lost to us but for the interference of Cromwell. By his command they were purchased for the nation.¹

Three sculptors of some eminence may be noticed here who were practising with success in England. Stone, who died in 1647, is the author, among other works, of a large monument in memory of a member of the Newcastle family, in Westminster Abbey, and which Flaxman, in his review of English sculpture, thinks worthy of commendation. Caius Gabriel Cibber, born in 1630, is known as the sculptor of the two stone statues of "Madness" and "Melancholy" at Bethlehem Hospital. They are remarkable works for expression, and for bold and vigorous design and execution. Grindley Gibbon was the sculptor of the bronze statue of James II. in the court-yard of the banquetting-house at Whitehall, a work of considerable merit, though the action is rather theatrical. The costume is that of a Roman general. This artist deserves particular mention as one of the most distinguished carvers in wood. He was much employed by Charles II. at Windsor Castle and Hampton Court, where his works may still be seen. He also executed the wood carvings in the screen of St Paul's Cathedral, as well as other elaborate performances of the kind at the country seats of many of the nobility. His imitation of birds, dead game, foliage, fruit, and such objects, deserve the highest praise. He died in 1721.

Nothing could be lower than the state of sculpture in England during the reigns of the two first Georges. In that of George III. a new era commenced. The position and importance of art as a pursuit honourable to a civilized nation were admitted, and the first national acknowledgment of its existence in England was made. It is not yet a hundred years since this was effected, but the result of this recognition has been of a kind amply to satisfy those who hoped well for the credit of English talent. Artists

Sculpture. have in this short time appeared who will bear comparison with their contemporaries all over the world. To mention but a few names: in architecture, Wren and Chambers; in painting, Reynolds, Gainsborough, Wilkie, and Turner; in engraving, Sharpe and Woollet (and there are many others who might easily be added in all branches of the arts), have triumphantly disposed of the charge of national incompetency. Of living artists, many of whom have justly acquired a widely-extended reputation, it would be invidious here to speak. In sculpture, England has within the last few years possessed very eminent names; and as some of these have exercised considerable influence, it may be desirable, in concluding this part of the history of the art, to point out the leading peculiarities that have marked their practice.

The chief sculptors who arose after the disappearance of the Rysbrach and Roubiliac schools, and who began to exercise their art with some independent feeling, were Banks, Bacon, Nollekens, Flaxman, Westmacott, and Chantrey. The merit of Banks may be judged of by his large group in the façade of the gallery of the British Institution in Pall Mall, representing Shakespeare between Poetry and Painting; by his elegant and expressive composition in marble in the National Gallery, of "Thetis rising from the Sea to console Achilles;" his fine statue in marble in the Royal Academy of "A Falling Giant," and other works. Nollekens produced many works showing a close observation of nature and accomplishment in the executive part of his art. In busts especially his practice was very great, and he also produced some statues of considerable merit. His drapery was, however, poor in design, and showed the influence of the weaker parts of the preceding schools.

Flaxman has made an European reputation of which his country may feel justly proud. As a designer, his fame is established by his compositions from Homer, Æschylus, and Dante, as well as by other works. Among his productions in sculpture may be especially mentioned the group of "Michael overcoming Satan;" a performance that places its author in the very highest rank of sculptors. His composition in rilievo of "Mercury conveying Pandora to Earth," those from the Lord's Prayer, his elaborate and classical "Shield of Achilles," after Homer, cast in gold, and numerous works illustrating passages of Scripture, introduced in monumental designs, attest the fertility of his invention and the true genius that characterised his conceptions. Flaxman's style was founded on the beautiful ancient examples, especially in the designs on Greek fictile vases, modified by his sympathetic appreciation of the simplicity and sentiment of the early Christian art of the Pisani and their followers. With Flaxman execution was subservient to invention, and it must be admitted that many of his most beautiful conceptions suffer from their inadequate execution.

Westmacott derived his earlier impressions from the ancient statues; and the influence of antique art appears in the generality of his designs. Some very original conceptions are, however, found in this artist's works. Among these, the large alto-rilievo of the "Dream of Horace," at Petworth, the illustrations of the Progress of Civilization, the Invention and Progress of Navigation, and similar subjects deserve attention. Among his best known ideal or sentimental statues, not of the antique school, may be mentioned the well-known group of the "Distressed Mother," and a group of the "Virgin and Child." These have great expression, and are also examples of a deep knowledge of the requirements and true principles of the art. His portrait-statues in bronze and marble are numerous, and many of his public monuments, exhibiting great fancy and invention, may be seen in the churches and public squares in different parts of England.

¹ It is curious to know that the cartoons of Andrea Mantegna were valued at L.2000, while those of Raffaele, which had been purchased for Charles I. by Rubens, were estimated at only L.300.

Sculpture.

Chantrey had no academical education in the art in which he became so eminent; a circumstance which accounts for many of the excellences and defects of his practice. His sound common-sense enabled him to perceive the falsehood of a school of modern art which was always repeating ancient designs and forms, and he therefore took nature, as he viewed her, for his example. In his portrait-statues in their modern costume, and in his busts he identified himself with his own age and people. In his busts of men he was without a rival; for although they are wanting in what the learned in art understand by ideality, they exhibit a truthfulness in their individuality and character that justly place them among the best works of their class. In many of his portrait-statues the same power of seizing the salient points of character are seen. But few ideal or "gallery" works by Chantrey exist. Indeed, his strength consisted in his ability to deal with the real or natural; and, not having any sympathy with merely classical art, he judiciously confined himself, with few exceptions, to the treatment of subjects out of the pale of poetical fancy or invention.

The influences that affected the leading sculptors of the English school may still be variously seen in the productions of living artists. While some have preferred the ancient Greek examples, both for subject and the mode of treatment, others have sought in commoner modern sources both the subjects for illustration and the forms in which they are to be presented. This country may now boast of a considerable amount of executive talent in sculpture; but the ultimate judgment as to the merit of the artist must be left to the just award of time. A too strict subserviency to ancient example may retard the progress of a true, original school, and may tend to establish cold, passionless, artificial, or academical art, while an injudicious and too close imitation of the merely natural may, in like manner, lead to a low standard of subject and form, and thus debase a high and fine art to the condition of vulgar, commonplace image-making. It is from the union of the expressive, which can be appreciated by modern feelings and sentiment, with the highest forms of beauty, of which the true elements are found in the principles pervading Greek sculpture, that the most happy success will result.

The processes of sculpture are now so generally known that it scarcely seems necessary to describe them; but as a history of the art would scarcely be complete without some little explanation of the mechanical and technical conduct of a work, a few general indications of the sculptor's mode of proceeding are here added.

The artist having invented or conceived his subject, usually begins by making a small sketch of it in some plastic or obedient substance, as clay or wax. He can change and alter this at his pleasure till he is satisfied with the composition, and the arrangement of the light and shadow. He then proceeds to copy it in his statue or group of its intended size. Before commencing the larger model it is necessary to form a sort of skeleton or frame-work of iron and wood, with joints made of wire to support the great mass of clay. This iron frame is firmly fixed upon a turning bench, or banker, so that the model may be constantly moved without difficulty. As the clay is likely to shrink as it gets dry, it is necessary occasionally to wet it by sprinkling water over it with a brush, or from a large syringe, and by laying damp cloths upon it. This is the process for preparing a model in the "round." In modelling rilievo of either kind, a plane or ground is prepared upon which the design is or should be carefully drawn. The clay is then laid in small quantities upon this, the outline being bounded by the drawing; and the bulk or projection is regulated by the degree of relief the sculptor requires. If the final work is to be in baked clay (*terra-*

cotta) there must be no iron or wooden nucleus, and the model is prepared for drying without such support. When perfectly dry, the model is placed in an oven and slowly baked, by which it acquires the peculiar brownish-red colour seen in these works. If the final work is to be in marble, or bronze, or plaster, the next process after finishing the model is to mould it. This is done by covering it with a mixture of plaster of Paris with water, which quickly sets, forming a hard and thick coating over the whole. The clay is then carefully picked out, and an exact matrix or form remains. This is washed clean, and the interior is brushed over with any greasy substance, usually a composition of soap and oil, to prevent the fresh plaster with which it is to be filled adhering too firmly to it. The fresh plaster is mixed to about the consistency of cream, and then poured gently into the mould till all the surface is filled or covered. When this is set the old plaster mould is carefully knocked away with chisels, and the true cast appears beneath, giving an entire fac-simile of the model. Some skill is required in making moulds, in order to provide for projecting parts and undercuttings; practice alone can give this. The above general instructions explain the ordinary process. In metal casting or founding attention must be paid to the strengthening of the parts to bear the weight of the metal; but the principle described in plaster-moulding applies also to the preparation for metal-casting. The mixture of metal to form bronze, the heating of the furnace, burning, chasing, and other processes of founding, cannot be fully described in this place, as they belong to a distinct practice.

If the model is to be copied in marble or stone, the first step is to procure a block of the required size. Two stones, called *scale-stones*, are then prepared, upon one of which the model or plaster cast is placed, and upon the other the rough block of marble. The fronts of these stones have figured marks or "scales" exactly corresponding. An instrument, capable of being moved by socket-joints and moveable arms, is then applied to the scale-stone of the model, and a projecting point or "needle" is made to touch a particular part of the model itself. This is carefully removed to the scale-stone of the rough block, and the marble is cut away till the "needle" reaches so far into the block as to correspond with the "point" taken on the model. A pencil-mark is then made to show that the point is fixed. This process is repeated all over the model and the block till a rough copy or shape of the model is entirely made. These "pointing" machines are not always precisely alike, but the principle upon which they act is exactly similar in all. The statue being thus rudely shaped out, the block is placed in the hands of a superior workman, called a carver, who copies the more minute portions of the work by means of chisels, rasps, and files; the pencil-marks showing him the precise situation of the parts and the limits beyond which he is not to penetrate into the marble. When the carver has carried the work as far as the sculptor desires, he proceeds himself to give it the finishing touches, improving the details of form and expression, producing varieties of texture, and harmonizing the whole.

The rich quality of surface that appears more or less in works in marble is produced by rubbing with fine sand or pumice-stone and other substances, and the ancients appear to have completed this part of their work by a process called by Pliny "*circumlitio*," which may probably mean not only rubbing or polishing, but applying some composition, such as hot wax, to give a rich colour to the surface. Many of the ancient statues certainly exhibit the appearance of some foreign substance having slightly penetrated the surface of the work to about one-eighth of an inch, and its colour is of a warmer tint than the marble below it. This process is quite distinct from *polychromy*, or what is usually understood by colouring sculpture. (R. W.—T.)

Sculpture.

Scuppers
||
Scylla.

SCUPPERS are metal pipes inserted in openings bored from the deck through the sides of a ship, to carry the water off from the deck to the sea.

SCURVY, a constitutional disease in which the quality of the blood has been much impaired, owing mainly to the absence for a great length of time of fresh vegetable diet and other articles, containing the salt of potash. It was formerly very prevalent among our seamen, but for many years, except in rare cases of neglect, it has not been heard of. The supply of a portion of lime or lemon-juice daily, effectually checks any tendency to scurvy.

SCUTARI, or SKUTARI (anc. *Chrysopolis*), the largest of the suburbs of Constantinople, forming a town of itself, on the opposite side of the Bosphorus, on seven low hills. The modern name is derived from the Persian *Ushudar*, a courier, on account of this being the post-station for couriers to and from the east. The town contains several mosques founded by sultans or sultanas, a large palace, barracks, several imarets or kitchens for the poor, baths, and convents. Among the last, the most remarkable is that of the howling dervishes, which is visited by many Europeans on account of the singular and fanatical rites performed. The cemetery of Scutari is much larger and more beautiful than any in the capital, on account of the sacredness supposed to belong to Asiatic soil. The town contains silk-mills and cotton factories; and has a considerable trade. In the vicinity there are many beautiful villas and country-houses. During the Russian war of 1854-6, the hospital of Scutari was used by the allied armies. Pop. estimated at 60,000.

SCUTARI (Albanian *Shodra*), a town of European Turkey, Albania, capital of a pashalic in the eyalet of Rumili, at the southern extremity of the Lake of Scutari, from which the Boyana here issues, 45 miles S.E. of Cattaro. It is walled and defended by two castles; contains a bazaar, numerous mosques, Greek and Roman Catholic churches. Ship-building, woollen and cotton weaving, and the manufacture of fire-arms, are carried on here. Scutari is the principal place of trade in Bosnia and Albania, as three important routes cross each other here—that from Constantinople to the Adriatic; that from Belgrade to the Mediterranean; and that from Dalmatia to Albania. Pop. 24,000.

SCUTTLES, in a ship, holes in the decks of a ship, either for air or as passages to the store-rooms; also openings in a ship's side for the admission of air. If, in order to sink a ship, a hole be cut in her bottom, she is said, in nautical language, to be scuttled.

SCYLLA, or SEIGLIO, a town of Naples, in the province of Calabria Ultra, on a promontory of the same name, at the Strait of Messina, 11 miles N.N.E. of Reggio. At the outmost point of the land stands the castle on a steep cliff; behind this the town is built on a neck of land, picturesquely rising in zig-zag terraces from the sand on either side. It contains numerous fountains, and some very handsome buildings; has important silk manufactories, a considerable trade, and an extensive fishery. Scylla suffered very much from an earthquake in 1783. Here is the once dreaded rock Scylla, of classical fame; but it is now passed without danger or fear by the navigator. Pop. 4560.

SCYLLA and CHARYBDIS, the names of two rocks in the Strait of Messina, fancifully described as sea-monsters by Homer, and after him by many of the best poets both in ancient and modern times. These descriptions are plainly intended to typify some objects of imminent danger and terror; and though it would be absurd to seek too minutely for a local habitation of such creations of the fancy, it is not improbable that the idea was originally derived from the exaggerated rumours about rocks and eddies that would be brought home by such adventurous seamen as had the courage, in their frail uncovered boats, to attempt

Scyros
||
Scythia.

the passage. Scylla is represented in different forms, with six heads, or with three, or with a fish's tail encircled by ever-howling dogs. She dragged vessels on the fatal rocks; while Charybdis, on the other side, engulphed them in the water, which she alternately sucked in and ejected from her capacious jaws. In modern language, Scylla and Charybdis have passed into a proverbial metaphor, expressing the difficulty of avoiding opposite extremes or dangers.

SCYROS, now SKYROS, or SKYRO, an island belonging to Greece, one of the group called the Sporades, in the Ægean Sea, 25 miles E. of Eubœa. Length about 17 miles; breadth from 2 to 7; area about 60 square miles. It consists of two parts united by a narrow isthmus in the centre, where there is a tract of low level ground. The northern and southern extremities are mountainous, especially the latter, which is the loftier, abounding in bare cliffs and deep ravines, clothed only with wild forests of oaks, pines, and beeches. In the northern portion the hills are less elevated; and these, as well as the valleys and plains, are covered with rich corn-fields, vineyards, and pastures. Corn, wine, and madder are the most valuable productions of the island; oranges and other fruits are grown; and goats of a good breed are reared. At the town of St George, on the east coast, which contains nearly all the inhabitants, some remains of the ancient capital have been found. On the west side the bay of Kalamitza forms a good harbour. Scyros is more than once mentioned in the ancient legends of Greece. It was here that Theseus, after retiring from Athens, was treacherously murdered by Lycomedes; and Achilles, according to one tradition, was sent hither by Peleus to avenge his death. In 476 B.C., the Athenians were directed by an oracle to bring home the bones of their tutelary hero; and accordingly no long time elapsed before Cimon conquered the island, expelled the former Dolopian inhabitants, colonized it with Athenians, and brought the bones of Theseus to the Theseium at Athens. The island long remained subject to the Athenians; afterwards it passed into the hands of the Macedonians, and still later into those of the Romans. Pop. 2630.

SCYTHE. See AGRICULTURE.

SCYTHIA, a name given by the ancients to a large tract of country, inhabited by a race of people whom they called Scythæ, but who called themselves Scoloti. The position and extent of this country, according to different writers, differ very considerably; and especially Herodotus and Ptolemy, who give the most distinct information on the subject, are completely at variance, the former placing it entirely in Europe, and the latter almost entirely in Asia. According to Herodotus, who does not recognise the country called Sarmatia by later writers, the Scythians occupied a portion of it, extending from the Ister (Danube) to the Palus Mæotis (Sea of Azoff), and the Tanais (Don); and from the Euxine northwards to the country of the Melanchlæni. Eastward from Scythia lay the country of the Sauromatae, between the Tanais, the Rha (Volga), and Caucasus; while the region between the Borysthenes (Dnieper) and the Tanais was at one time occupied by the Cimmerians, who were expelled by the Scythians. Scythia, therefore, in the time of Herodotus, comprehended Moldavia and the southern portions of European Russia. The Scythians themselves, according to the historian, were a branch of the Sacae, an Asiatic people living to the east of the Caspian, and had been driven out from their original country by the Massagetae. Only two important events in Scythian history are mentioned by Herodotus; the one is the invasion of Media by the Scythians, and the other that of Scythia by Darius. In 624 B.C., the Scythians entered Media, defeated Cyaxares, the reigning monarch, and occupied the land for twenty-eight years before they were expelled. It was at least ostensibly in revenge for this

Scythia. incursion that Darius Hystaspis determined to invade Scythia about 513 B.C. He formed a bridge across the Danube; and crossing that river, obtained some advantages over the Scythians. But he was unable to effect any real conquest of these nomad tribes, and narrowly escaped having his retreat cut off by the destruction of the bridge. In later times we do not hear much of the Scythians in history. Instead of them the Sarmatians appear as the occupants of these regions. Whether this is to be accounted for by supposing that the Sauromatae of Herodotus encroached upon the Scythian territory and supplanted its former inhabitants, or we are to believe that the change was only in the name by which these nomad tribes were known to the Greeks and Romans, is a doubtful point; but there can be no question of the fact, that in the time of Ptolemy the term Scythia was applied exclusively to those eastern regions, which even, according to Herodotus, formed the original home of the Scythians. Scythia was, according to this view, bounded on the W. by the Rha, which separated it from Sarmatia; S. by the Jaxartes (Sir Daria), which separated it from Sogdiana, and by the Emodi Montes (Hindoo Coosh and Himalayas), which separated in from

India. On the N. and E. there was no definite boundary; in these directions lay the lands of the Seres and the Sinae. Scythia was divided into two parts, inside and outside the Imaus, a name applied somewhat vaguely to the mountains of Central Asia; but which probably indicates in this connection the ranges now known as Bolor and Thian Shan. Scythia intra Imaum would thus comprehend the Kirghize steppes; and Scythia extra Imaum Tibet and Little Bucharina. The term Scythia, as used by Ptolemy, thus corresponds very much to the similarly indefinite terms Tartary and Turkestan, which we apply to nearly the same regions, dividing it in a similar way into the western or Independent, and the eastern or Chinese portion. The Scythians of the ancients are also probably to be identified with the Turkish races; and it will no more surprise us to find the former in ancient times occupying the position assigned them by Herodotus, than to find the latter at the present day occupying European Turkey. The physical characteristics, manners, and language of the Scythians, so far as they can be ascertained, confirm this opinion, though some eminent authorities have arrived at different conclusions.

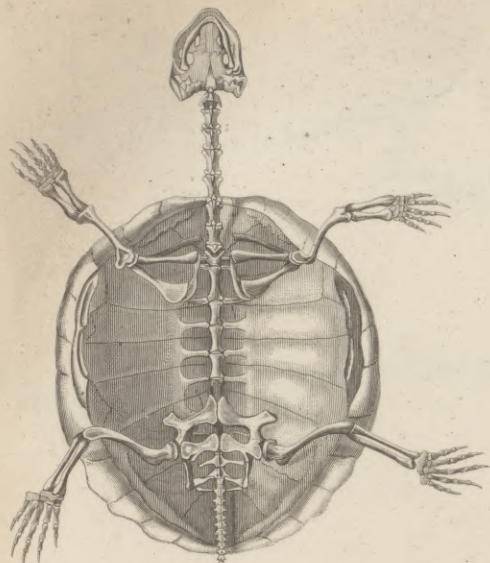
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1848

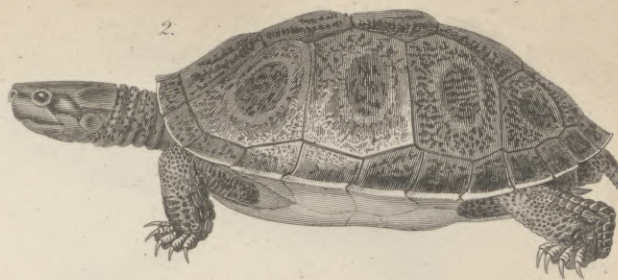
1848



1.

*Skeleton of Astuda Europaea.*

2.

*Emys ocellata.*

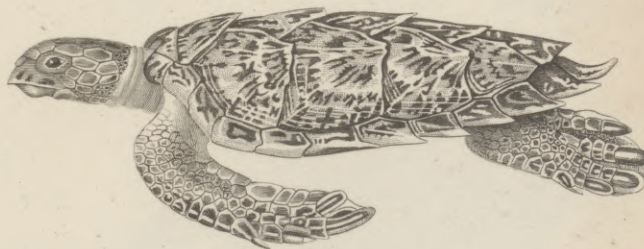
3.

*Emysaura serpentina.*

5.

*Chelonia coriacea.*

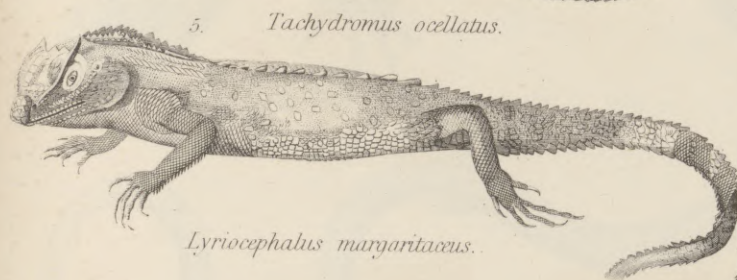
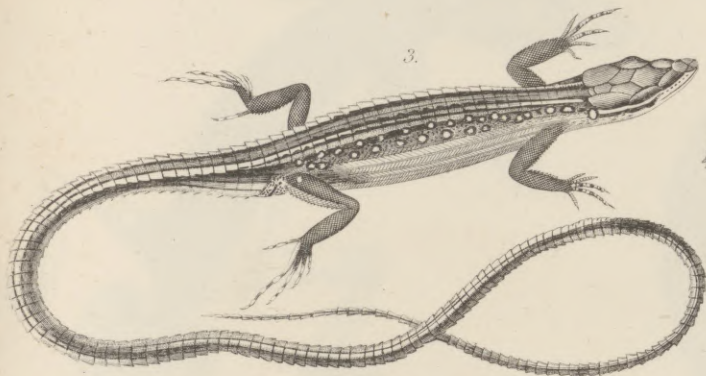
4.

*Chelonia imbricata.*

6.

*Crocodilus biporcatus.*

Geo. Atkinson, Sculp.





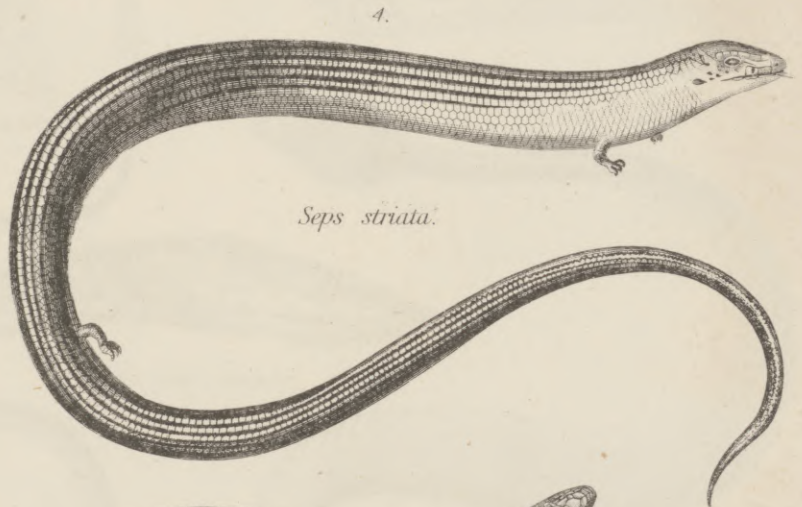
Chamaeleo Africanus.



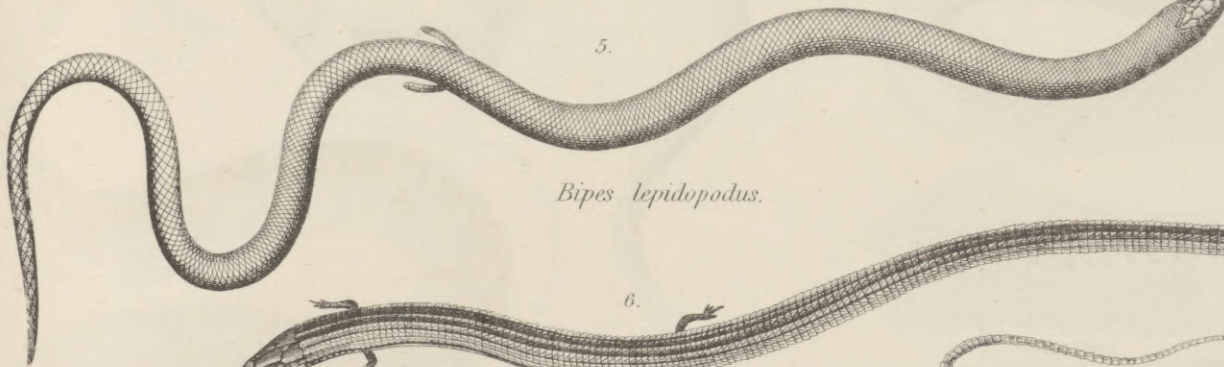
Anolis velifer.



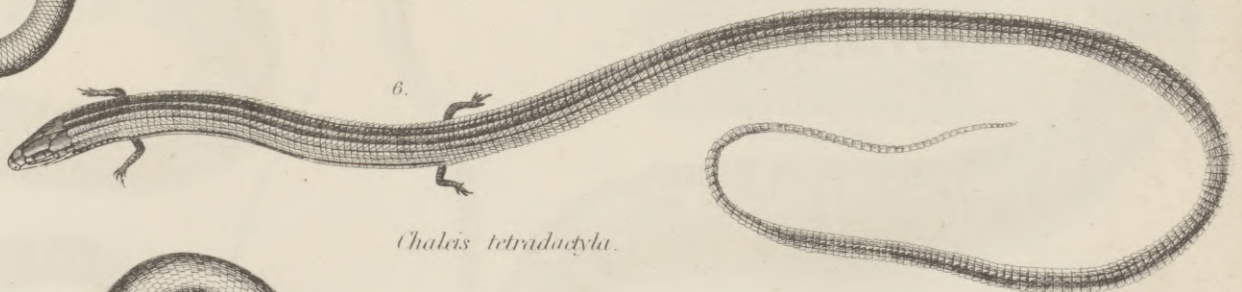
Phyllurus platurus.



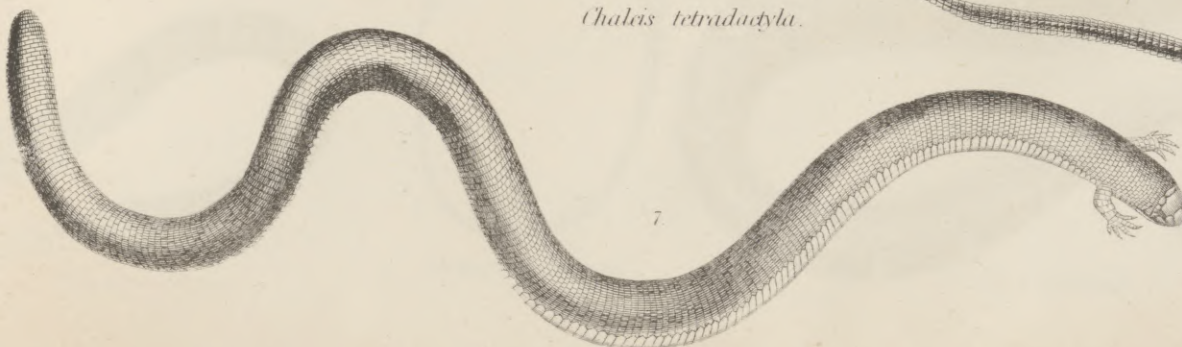
Seps striata.



Bipes lepidopodus.



Chalcis tetradactyla.



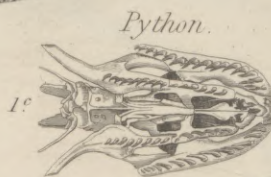
Chirotes ocellatus.



Cecilia.



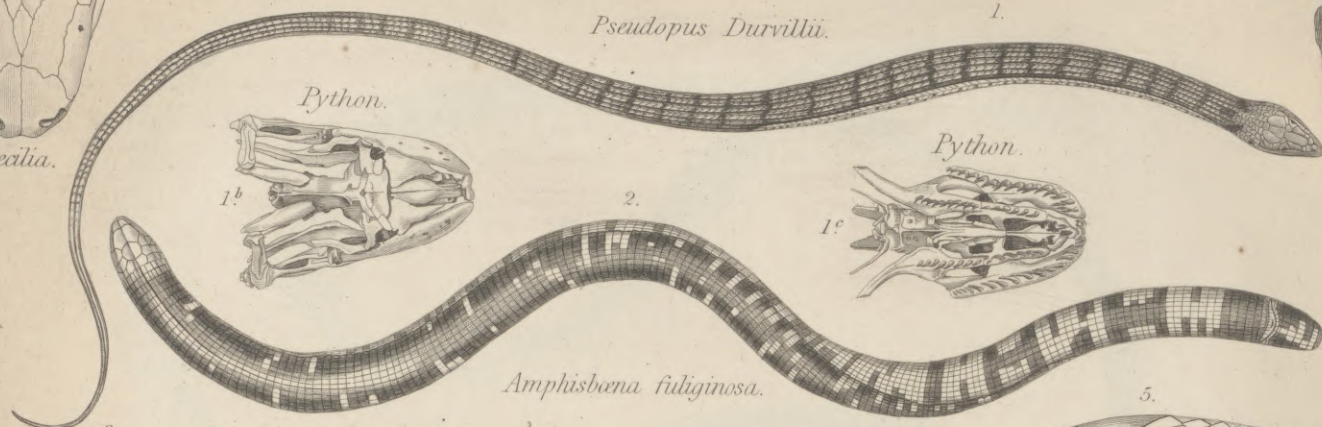
Python.



Python.



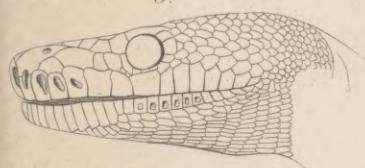
Amphisbaena.



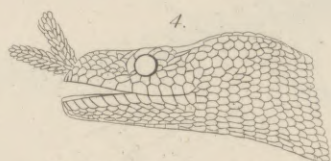
Pseudopus Durvillii.



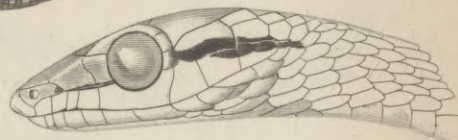
Amphisbaena fuliginosa.



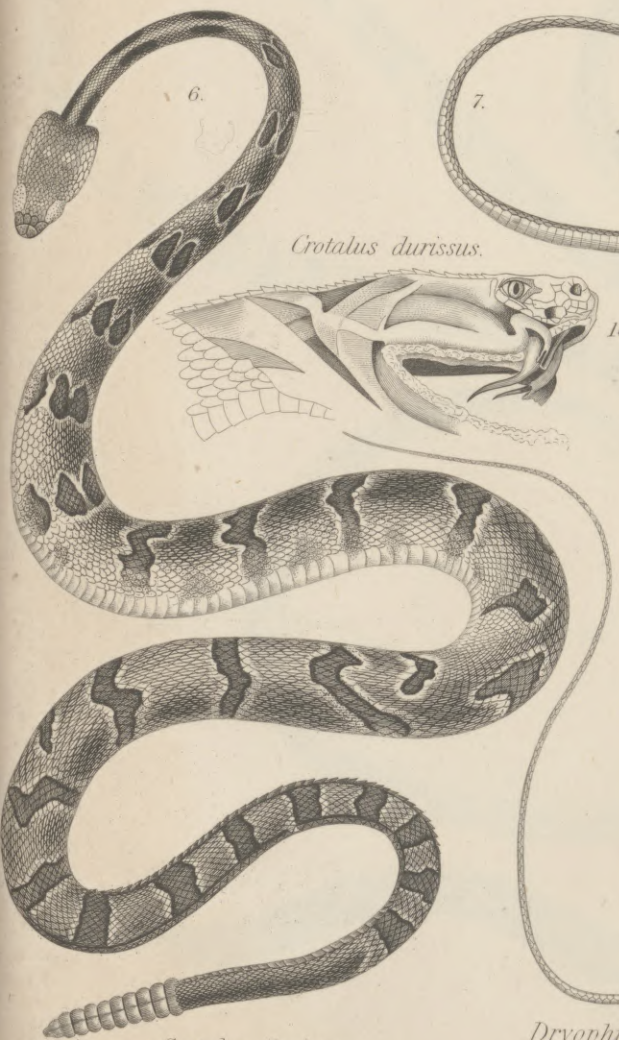
Head of Python Schneideri.



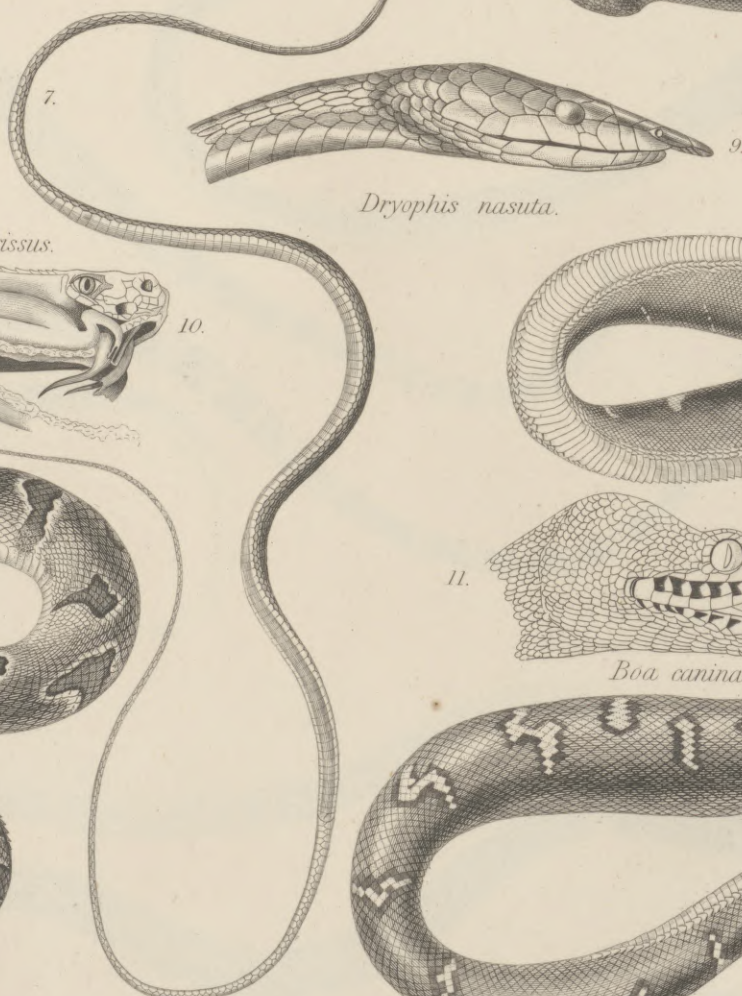
Head of Erpeton tentaculatus.



Head of Dendrophis liocercus.



Crotalus durissus.



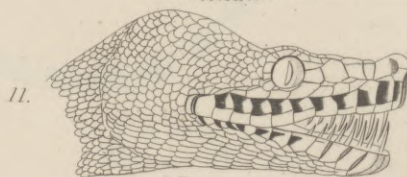
Dryophis nasuta.



Boa canina.



Crotalus durissus.

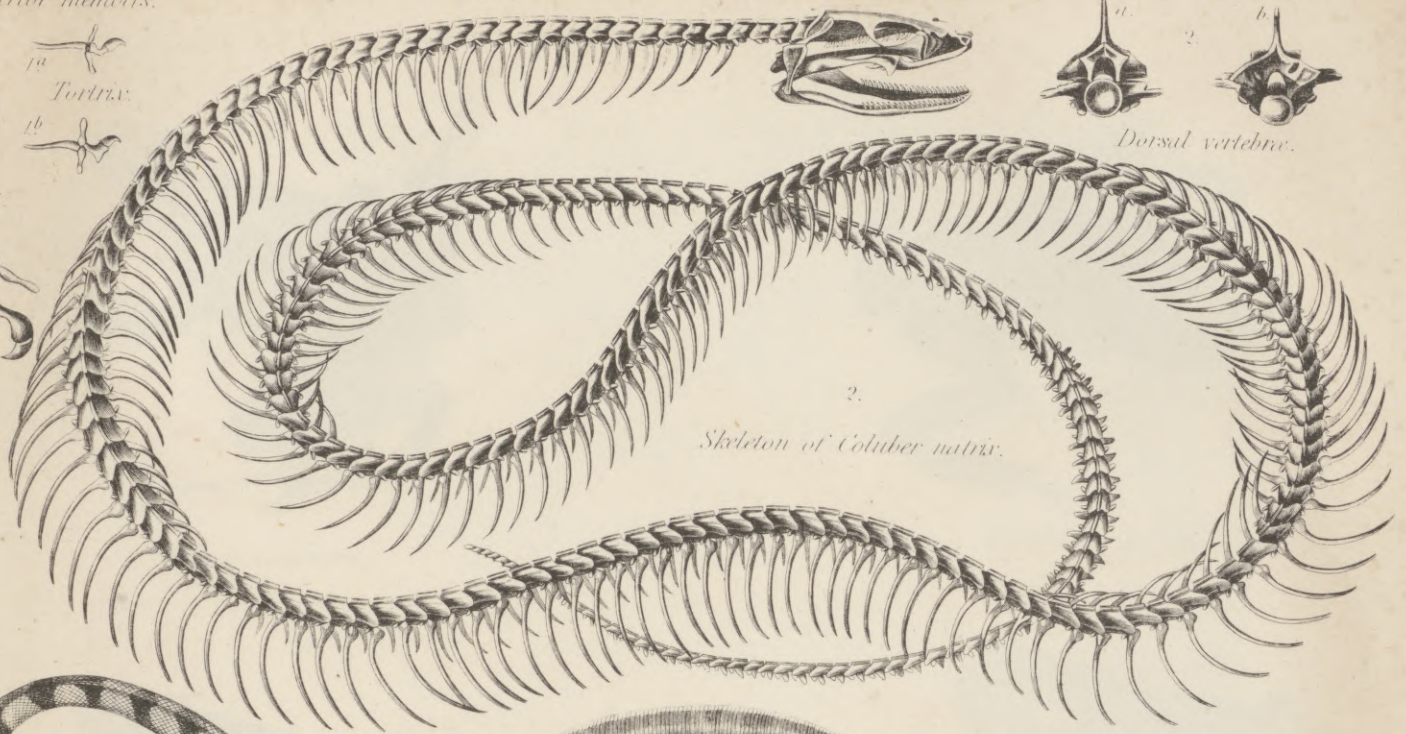


Boa canina.

Posterior members.



Dorsal vertebra.



Skeleton of *Coluber natrix*.

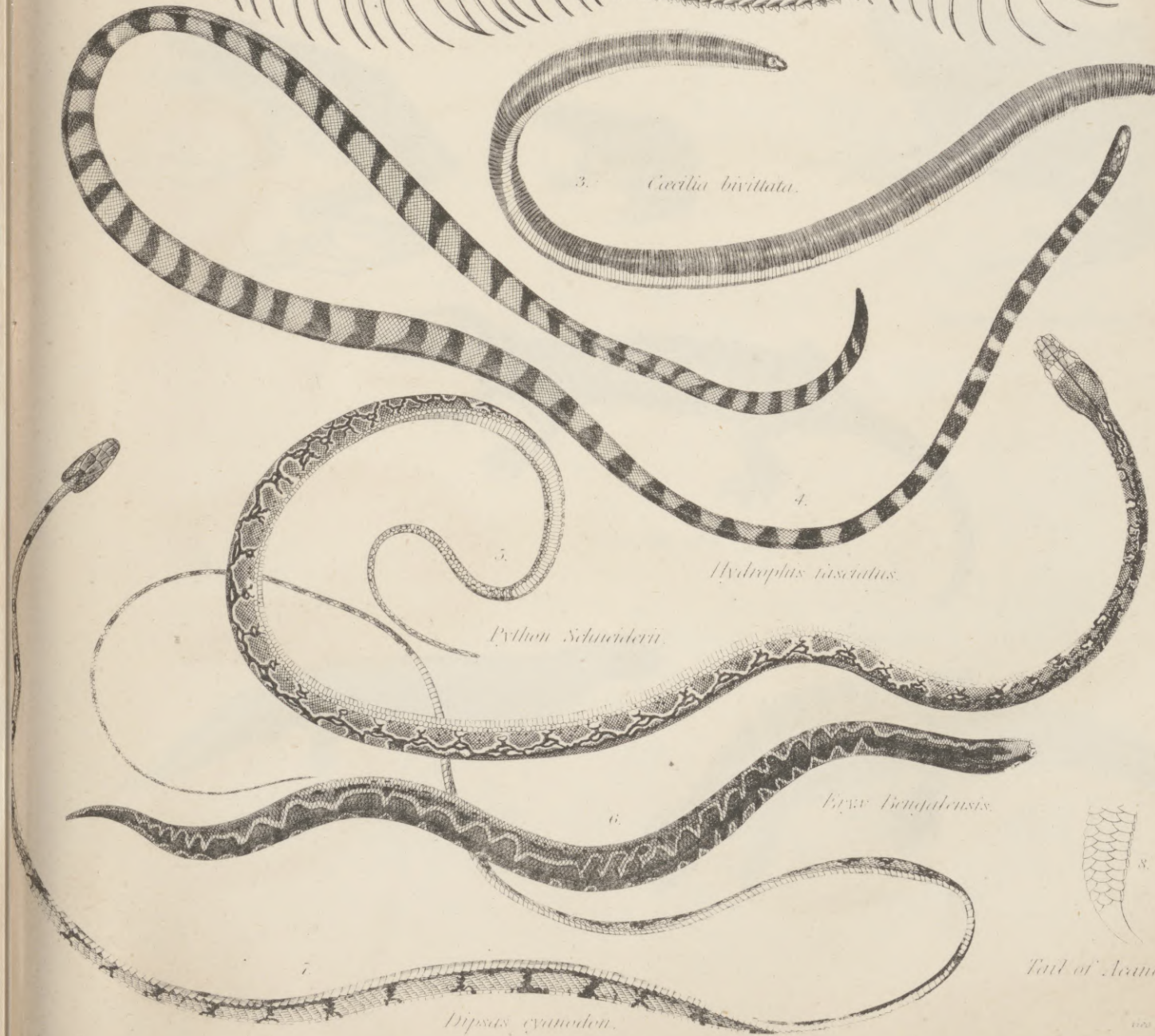
3. *Cecilia bivittata*.



4.

Hydrophis fasciatus.

Python Schauinslandi.



Naja bengalensis.

Vipera cyanodon.

Part of *Acanthopis*.



Rana palustris.



Ceratophrys granulosa.



Hyla bicolor.



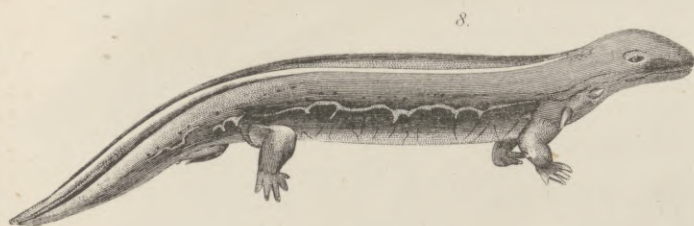
Oxyrhynchus bicolor.



Engystoma marmoratum.



Salamandra atra.



Menopoma gigantea.

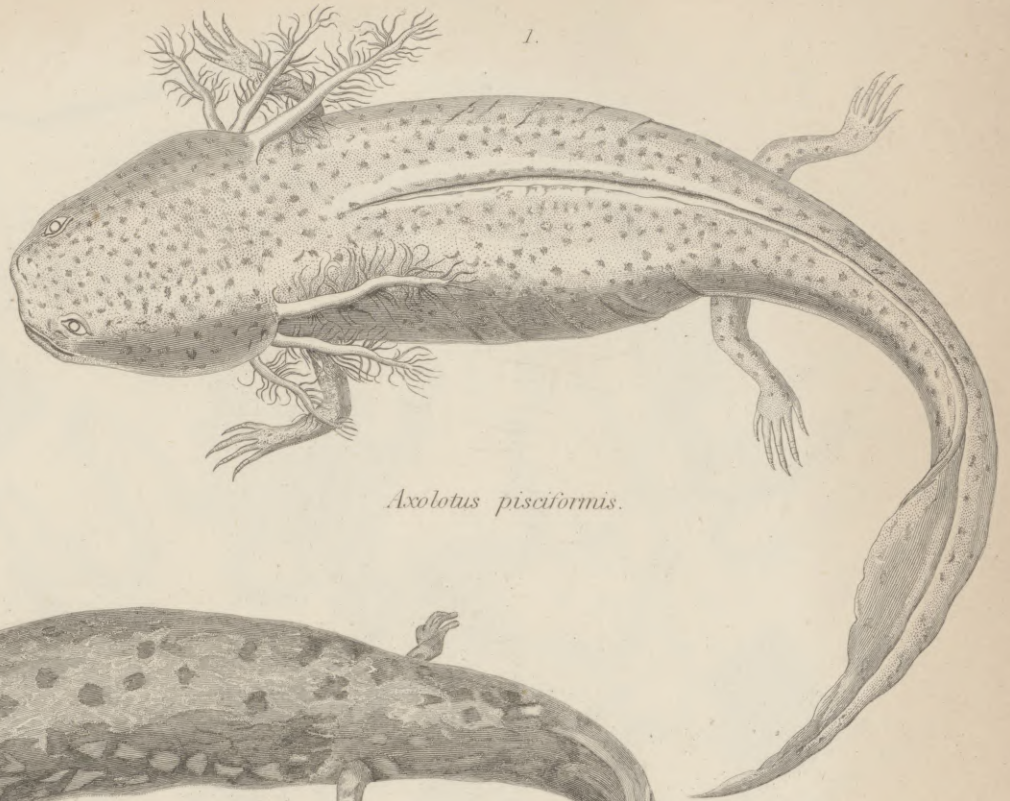


Triton vittatus.





Head & gills of N^o 1.



Axolotus pisciformis.

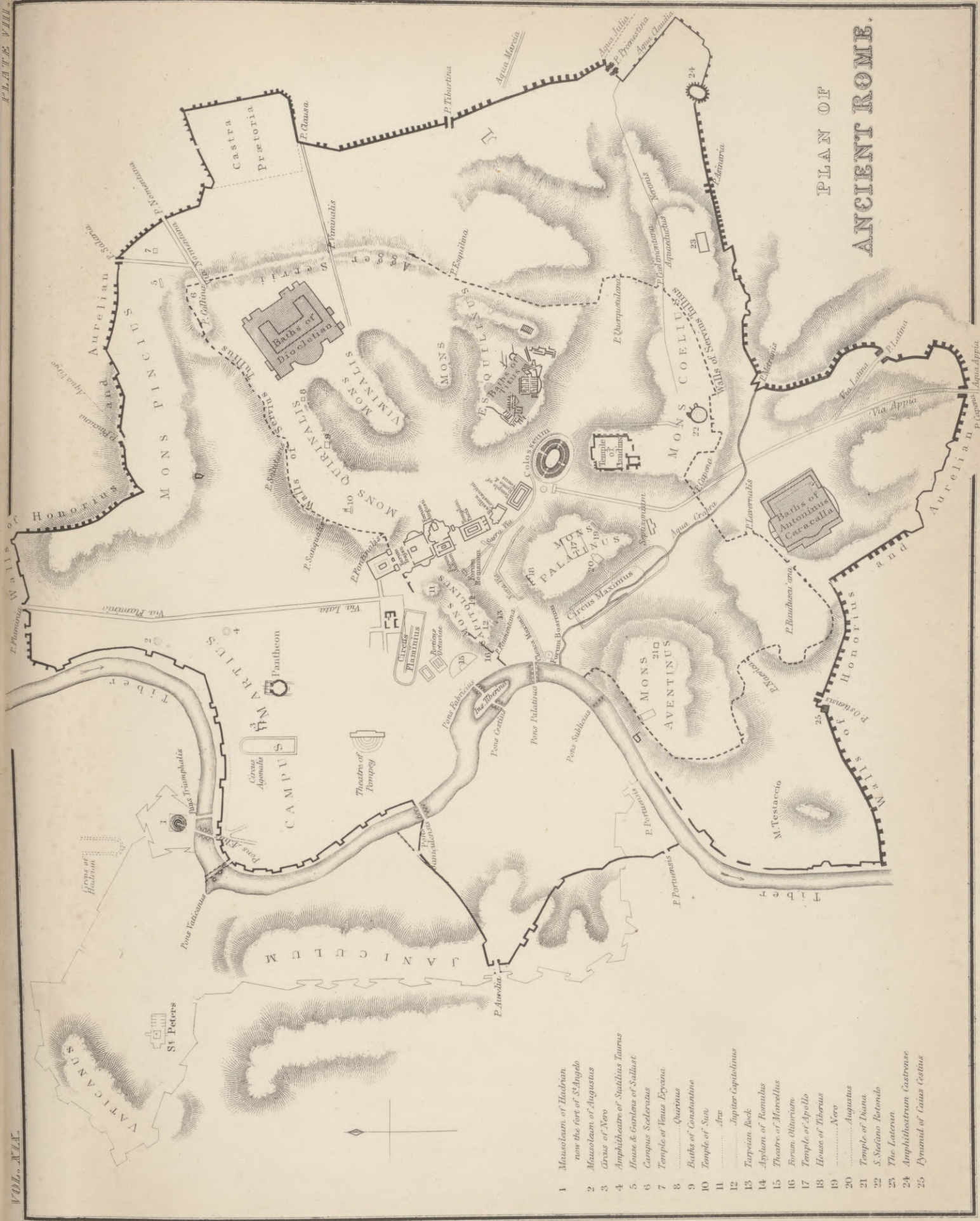


Menobranchus lateralis.



Siren lacertina.

Geo. Aikman, Sculp^t



- 1 Mausoleum of Hadrian
now the fort of St Angelo
- 2 Mausoleum of Augustus
- 3 Circus of Nero
- 4 Amphitheatre of Statilius Taurus
- 5 House & Gardens of Sallust
- 6 Campus Sclavorum
- 7 Temple of Venus Erycina
- 8 Quirinus
- 9 Baths of Constantine
- 10 Temple of Sun
- 11 Ara
- 12 Jupiter Capitolinus
- 13 Tarpeian Rock
- 14 Asylum of Romulus
- 15 Theatre of Marcellus
- 16 Forum Ultimum
- 17 Temple of Apollo
- 18 House of Tiberius
- 19 Nero
- 20 Augustus
- 21 Temple of Diana
- 22 S. Stefano Isendo
- 23 The Lateran
- 24 Amphitheatreum Castrense
- 25 Pyramid of Caius Cestius

PLAN OF ANCIENT ROME.

